

BEST MANAGEMENT PRACTICES FOR NEW WELL SITES IN COMMERCE CITY

~~6/26~~9/12/2019 draft

1. ***Air Quality.*** Operator must eliminate, capture, or minimize all potentially harmful emissions and minimize dust associated with onsite activities and traffic on access roads pursuant to the terms herein. Operator shall comply with all applicable state and federal regulations including regulations promulgated by CDPHE, COGCC and US EPA.
 - A. Minimization of Emissions. To protect air quality, the following is required of the operator:
 - i. The use of electric equipment for permanent equipment, such as electric drilling rigs, electric compressors and use of line power as detailed in BMP Section 1E.
 - ii. Air emissions from the Operations shall be, at a minimum, in compliance with the permit and control provisions of the Colorado Air Quality Control Program, C.R.S. § 25-7-101 et seq. as may be amended.
 - iii. All fossil-fuel powered engines used for drilling, completions and production operations on Well Sites shall employ the latest emission-reduction technologies that are economically practicable and Best Management Practices such as drilling rigs powered by electricity, electric compressors and green completions.
 - iv. Comply with the transportation and circulation section addressing traffic provisions set forth in Section 15.
 - v. The utilization of pipelines pursuant to Section 11.
 - vi. Manufacture test or other data demonstrating hydrocarbon destruction or control efficiency that complies with a design destruction efficiency of 98% or better.
 - vii. The use of no-bleed continuous and intermittent pneumatic devices. This requirement can be met by replacing natural gas with electricity or instrument air, or routing the discharge emissions to a closed loop-system or process.
 - viii. Any flare, auto ignition system, recorder, vapor recovery device or other equipment used to meet the hydrocarbon destruction or control efficiency requirement shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.
 - ix. No use of glycol dehydrators or desiccant gas processing dehydrators.
 - x. Compressor engines are prohibited within the City limits except for wellhead, sales, and gas lift compressors, air and/or gas gathering compressors which shall be located on the Well Sites. Operator agrees to use enclosures of compressor engines where necessary to

provide visual and/or noise mitigation. Any compressors that are used as part of the vapor recovery units (air pollution controls) will be limited to 6-8 small engine drive units. VRU compressors will be installed with sound walls to buffer noise.

- xi. Year-round application of odor requirements pursuant to COGCC and CDPHE regulations.
- xii. To the maximum extent practicable, Operator's Well Site and equipment design will reduce emissions of associated gas from hybrid gas-oil wells (i.e. gas that is co-produced from a well that primarily produces oil).
- xiii. Best management practices during liquids unloading (i.e. maintenance activities to remove liquids from existing wells that are inhibiting production), and the installation of artificial lift or unloading through the separator where practicable.
- xiv. To the maximum extent practicable, Operator will reduce emissions from oil and gas pipeline maintenance activities such as pigging or blowdowns. If any maintenance activity will involve the intentional venting of gas from a well tank, compressor or pipeline, beyond routine pipeline maintenance activity and pigging, the operator shall provide forty eight (48) hour advance written notice to the City of such proposed venting. Such notice shall identify the duration and nature of the venting event, a description as to why venting is necessary, a description of what vapors will likely be vented, what steps will be taken to limit the duration of venting, and what steps the operator proposes to undertake to minimize similar events in the future. If venting is required, or if accidental venting occurs, the operator shall provide such notice to the City of such event as soon as possible, but in no event longer than 24 hours from the time of the event, with the information listed above and with an explanation as to the cause and how the event will be avoided in the future.
- xv. Flaring shall be eliminated or minimized to the maximum extent practicable.
- xvi. Compliance with dust suppression techniques set forth in BMP Section 1H.
- xvii. Compliance with odor requirements set forth in BMP Section 1I.
- xviii. Consolidation of product treatment and storage facilities within a Well Site.
- xix. Centralization of compression facilities within a Well Site.
- xx. Telemetric control and monitoring systems, including surveillance monitors to detect when pilot lights on control devices are extinguished.
- xxi. Compliance with all CDPHE air permits, if any, and all OSHA work practice requirements with respect to benzene.
- xxii. Participation in Natural Gas STAR program or other equivalent voluntary programs to encourage innovation in pollution control at Well Sites.

- xxiii. Use of a pressure-suitable separator and vapor recovery unit (VRU) where applicable.
- xxiv. Pipeline infrastructure will be constructed prior to the Production Phase.
- xxv. For hydraulic fracturing pumps, Operator agrees to use any of the following:

(a) Tier 4 or better diesel engines, or

(b) combined diesel and natural gas co-fired Tier 2 engines, or

(c) natural gas fired spark ignition engines

- B. *Leak Detection and Repair.* Operator shall develop and maintain an acceptable leak detection and repair (“LDAR”) program as required by CDPHE using modern leak detection technologies such as infra-red cameras for equipment used on the Well Sites. For the five (5) year period beginning with the start of the Production Phase per well location at the first Well Site, Operator shall conduct quarterly IR camera monitoring of all equipment at the Well Sites. After the first five-year period, Operator will conduct at least semi-annual IR camera monitoring until all the wells on the Well Site are plugged and abandoned. Except when a circumstance would necessitate an immediate repair, Operator must repair leaks as quickly as practicable. If more than 48-hours repair time is needed after a leak is discovered, an explanation of why more time is required must be submitted to the City. Operator shall conduct continuous pressure monitoring to detect leaks. At least once per year, the Operator shall notify the City five (5) business days prior to an LDAR inspection of its facilities to provide the City the opportunity to observe the inspection.

- ~~C. *Ambient Air Sampling. The Modeling.* Operator shall ~~conduct, as approved by the City, a specific ambient air quality test that includes:~~~~

- ~~i. ~~Pre-construction baseline air quality testing shall be completed on the Well Sites by a consultant approved by the City and paid for by the Operator. If there is a residential building unit within a 1,000 feet from the edge of the Well Site, another sample will be taken within 100 ft of the Residential Building Unit closest to the Well Site. If the closest surface owner has not provided permission to access and test after thirty (30) days from receiving notice, the Operator shall work with the City to identify another suitable location. Samples will be collected using canisters (e.g. SUMMA) for a 5-day period at each Well Site. Each canister will be mounted on a tripod, located about three feet above ground level. Collected samples will be sent to a laboratory and analyzed for a suite of hydrocarbons using US Environmental Protection Agency (USEPA) Method TO-15. This method returns the measured concentrations for up to about 60 different hydrocarbons.~~~~

- ~~ii. ~~Operator shall provide access to the Well Sites to the City’s designated inspector or personnel or agent to allow air sampling to occur.~~~~

- ~~iii.~~ C. Operator will provide a regionally based air modeling and emissions inventory based upon a similar project. The air modeling emission inventory that will be provided is taken from the City

and County of Broomfield in the 3rd quarter of 2017 ~~its~~ which was completed by a third-party consultant.

- D. *Ozone Air Quality Action Days.* On Air Quality Action Day advisories posted by the CDPHE for the Front Range Area, the Operator shall implement CDPHE-suggested air emission reduction measures as practicable. Emission reduction measures shall be implemented for the duration of an Air Quality Action Day advisory and may include measures such as:
- i. Minimize vehicle and engine idling;
 - ii. Reduce truck traffic and worker traffic;
 - iii. Delay vehicle refueling;
 - iv. Suspend or delay use of fossil fuel powered ancillary equipment; and
 - v. Postpone construction activities, if practicable.
 - vi. Within 30 days following the conclusion of each annual Air Quality Action Day season, Operator must submit a report to the City that details which measures it implemented during any Action Day advisories.
- E. *Electric Equipment.* All permanent production equipment, such as compressors, motors and artificial lift equipment, shall utilize electric line power in order to mitigate noise and to reduce emissions.
- i. All drilling rigs capable of drilling to Total Depth (TD) on a well shall be required to utilize electric line power unless Commerce City waives this provision in writing for a specific location or for any well not located within 1,320 ft of a Residential Building Unit or not within 1,500 ft of a High Occupancy Structure. At any location where Operator is not required by this provision to utilize line power for drilling, Operator will utilize line power if available in sufficient quantity from the utility provider. Operator shall minimize use of diesel generators for temporary power, including the use of liquified or compressed natural gas for power generation to further reduce emissions and noise. At any location where line power is not used for drilling, Operator shall provide to City at City's request the source(s) used for power.
 - ii. If necessary, Operator shall provide an Electrification Plan to describe how electricity will be brought to the location for all phases of development.
- F. *Exhaust.* The exhaust from all engines, motors, coolers and other mechanized equipment shall be vented up or in a direction away from the nearest occupied building.
- G. *Flares and Combustion Devices.* To the extent flares, thermal oxidizers, or combustion devices are utilized, all such flares shall be designed and operated as follows:

- i. Flares shall be fired with natural gas and designed to operate with a 98% of higher hydrocarbon destruction efficiency.
 - ii. Flares shall be designed and operated in a manner that will ensure no visible emissions during normal operation. Visible emissions means observations of smoke for any period or periods of duration greater than or equal to one (1) minute in any fifteen (15) minute period during normal operation, pursuant to EPA Method 22. Visible emissions do not include radiant energy or water vapor.
 - iii. Flare shall be operated with a flame present at all times when emissions may be vented to it, or shall utilize another mechanism that does not allow uncontrolled emissions.
 - iv. All combustion devices must be equipped with an operating auto-igniter.
- H. *Fugitive Dust.* Operator must submit to the City a dust mitigation plan. Silica dust must be contained to the maximum extent ~~reasonably~~-practicable during the hydraulic fracturing process. Dust associated with on-site activities and traffic on access roads shall be minimized throughout construction, drilling and operational activities such that there are no visible dust emissions from access roads or the Well Sites to the extent practical given wind conditions. No untreated produced water or other process fluids shall be used for dust suppression. The Operator will avoid creating dust or dust suppression activities within three hundred (300) feet of the ordinary high water mark of any waterbody, unless the dust suppressant is water. Material Safety Data Sheets (MSDS) for any chemical-based dust suppressant, other than magnesium chloride, shall be submitted to the City prior to use.
- I. *Odor/Dust Containment.* Operations shall be conducted in such a manner that odors and dust do not constitute a nuisance or hazard to public health, safety, welfare and the environment. All Operations shall use best available technologies that are reasonably available to control odor and dust. If deemed necessary and reasonable, the City may require additional mitigation efforts at any point during Operations. Odor emitting from Well Sites must be controlled. Operator to prevent odors from oil and gas operations by proactively addressing and, to the extent possible, resolving complaints filed by impacted members of the community. If a person living in a Residential Building Unit within 1,320 feet of a Well Site complains of odor, Operator shall determine whether the odor is caused by Operators Operations. If the odor is caused by Operators Operations, Operator shall resolve the odor concern to the maximum extent practical within 24 hours. Operator must use a filtration system or additives to the drilling and fracturing fluids to minimize odors. Use of fragrance to mask odors is prohibited. In order to meet the provisions of this section, Operator shall implement one or more of the following measures as necessary:
- i. Running mud through a cooler to reduce odor.
 - ii. Wiping down the drill pipe each time that the drilling operation “trips” out of the hole.
 - iii. Increase additive concentration ~~as necessary.~~

- iv. Operator will employ the use of drilling fluid with low to negligible aromatic content during drilling operations after surface casing is set for the protection of fresh water aquifers;
 - v. Operator will haul drill cuttings off on a daily basis.
 - vi. Per BMP 1.E. certain locations will utilize an electric drilling rig, which will further reduce odors associated with drilling.
- J. *Reduced Emission Completions (Commonly known as Green Completions).* At Well Sites Operator shall employ reduced emission completions, also commonly known as green completions, which comply with federal and state requirements. The Operator has a general duty to safely maximize resource recovery and minimize releases to the atmosphere during flowback and subsequent recovery/operation. In addition, Operator shall comply with the following:
 - i. Gas gathering lines, separators, and sand traps capable of supporting green completions, as described in COGCC Rule 805 shall be installed per the provisions of COGCC Rule 805.
 - ii. Operator shall comply with 40 CFR 60 (Subpart OOOO), as may be amended, for green completions.
 - iii. Uncontrolled venting is prohibited other than where necessary for safety.
 - iv. Temporary flowback flaring and oxidizing equipment where allowed shall include the following:
 - a) Adequately sized equipment to handle 1.5 times the largest flowback volume of gas from a vertical/directional and/or horizontally completed well respectively as reported to the COGCC in a ten mile radius;
 - b) Valves and porting available to divert gas to flaring and oxidizing equipment; pursuant to the above Rules 40 CFR 60 (Subpart OOOO) for green completions & COGCC Rule 805 or as may be amended.
 - c) Auxiliary fueled with sufficient supply and heat to combust or oxidize non-combustible gases in order to control odors and hazardous gases. The flowback combustion device shall be equipped with a reliable continuous ignition source over the duration of flowback, except in conditions that may result in a fire hazard or explosion; and
- K. *Compliance.* The Operator must submit annual reports to the City certifying (a) compliance with these air quality requirements unless demonstrated to be inapplicable and documenting any periods of material non-compliance, including the date and duration of each such deviation and a compliance plan and schedule to achieve compliance, (b) that the equipment at the Well Sites continues to operate within its design parameters, and if not, what steps will be taken to modify the equipment to enable the equipment to operate within its design parameters. The annual report

must contain a certification of accuracy and completeness of the reports, signed by a responsible corporate official. The Operator may satisfy this reporting obligation in whole or in part by submitting its AQCC Regulations No. 7 annual reports for the prior calendar year to the City, and supplementing them as needed to meet these reporting requirements for covered facilities within the City. The Operator will also provide the City with a copy of any self-reporting submissions that Operator provides to the CDPHE due to any incidence of non-compliance with any CDPHE air quality rules or regulations at the Well Sites.

2. *Water Quality Protection*

- A. *Chemical Disclosure and Storage.* All fracturing chemicals shall be disclosed to the City pursuant to the process set forth below before chemicals are transported to the Well Site. Prior to the transportation of such chemicals onto the property, the Operator shall make available to the City, in table format, the name, Chemical Abstracts Service (CAS) number, storage, containment and disposal method for such chemicals to be used on the Well Sites, which the City may make available to the public as public records. Fracturing chemicals shall be uploaded onto the Frac Focus website within sixty days of the completion of fracturing operations. The Operator shall not permanently store fracturing chemicals, flowback from hydraulic fracturing, or produced water in the City limits. Operator shall remove all hydraulic fracturing chemicals from a Well Site within thirty (30) days following the completing of hydraulic fracturing at that Well Site.

In addition to any substances that are not permitted to be used in accordance with state or federal rules or regulations in place from time to time, the following chemicals shall not be utilized in hydraulic fracturing fluid at the Well Sites:

Ingredient Name	CAS #
Benzene	71-43-2
Lead	7439-92-1
Mercury	7439-97-6
Arsenic	740-38-2
Cadmium	7440-43-9
Chromium	7440-47-3
Ethylbenzene	100-41-4
Xylene-F	1330-20-7
1,3,5-trimethylbenzene	108-67-8

Ingredient Name	CAS #
1,4-dioxane	123-91-1
1-butanol	71-36-3
2-butoxyethanol	111-76-2
N,N-dimethylformamide	68-12-2
2-ethylhexanol	104-76-7
2-mercaptoethanol	60-24-2
benzene, 1,1'-oxybis-, tetrapropylene derivatives, sulfonated, sodium salts (BOTS)	119345-04-9
butyl glycidyl ether	8/6/2426
polysorbate 80	9005-65-6
quaternary ammonium compounds, dicoco alkyldimethyl, chlorides (QAC)	61789-77-3
hexamethylene triamine penta methylene phosphonic acid (BMPA)	35657-77-3
diethylenetriamine penta (methylene-phosphonic acid)(DMPA)	15827-60-8
FD&C blue no. 1	3844-45-9
Tetrakis(triethanolaminate) zirconium(IV) (TTZ)	101033-44-7

- B. *Closed-Loop Pitless Systems for the Containment and/or Recycling of Drilling Fluids.* Wells shall be drilled, completed and operated using closed-loop pitless systems for containment and/or recycling of all drilling, completion, flowback and produced fluids. Operator shall recycle fluids to the maximum extent practicable, with the understanding that Operator is limited in its ability to recycle all fluids, as doing so would necessitate the use of permanent tanks, which is otherwise prohibited by the terms of the Agreement, and result in the potential for additional emissions. Operator shall not store waste onsite for periods longer than 30 days.
- C. *Containment Berms.* The Operator shall utilize steel-rim berms (or similar material of comparable durability) around all permanent separation and storage equipment at the Well Sites with sufficient

capacity to contain 1.5 times the maximum volume of liquids that such equipment will contain at any given time plus sufficient freeboard to prevent overflow. All berms and containment devices shall be inspected quarterly by the Operator and maintained in good condition. No potential ignition sources shall be installed inside the secondary containment area unless the containment area encloses a fired vessel or such sources are rated in accordance with industry codes and standards. Secondary containment such as duck ponds or lined earthen berms for temporary tanks shall also be used.

- i. Permanent containment berms shall be constructed of steel rings or similar material, designed and installed to prevent leakage and resist degradation from erosion or routine operation.
 - ii. Secondary containment for permanent tanks shall be constructed with a synthetic or engineered liner that contains all primary containment vessels and is mechanically connected to the steel ring to prevent leakage.
- D. For locations within five hundred (500) feet and up-gradient of a surface water body, tertiary containment, such as an earthen berm, is required around respective production facilities.
- E. *Spill Response Kits.* Spill Response Kits will be available at either Well Sites or carried by field staff or contractors. These Spill Response Kits will be capable of mitigating small to mid-size spills (e.g., 5 to 50 gallons).
- F. *Injection Wells.* The Operator is prohibited from drilling or using injection wells in Commerce City or the Rocky Mountain Arsenal Wildlife Reserve.
- G. *Maintenance of Machinery.* Maintenance of vehicles shall not occur on site. Routine field maintenance of mobile machinery shall not be performed within three hundred (300) feet of any water body as defined by Commerce City Land Development Code. All fueling must occur over impervious material.
- H. *Spills.* Operator must notify the City and “SACWSD” (South Adams County Water and Sanitation District) of spills on the Well Sites that has a reportable spill quantity under any law. The Operator will also provide the City with a copy of any self-reporting submissions that Operator provides to the COGCC due to any spills at the Well Sites.
- I. *Stormwater Pollution Prevention and Erosion Control Plan.* All oil and gas operations at the Well Sites shall comply and conform with the City’s stormwater control regulations.
- J. *Water Quality Monitoring Plan.* Oil and gas operations shall avoid causing degradation to surface or ground water within the City and to wetlands within the City. The following standards set forth by the City are consistent with the COGCC rules and regulations. If Operator needs to seek a variance from a COGCC provision then an approved COGCC variance will apply upon notice of such variance from Operator to the City.

- i. Using records of the Colorado Division of Water Resources, Operator must implement a water quality monitoring plan that includes the following:
 - a) Operator must obtain initial baseline samples and subsequent monitoring samples from all available potable water sources within a one-half (1/2) mile radius of the Well Sites. Potable water sources include registered water wells or permitted or adjudicated springs.
 - b) Operator must collect initial testing of baseline samples from all available water sources prior to the commencement of drilling a well, or prior to the re-stimulation of an existing well for which no samples were collected and tested during the previous 6-12 months.
 - c) Post-stimulation samples of all available water sources shall be collected and tested pursuant to the following time frame:
 - 1. One sample approximately one (1) year after commencement of the Production Phase;
 - 2. One sample approximately five (5) years after commencement of the Production Phase; and
 - d) Operator shall collect a sample from at least one upgradient and two down-gradient water sources within a one-half (1/2) mile radius of a Well Site. If no such water sources are available, Operator shall collect samples from additional water sources within a radius of up to one (1) mile from the Well Site until samples from a total of at least one upgradient and two down-gradient water sources are collected. Operator should give priority to the selection of water sources closest to the Well Site.
 - e) Operator may rely on existing groundwater sampling data from any water source within the radii described above that was collected in accordance with accepted standards, provided the data was collected within the 12 months preceding the commencement of Drilling Phase for such Well Site, the data includes measurement of all of the constituents measured in Table 1 below and there has been no significant oil and gas activity within a one-mile radius in the time period between the original sampling and the commencement of the Drilling Phase for such Well Site.
 - f) Operator shall make reasonable efforts to obtain the consent of the owner of the water source. If the Operator is unable to locate and obtain permission of the water source, the Operator must advise the City that Operator could not obtain access to the water source from the surface owner.
 - g) Testing for the analytes listed in Table 1 below, and subsequent testing as necessary or appropriate.

- h) Operator must follow standard industry procedures in collecting samples, consistent with the COGCC model Sampling and Analysis Plan.
- i) Operator must report the location of the water source using a GPS with submeter resolution.
- j) Operator must report results of field observations including reporting on damaged or unsanitary well conditions, adjacent potential pollution sources, odor, water color, sediment, bubbles, and effervescence.
- k) Operator must provide copies of all test results to the City, the COGCC, and the water source owners within 30 days after receiving the samples.
- l) Subsequent sampling. If sampling shows water contamination, additional measures shall be required including:
 - 1. If free gas or a dissolved methane concentration level greater than one (1) milligram per liter (mg/l) is detected in a water source, determination of the gas type using gas compositional analysis and stable isotope analysis of the methane (carbon and hydrogen).
 - 2. If the test results indicate thermogenic or a mixture of thermogenic and biogenic gas, an action plan to determine the source of the gas.
 - 3. Immediate notification to the City, the COGCC, and the owner of the water well if the methane concentration increases by more than five (5) mg/l between sampling periods, or increases to more than ten (10) mg/l.
 - 4. Immediate notification to the City, the COGCC and the owner of the water well if BTEX and/or TPH are detected as a result of testing. Such detections may result in required subsequent sampling for additional analytes.
 - 5. Further water well sampling in response to complaints from water source owners.
 - 6. Timely production and distribution of test results in electronic deliverable format to the City, the COGCC and the water source owners.
 - 7. Qualified Independent Professional Consultant. All subsequent water source testing must be conducted by a qualified independent professional consultant.

TABLE 1

GENERAL WATER QUALITY

Alkalinity, Conductivity & TDS, pH, Dissolved Organic Carbon (or Total Organic Carbon), Bacteria, Perfluorinated Compounds (PFCs), and Hydrogen Sulphide

MAJOR IONS

Bromide, Chloride, Fluoride, Magnesium, Potassium, Sodium, Sulfate, and Nitrate + Nitrite as N

METALS

Arsenic, Barium, Boron, Chromium, Copper, Iron, Lead, Manganese, Selenium, Strontium, Mercury, Uranium, and Radium

DISSOLVED GASES and VOLATILE ORGANIC COMPOUNDS

Methane, Ethane, Propane, BTEX as Benzene, Toluene, Ethylbenzene and Xylenes, Total Petroleum, and Hydrocarbons (TPH)

OTHER

Water Level, Stable isotopes of water {Oxygen, Hydrogen, Carbon}, Phosphorus.

- K. *Wastewater and Waste Management.* Operator must submit a Waste Management Plan to the City that complies with the following: All fluids shall be contained and there shall be no discharge of fluids. Waste shall be stored in tanks, transported by tanker trucks and/or pipelines, and disposed of at licensed disposal or recycling sites. The plan shall incorporate secondary containment and stormwater measures consistent with Sections 8 and 37. No land treatment of oil impacted or contaminated drill cuttings are permitted. If required, a copy of the Operator's Spill Prevention, Control, and Countermeasure Plan (SPCC) will be given to the City, which describes spill prevention and mitigation practices. The Operator shall not dispose of any wastewater within the City. All other waste shall be disposed of in accordance with state regulations.
 - L. *Well Integrity.* Operator must equip the bradenhead access to the annulus between the production and the surface casing, as well as any intermediate casing, with a fitting to allow safe and convenient determinations of pressure and fluid flow. Valves used for annular pressure monitoring shall remain exposed and not buried to allow for visual inspection. The Operator shall take bradenhead pressure readings as required by the COGCC.
 - M. *Wetlands Protection Plan.* If applicable, Operator must supply a Wetlands Protection Plan demonstrating the oil and gas operations shall, to the maximum extent practicable, avoid causing degradation to wetlands with Commerce City. Among other methods to achieve compliance with this standard, the proposed oil and gas operation shall not alter historic drainage patterns and/or flow rates or shall include acceptable mitigation measures to compensate for anticipated drainage impacts.
3. **Water Supply.** The Operator shall comply with applicable State of Colorado, Department of Natural Resources and other applicable State regulations concerning the source(s) of water used in the Drilling Phase and Completions Phase. The Operator shall notify the City, upon its request, of the source(s) of water to be used at Well Sites during the Drilling Phase and Completion Phase and will provide the City with an estimate of the volumes of water to be utilized, with such estimates subject to change. All water volumes actually used by Operator shall be reported by the Operator to the State of Colorado in accordance with its regulations. All fresh water for completionshydraulic fracturing shall be transported to the Well Sites by means other than by truck, unless the Operator provides notice after demonstration of extenuating circumstances which will short amount of time seven days or less. If the transportation of water by means other than truck exceeds seven (7) days the operator will seek any necessary amendments to the OGP.

4. **Safety**

- A. *Bradenhead Monitoring.* Operator will conduct bradenhead monitoring on the New Wells in accordance with COGCC Rules.
- B. *Burning.* No open burning shall occur on the site of any oil and gas operation except flaring as allowed in Section 1G.
- C. *Discharge Valves.* Open-ended discharge valves on all storage tanks, pipelines and other containers within the Well Site shall be secured and shall not be accessible to the general public. Open-ended discharge valves within the Well Site shall be placed within the interior of the secondary containment area.
- D. *Flammable Material.* All ground within twenty-five (25) ft. of any tank, or other structure containing flammable or combustible materials, shall be kept free of dry weeds, grass or rubbish, and shall conform to COGCC 600 Series Safety Regulations and the applicable Fire Code. As such, no landscaping will be required within 25'± ft. of any tank or other structure containing flammable or combustible materials.
- E. *Flowlines.* Any newly constructed or substantially modified flowlines on the Well Sites shall be constructed and operated under the provisions of the COGCC 1100 Series Flowline Regulations, any future COGCC Flowline Regulations, and any applicable surface use agreements with the surface owners. Operator shall pressure test all flowlines following their construction, including those rated at less than 15 PSI. Operator will provide to the City all records required to be submitted to State agencies related to inspections, pressure testing, accidents and other safety incidents related to flowlines at the Well Sites and, upon specific request by the City, Operator will provide to the City any other records submitted to State agencies related to flowlines at the Well Sites.
 - i. *Recordation of Flowlines.* All new flowlines and pipelines shall have the legal description of the location recorded with the Adams County Clerk and Recorder within thirty (30) days of completion of construction. Abandonment of any recorded flowlines shall be recorded with the Adams County Clerk and Recorder within thirty (30) days after abandonment.
 - ii. Operator will provide GIS files for the location of Flowlines.
 - iii. Flowlines will be removed when last well utilizing lines are plugged and abandoned unless this requirement is waived in writing by Commerce City.
- F. *General Maintenance.* Operator shall operate and maintain all equipment pursuant to manufacturer specifications consistent with technological limitations and reasonable and customary maintenance practices.
- G. *Plugged and Decommissioned Well Testing.* Prior to and following the hydraulic fracturing of any New Well, Operator shall assess the integrity of all oil and gas and disposal wells (Active, Dry & Abandoned, Injecting, Plugged & Abandoned, Producing, Shut-In, and Temporarily Abandoned) where the surface location is within Commerce City Limits and within 1,500 ft. of the completion

interval of the projected track of the borehole of the proposed New Well. Evaluation of these wells, including the additional testing and disclosure that exceeds COGCC requirements, will promote public health and safety by identifying and reporting findings at these Previously Abandoned wells and ensuring that the completion of New Wells has no impact to them.

This shall include:

- i. Compliance with all COGCC rules in relation to abandonment and plugging.
- ii. Notification to the City and applicable Fire District not less than fourteen (14) days prior to commencing plugging operations.
- iii. Based upon examination of COGCC and other publicly available records, identification of all Previously Abandoned Wells located within one-quarter mile of the projected track of the borehole of a proposed well.
- iv. Assessment of leaking gas, oil, or water to the ground surface or into subsurface water resources, taking into account plugging and cementing procedures described in any recompletion or plugged and abandoned report filed with the COGCC.
- v. Notification of the City and COGCC of the results of the assessment of the plugging and cementing procedures.
- vi. Permission from each surface owner with a Previously Abandoned Well on their property to access the property to test the soil within a 10 ft. radius of the Previously Abandoned Well. If a surface owner has not provided permission to access and test after thirty (30) days from receiving notice, the Operator shall not be required to test the Previously Abandoned Well. Notice to the surface owner will be sent by Certified Mail through the US Postal Service, return receipt requested, to assure that the surface owner receives proper notice. The City will be notified for purposes of testing is denied within the City limits.
- vii. For each Previously Abandoned Well or other wells abandoned by the Operator within the City for which access and permission to test is granted, a soil gas survey to test the soil within a 10' radius of the Previously Abandoned Well shall be completed prior to production from the proposed New Well and again one (1) year after production has commenced on the New Well. Every Well abandoned by the Operator per this Agreement shall also be subject to the testing one (1) year after production has commenced on the New Wells.
- viii. Notification of the results of the soil gas survey to the City and the COGCC within one (1) month of conducting the survey or advise the City that access to the Previously Abandoned Wells could not be obtained from the surface owner.

- H. *Site Security.* Operator will provide a Site Security Plan for each location. Each plan will need to be updated every ten years or more frequently if required by Commerce City at its sole discretion based upon growth and development in the immediate vicinity.
- I. *Surface Safety Valve and Automatic Safety Protective Systems.* An automated safety system, governed by safety devices and a programmable logic computer, will be installed at the Well Sites. The automated safety system shall include the installation, monitoring and remote control of a Surface Safety Valve (“SSV”) among many other engineered measures and devices that are implemented to greatly reduce or eliminate the potential for a well event. All New Wells will have a SSV installed prior to the commencement of the Production Phase connected to the production tubing at the surface. The SSV will be equipped to operate remotely via the automated safety protective system, which monitors multiple flowing pressures and rates which have predetermined maximum and/or minimum threshold values programmed and will remotely shut the well in should certain upset conditions be detected. Additionally, the automated safety system shall provide the ability to remotely shut-in wells on demand through operator remote intervention. The SSV will have documented quarterly testing to ensure functionality.

5. ***Visual Mitigation Plan.*** Operator shall implement the Visual Mitigation Plan for a Well Site approved during the application process for such Well Site. The Visual Mitigation Plan shall include photographic simulations of the Well Site that include proposed impact mitigation measures as indicated below. The Community Development Director will determine if the proposed Well Site requires a photographic simulation based upon topography, existing vegetative and/or structural screening and the linear distance from the proposed Operations to residential and/or commercial land use(s).

- A. *Visual Mitigation Methods.* One or more of the following visual mitigation methods may be required on a site-specific basis:
 - i. Use of low-profile tanks less than 16 ft. in height. Operator will also consider equipment height and profile when designing and selecting other permanent equipment such as emission control devices, and other production equipment.
 - ii. Facility painting, vegetative or structural screening, land berming and landscaping.
 - iii. Earthen berm located around the perimeter of the fence and planted with turf grass or ground cover generally recognized by landscape architects and horticulturalists for local area use for the purpose of general screening
 - iv. Establishment and proper maintenance of ground cover, trees and shrubs for screening and aesthetic purposes; and
 - v. Designing the Oil and Gas Facility to utilize natural screens where possible.
 - vi. Construction of fences for use with or instead of landscaping or berming.

B. *Landscaping.* A Landscaping Plan shall be required for every Oil and Gas Location. The Landscaping Plan shall be coordinated with the City, depending on access to water, may be staged to accommodate surface development.

- i. If water for irrigation use is unavailable at the location, the initial phase will utilize natural topography and fencing surrounding the location, as well as any trees already established near the property. Initial landscaping will be installed within 6 months of finishing drilling and completion operations. At that time Operator will fence and landscape the location.
- ii. Once water for irrigation use is available to the area, the Operator must implement the final Landscaping as described in the Landscaping Plan. ~~If more than three (3) years have passed, the~~The Operator must consult with the City as well as meet Land Development Code requirements at the time the final landscaping is installed.
- iii. All plant materials shall be maintained in a healthy growing condition at all times. The Operator is responsible for the regular weeding, mowing, fertilizing, pruning and other maintenance of all plant materials as needed. Proper irrigation of plant materials is required, except that automatic irrigation systems are not required if no direct water connection is available within 500 ft.
- iv. *Significant Trees.* Existing significant trees (greater than eight inches in caliper) shall be preserved to the maximum extent practicable and may help satisfy the landscaping requirements set forth above. All required landscape plans shall accurately identify the locations, species, size, and condition of all significant trees, each labeled showing the applicant's intent to either remove, transplant, or protect.

Trees that meet one or more of the following removal criteria shall be exempt from the requirements contained in this subsection:

- a) Dead, diseased, or naturally fallen trees, or trees found to be a threat to public health, safety or welfare;
- b) Trees that are determined by the city to substantially obstruct clear visibility at driveways and intersections; or
- c) Tree species that constitute a nuisance to the public such as cotton-bearing cottonwood, Siberian or Chinese elm, Russian olive and female box-elder. Native cotton-bearing cottonwood trees and female box-elder trees, when located in a natural area buffer zone, are not nuisance tree species.

C. *Lighting.* Exterior lighting shall be directed away from residential and other sensitive areas or shielded from said areas to eliminate glare. All permanent lighting fixtures installed at the Operations shall comply with the lighting standards of this Code. The intent of this provision is to minimize light spillage beyond the perimeter of the Well Sites and for the Operator to take appropriate steps in order to achieve this. All permanent lighting or lighting higher than a perimeter wall must be downward facing. All bulbs must be fully shielded to prevent light

emissions above a horizontal plane drawn from the bottom of the fixture. Prior to installation of permanent lighting on any facility, the Operator agrees to submit to the City a Lighting Plan and the City shall communicate with Operator any modifications to the plan that it deems appropriate. Operator shall make such modifications as reasonably required by the City and as required by law. The lighting plan shall indicate the location of all outdoor lighting on the site and any structures, and include cut sheets (manufacturer's specifications with picture or diagram) of all proposed fixtures. During the Drilling and Completion Phases, consistent with applicable law, Operator will construct a minimum 32 ft.in height wall around as much of the perimeter of the well pads as operations allow to reduce light escaping from the site, unless taller, shorter, or no walls are mutually agreed to by City and Operator on a site-specific basis.

- D. *Artificial Lift.* Artificial lift will not be accomplished through the use of traditional pump jacks. Alternatives such as gas lift, linear rod pumps, or hydraulic pumping unit may be used, and are to be as low profile as practicable with a maximum height of 30 ft. An alternative artificial lift system may be used if it is less visible or auditory impacts and is agreed to by both parties.
- E. *Fencing.* ~~Operator~~As part of the Extraction Agreement, the City will evaluate the Well Site location and require ~~fencing requirements on a site-specific basis;~~ for the purposes of both visual mitigation and security. Permanent perimeter fencing shall be installed around production equipment unless such fencing is not required by the Visual Mitigation Plan for a Well Site, and shall be secured. The Operator must consult with the City as well as meet Land Development Code requirements at the time the final landscaping is installed.
- F. *Trailers.* A construction trailer(s) is permitted as an accessory use during active construction, drilling and well completion or workover operations only. No permanent residential trailers shall be permitted at the Well Sites; provided, however, that until ninety (90) days following the end of the Completion Phase on a Well Site, temporary residential and/or security trailers are permitted, as needed for on-site operations, for exclusive use by the Operator's personnel and the personnel of its subcontractors on a temporary basis.

6. *Noise Management Plan*

- A. Operators may be required to provide for additional noise mitigation based on the following site specific characteristics considering the distance from the nearest residential structure:
 - i. Nature and proximity of adjacent development (design, location, use);
 - ii. Prevailing weather patterns, including wind directions;
 - iii. Type and intensity of the noise emitted; and
 - iv. Vegetative cover on or adjacent to the site or topography.
- B. Based on the foregoing, if there is a Residential Building Unit or developed Public Park, as defined by City Code, within 1,320 ft. of the Well Location, the City may require one or more of the following additional noise abatement measures or BMPs depending on the site including:

- i. A Noise Management Plan specifying the hours of maximum noise and the type, frequency and level of noise emitted, and the mitigation methods to be employed to control both A and C scale noise consistent and no greater than those noise specifications delineated in ii-vii below.
 - ii. The Operator shall comply with all provisions of COGCC Rule 802 on Noise Abatement with respect to the Well Sites; provided, however, that the Operator and City agree that the maximum permissible noise levels to be applied under Rule 802 shall be, other than during pad construction at the Well Sites, the greater of (i) the levels set forth for the land use type of “Residential/Agricultural/Rural” under Rule 802 if measurements are taken at 1,000 ft. from the sound walls at the Well Site and (ii) 4 dB(A) higher than baseline ambient sound measured at 1,000 ft. from the sound walls at the Well Site. During pad construction at the Well Sites, the Operator agrees that noise levels shall not exceed those produced by the construction of a typical residential or commercial development. All measurements considered for compliance with this section shall be taken by a third-party contractor using industry standard equipment and practices.
 - iii. A Baseline Noise Mitigation Study will be conducted to ascertain baseline noise levels at each Well Site to demonstrate that noise is expected to be mitigated to the extent practicable and a copy will be provided to the City.
 - iv. If a Well Location is ever within 1,320 ft. of five or more Residential Building Units, a third party contractor, at expense of Operator, shall continuously monitor noise and continuously collect and store noise readings during drilling and completions, with instruments placed between the Oil and Gas Location and Residential Building Units. Third party contractor shall conduct the monitoring and data collection during construction, drilling, and completions operations. This data shall be available to COGCC on tables or graphs within 48 hours of being requested by COGCC.
 - v. The Operator shall address C scale noise/vibration through berming, capable sound walls, and other associated BMPs. During the Drilling and Completion Phases, the operator shall construct a perimeter wall and/or comparable measures to mitigate noise as appropriate on a case-by-case or modeled basis. Additional mitigations must be taken by the Operator if C-scale noise levels are increased the larger of either 5db over ambient or above 65db at 25’ from the nearest occupied building unit.
 - vi. Use of electric-powered motors and pumping systems; and
 - vii. Construction of buildings or other enclosures where Operations create noise and visual impacts that cannot otherwise be mitigated due to proximity, density or intensity of adjacent land use.
- C. *Quiet Technology.* The Operator agrees to use quiet completions technology for any well located within 1,320 ft. of a Residential Building Unit or within 1,500 ft. of a High Occupancy Structure unless Operator obtains waivers from all affected property owners within that distance.

7. Community Outreach and Notification – Operator will comply with the following community outreach efforts:

- A. *Outreach to Affected Residents:* Operator will maintain a list, updated annually, of the residents and business owners within ¼ mile (1,320 ft.) of a location (“affected residents”). Operator will use the list to (1) Provide at least 7-14 days advanced notice and community awareness to affected residents of mobilization in, rig up (MIRU), (2) Notify affected residents within 7 days of any reportable events that could have off-site impacts including fires, explosions, blow-outs, venting, or large spills (over 100 barrels). Operator may satisfy these public notification requirements through direct correspondence or through direct mail. These affected resident notices shall also go to local Operations Emergency Management (OEM) (Fire/Police).
- B. *Bi-Annual Updates to City:* The Operator shall provide a formal written update to the City Council on a Bi-Annual basis as to the progress of the project, including but not limited to, (1) any reportable spills or reportable accidents at locations, (2) any notice of alleged violations from the City or COGCC, and (3) summary of complaints to the Operator and COGCC. This update shall be coordinated through the Community Development Department specifically including the LGD. Updates shall begin at the beginning of construction and continue throughout drilling and completion operations and cease once the final well approved has been drilled and has been in production for one full year.
- C. *Complaint Response:* Operator has a dedicated phone line to address complaints that is open 24 hours per day, 7 days a week. All substantive and actionable complaints received by Operator are documented, investigated, with an initial response within 24 hours communicated to the complainant, landowner, City LGD and appropriate state agency officials. Once appropriate corrective actions have been taken, those actions will be communicated to the complainant, landowner, City LGD and appropriate state agency officials. Coordination with City LGD will be ongoing to ensure the effectiveness of the complaint management process.

The following phone numbers and websites will be available to the community members to report complaints and will be provided in the materials sent to affected residents:

- i. Operator complaint/ 24 hr. hotline
- ii. Emergency / 24 hotline
- iii. Commerce City LGD
- iv. COGCC: <http://cogcc.state.co.us/complaints.html#/complaints>

8. Reclamation

- A. *Interim Reclamation Plan.* An interim reclamation plan, taking into account the interests of the Surface Owner, must be approved by the City. The interim reclamation plan must include, at minimum:

- i. *Removal of Debris.* All construction-related debris shall be removed from the site for proper disposal in a timely manner. The site shall be maintained free of debris and excess materials at all times during operation. Operator shall not burn or bury debris at any time on the Well Sites.
- ii. *Removal of Equipment.* All equipment used for drilling, re-completion and maintenance of the facility shall be removed from the site within thirty (30) days of completion of the work, weather condition permitting, unless otherwise agreed to by the surface owner. Permanent storage of removable equipment on Well Sites shall not be allowed.
- iii. *Weed Control.* The Operator shall be responsible for ongoing weed control at the Well Sites and along access roads per City or other applicable agency regulations.

B. *Final Reclamation Plan.* Operator must submit an oil and gas Well Site Final Reclamation Plan and reclaim a Well Site not later than six (6) months after plugging and abandoning the last New Well at such Well Site, weather and planting season permitting.

- i. *Removal of Pipelines.* Pipelines, gathering lines and flowlines shall be removed after one year of non-use when last well utilizing lines are plugged and abandoned unless this requirement is waived in writing by Commerce City.
- ii. *Temporary Access Roads.* Temporary access roads associated with oil and gas operations at the Well Sites shall be reclaimed and revegetated to the original state within a reasonable amount of time, taking into account planting seasons, or as directed by the landowner in a Surface Use Agreement and subject to applicable COGCC variances. Operator must control erosion while access roads are in use.

9. ***Risk Management.*** Operator shall submit a project wide Risk Management Plan for oil and gas Well Sites and Facilities that includes but is not limited to risk identification, responsibilities, assessment, response, planning mitigation and, methods of risk avoidance and control that implement techniques to prevent the accident/loss and reduce the impact after it occurs. The Risk Management Plan that will be provided is taken from a similar project in the City and County of Broomfield which was completed by a third-party consultant. Operator shall also provide an addendum to the Risk Management Plan that identifies any site-specific concerns unique to the Well Site or not identified in the general plan. A Risk Management Plan is an evolving document subject to regular updates.

A. **Identification**

Operator will evaluate the project and develop a list of items which are identified as a risk by those on the project planning team. The operator shall develop the risk identification in a risk table which will identify the particular site by name, describe the risk, provide a description of the risk area and associated factors and whether it is an unmitigated or mitigated risk.

B. **Responsibilities**

The Risk Management Plan will provide information as to who is responsible for the managing risk and what plans support the risk mitigation. The RMP shall provide for employees, plans and procedures to oversee implementation and periodic revision of plan.

C. **Assessment**

The Risk Management Plan will note whether there is a health, safety, and/or environmental impact, and whether there will be an impact to the development schedule or to the overall performance and quality assurance.

D. **Response, Planning and Mitigation**

The Risk Management Plan may note a planned mitigation response for certain identified risks. The mitigation strategy should note a BMP for the varied risks. The mitigation strategies should include emergency response, tactical response plans and notifications.

E. **Compliance Audit, Tracking and Reporting**

Operator will implement a compliance and audit program. The Operator shall determine and document an appropriate response to each of the findings of the compliance audit, and document that deficiencies have been corrected. If operator utilizes a self-reporting mechanism to any respective agency, that self-reporting mechanism will be described in the Risk Management Plan. If operator self-reports, any findings included in the self-reporting to any other respective agency will be provided to the City.

F. **Incident ~~Evaluations~~ and accident reporting.**

i. ~~Incidents. Within a week of any reportable safety event as defined by the COGCC in Rule 602(c), Operator will provide the~~ shall submit a report provided to the COGCC and OSHA including conclusions, findings ~~City that includes the following, to the extent available:~~

1. ~~Fuel source, location, proximity to residences and corrective actions~~ other occupied buildings, cause, duration, intensity, volume, specifics and degree of damage to properties, if any beyond the Well Site, injuries to persons, emergency response, and remedial and preventative measures to be taken and changes to operational processes. See BMP 12 ~~within a specified amount of time.~~

ii. City may require Operator to conduct a root cause analysis of any reportable safety events or Grade 1 gas leaks, each as defined by the COGCC.

iii. Any spill or release that is reportable to the COGCC shall be simultaneously reported to the City's LGD and applicable fire district.

iv. Notification to the City's LGD of all spills of a one (1) barrel or more that leaves the facility, all spills of any material on permeable ground at the facility that has a reportable spill quantity under any applicable law and copies of any self-reporting submissions that operator provides to the COGCC.

G. **Update of Risk Management Plan**

~~—~~ Risk Management Plan is subject to review by the City Manager and City Council periodically, but at least every three years and after any incident. City may retain outside consultants to review Risk Management Plan and may require modifications to Risk Management Plan based on its review.

- H. Automatic safety protective systems and surface safety valves. Operator is required to install automated safety system prior to commencement of production. Automated safety system shall include the installation, monitoring and remote control of a surface safety valve or a wellhead master control valve and shall be able to remotely shut-in wells on demand. Surface safety valve or a wellhead master control valve shall be equipped to operate remotely via the automated safety protective system. Operator shall test automated safety system to ensure functionality per manufacturer's specifications.
- I. Operator shall maintain safety management plans for oil and gas operations including: hazard review, operating procedures, safety training program, maintenance procedures, compliance audits, and design measures.

10. *Signs and Markers.* The Operator shall mark each and every Oil and Gas Well in a conspicuous place, from the time of initial drilling until final abandonment, as follows:

- A. General Sign Requirements. No sign required under this Section shall be installed at a height exceeding six (6) ft. Operator shall maintain signs in a legible condition and shall replace damaged or vandalized signs within sixth (60) days. New or successor Operators shall update signs within sixty (60) days after change of Operator approval is received from the COGCC.
- B. Drilling and Recompletion Operations. The Operator shall provide directional signs, no less than three (3) and no more than six (6) sq. ft. in size, during all drilling and recompletion Operations. Such signs shall be at locations sufficient to advise emergency crews where drilling or recompletion is taking place. At a minimum, such sign locations shall include the first point of intersection of a public road and the rig access road and thereafter at each intersection of the rig access route, except where the route to the well is clearly obvious to uninformed third parties. Signs not necessary to meet other obligations under these rules shall be removed as soon as practical after the Operation is complete.
- C. Permanent Designations.
 - i. Oil and Gas Wells. Within sixty (60) days after the Completion Phase of an Oil and Gas Well, a permanent sign shall be located at both the wellhead and surface equipment (if not at the wellhead), which shall identify the Oil and Gas Well, the name and contact information of the Operator and the legal location, including the quarter section.
 - ii. Surface Equipment. Within sixty (60) days after the installation of a tank battery, a permanent sign shall be located at the tank battery. At the option of the Operator, or at the request of the City, the sign may be placed at the intersection of the lease access road with a public road nearest the tank battery, if the tank battery is readily apparent from such location. Such sign, which shall be no less than three (3) sq. ft. and no more than six (6) sq. ft., shall provide: the name of the Operator; a phone number at which the Operator may be reached at all times; a phone number for local emergency services; the lease name

or Oil and Gas Well name(s) associated with the tank battery; the public road used to access the site; and the legal location, including the quarter section. In lieu of

iii. Tanks and Containers.

- a) All tanks with a capacity of ten (10) barrels or greater shall be labeled or posted with the following information:
 1. Name of Operator;
 2. Operator's emergency contact telephone number;
 3. Tank capacity;
 4. Tank contents; and
 5. National Fire Protection Association (NFPA) Label.

11. ***Use of Pipelines.*** The Operator agrees to build pipelines for the transport of oil, ~~gas~~, and ~~produced water~~ ~~gas~~ from the Well Sites in Exhibit A and ~~to~~ shall utilize such pipelines at the Well Sites before the Production Phase commences. ~~During the Completion Phase, the Operator will use pipelines for~~ shall pipe ~~all produced water for flowback to the maximum extent practicable from all Well Sites west of Tower Road.~~ All fresh water for ~~Completions Phase~~ hydraulic fracturing shall be transported to the Well Sites by means other than by truck. The Operator's obligation to build and utilize such pipelines is subject to the City granting Operator all necessary right-of-way and the City issuing Operator the necessary City approvals (including but not limited to right-of-way, grading, conditional use permit). Operator shall be permitted to utilize temporary tanks during drilling, flowback, workover, completion, hydraulic fracturing and maintenance operations. This is contingent on the approval of the Conditional Use Permit for the Pipelines.

12. ***Emergency Response Plan.*** The Operator is required to complete a detailed Emergency Response Plan. The City Office of Emergency Management (OEM) and the South Adams County or Brighton Fire Rescue District must approve of the Emergency Response Plan ("Plan") before the Drilling Phase commences. As long as all requirements of this Section are met, the City shall not unreasonably withhold approval and shall approve the Plan within thirty (30) days of submittal and the City will assist Operator in obtaining an expeditious approval from the South Adams County and Brighton Fire Department.

The Plan shall be reviewed by the Operator on an annual basis and any updates filed with the City and the South Adams County or Brighton Fire Rescue District including changes (responsible field personnel change, ownership changes, etc.). If no updates to the Plan are made then Operator shall provide notice of "No Change." The Plan shall include a notification system for potentially affected citizens and occupied buildings.

The Plan shall consist of at least the following information:

- A. Name, address and phone number, including twenty-four-hour numbers for at least two persons responsible for field operations as well as the contact information for any subcontractor of Operator engaged for well-control emergencies.
- B. An as-built facilities map in a format suitable for input into the City's GIS system depicting the locations and type of above and below ground facilities, including sizes and depths below grade of all oil and gas flow lines and associated equipment, isolation valves, surface operations and their functions, as well as transportation routes to and from exploration and development sites, for response and management purposes. The information concerning flowlines and isolation valves shall be held confidentially by the City and shall only be disclosed in the event of an or to responders or for the training of responders. The City shall deny the right of inspection of the as-built facilities maps to the public pursuant to C.R.S. § 24-72-204.
- C. Detailed information addressing each reasonable potential emergency that may be associated with the operation. This may include any or all of the following: explosions, fires, gas, oil or water pipeline leaks or ruptures, hydrogen sulfide or other toxic gas emissions, hazardous material vehicle accidents or spills, or natural disasters. A provision that any spill outside of the containment area, that has the potential to leave the facility or to threaten waters of the state, or as required by the City-approved Plan shall be reported to the local dispatch and the COGCC Director in accordance with COGCC regulations.
- D. Detailed information identifying access, and health care facilities anticipated to be used.
- E. A project-specific plan for any project that involves drilling or penetrating through known zones of hydrogen sulfide gas.
- F. A statement and detailed information indicating that the Operator has adequate personnel, supplies, and training to implement the Plan immediately at all times during construction and operations.
- G. The Operator shall have current Material Safety Data Sheets (MSDS) for all chemicals used or stored on a Well Site. The MSDS sheets shall be provided immediately upon request to City officials, a public safety officer, or a health professional as required by COGCC Rule 205.
- H. *Public Notification.* The Plan shall include a provision establishing a process by which the Operator notifies surrounding neighbors to inform them about the on-site operations and provide sufficient contact information for surrounding neighbors to communicate with the Operator.
- I. All training associated with the Plan shall be coordinated with the City and the South Adams County Fire District and Brighton Protection District.
- J. A provision obligating the Operator to reimburse the appropriate agencies for their expenses resulting from the Operator's operations, to the extent required by Colorado Revised State Statutes.

- K. Operator shall provide the City with its shutdown protocols and promptly notify the City of any shut downs that would have an impact to any area beyond the confines of the Well Site.
- L. *Emergency Evacuation Plan.* Operator shall provide a copy of an emergency evacuation plan for the Well Site. Any evacuation plan detailing all persons to be notified in the event of an evacuation, including but not limited to, all persons residing within one-half (1/2) mile of the edge of construction or surface disturbance will be handled by the OEM.
- M. *Fires and Explosions Reporting.* Any accident or natural event involving a fire, explosion or detonation requiring emergency services or completion of a COGCC Form 22 shall be reported to the City LGD within 24 hours of the conclusion of an incident. This report shall include such specifics, to the extent available:
 - i. Fuel source
 - ii. Location
 - iii. Proximity to residences and other occupied buildings
 - iv. Cause
 - v. Duration
 - vi. Intensity
 - vii. Volume
 - viii. Specifics and degree of damage to properties, if any beyond the Well Site
 - ix. Injuries to person(s)
 - x. management response; and
 - xi. Remedial and preventive measures to be taken within a specified amount of time The Operator shall provide the City with an additional report containing the information above after the conclusion of the accident or natural event if lasting more than 24 hours.

13. ***Insurance.*** The Operator agrees to provide liability and insurance under the conditions, and in the amounts, set forth in Exhibit C

14. ***Transportation and Circulation.*** The Operator will comply with all Transportation and Circulation requirements as contained in the City Land Use Code as may be reasonably required by the City's Traffic Engineer and will comply with all applicable hazardous material regulations. The Operator will submit a traffic control plan to the City that includes detailed descriptions of all proposed access routes for equipment, water, sand, waste fluids, waste solids, mixed waste, and all other material to be hauled on the public streets and roads of the City. The Operator will obtain necessary access permits, which the City will not unreasonably withhold.

- A. *Traffic Control Plan.* The traffic plan shall include the following:
- i. Estimated weights of vehicles when loaded, a description of the vehicles, including the number of wheels and axles of such vehicles and trips per day.
 - ii. Detail of access locations for each well site including sight distance, turning radius of vehicles and a template indicating this is feasible, sight distance, turning volumes in and out of each site for an average day and what to expect during the peak hour.
 - iii. Truck routing map and truck turning radius templates with a listing of required and determined that certain improvements are necessary at intersections along the route.
 - iv. Restriction of non-essential traffic to and from Well Sites to periods outside of peak am and pm traffic periods and during school hours (generally 7-8am and 3-6pm) if Well Site or access road are within 1,000 ft. of a school property. Identification of need for any additional traffic lanes, which would be subject to the final approval of the City's engineer.
 - v. *Public Improvements.* In the event public road improvements are necessary to accommodate an Operation, and before work will be permitted within any City right-of-way, the Operator shall draft engineered drawings to be prepared by a Colorado licensed civil engineer, in conformance with City standards, for review and approval by the City.
 - vi. *Oil and Gas Well Site Access.* Access to any property from a City street requires a City-issued access permit. Access Permits are revocable upon issuance of a stop work order or if other Oil and Gas Permit violations occur. The permitting and construction of accesses shall comply with the City's Engineering Construction Standards and Specifications and design standards.
 - vii. *Private Access Roads.* Access points to public roads must be located, improved and maintained to assure adequate capacity for efficient movement of existing and projected traffic volumes and to minimize traffic hazards. Permanent access roads must be improved a minimum distance of 200 feet on the access road from the point of connection to a public road. All access roads must be in conformance with the City's standards and specifications. The access road must be improved as a hard surface (concrete or asphalt) for the first 100 feet from the public road, unless public road is not already a hard surface, in which case, Operator shall meet the current standards of the public road. The access road must be improved with a crushed surface (rock, concrete, or asphalt) for the next 100 feet in the appropriate depth to support the weight load requirements of the vehicles accessing the Well Site. A geotechnical report and pavement design will be submitted to the City for approval. If an access road intersects with a pedestrian trail or walk, the Operator shall pave the access road as a hard surface (concrete or asphalt) a distance of 100 feet either side of the trail or walk, unless the trail or walk is not already a hard surface, in which case, Operator shall meet the current standards of the trail or walk. If necessary, Operator shall replace the trail or walk to address the weight load requirements of the vehicles accessing the well and production facilities. Temporary access roads associated with the Operations will be reclaimed and reseeded to the original state within 60 days after

discontinued use of the temporary access roads. An exception to temporary access road construction standards and specifications may be made upon agreement of the Parties where circumstances warrant a departure given future development needs.

viii. *State Highway Access.* Where a Site's access is directly to a state highway, the Operator must procure and maintain an approved State Highway Access Permit.

ix. *Haul Routes.* Operators shall only use roadways for haul routes that are identified on a City-approved traffic control plan.

B. *Oversize/Overweight Vehicles.* Any oversize or overweight vehicle making use of any City street shall obtain an Oversized, Overweight and Longer Vehicle Combination Permit from the City.

C. *Mud Tracking.* The Operator shall take all practicable measures to ensure that vehicles do not track mud or debris onto City streets. If mud or debris is nonetheless deposited on City streets, in excess of *de minimus* levels, the streets shall be cleaned immediately by the Operator. If for some reason this cannot be done, or needs to be postponed, the City shall be notified of the Operator's plan for mud removal.

D. *Chains.* Traction chains from heavy equipment shall be removed before entering a City street.

15. *Flowback Best Management Practices*

A. Before flowback, Operator will notify appropriate local fire district at least 24-hours before production flowback is scheduled to begin for the first time on a well pad. Operator will conduct a pre-startup safety review (PSSR), which will review facility and equipment spacing requirements and safety procedures.

B. During flowback, Operator will utilize gas monitors that are capable of detecting Lower Explosive Level and H₂S, which emit an audible tone linked to cell phones to notify people on and off location. Operator will also send flowback gas to sales pipeline when possible. The production facility will be built before flowback and flowback equipment will be tied into Combustors. Operator will utilize automatic tank gauging to measure tank levels and have 24-hr manned operations. The production facilities will be capable of remote ESD (emergency shut down).