

FORM
2A

Rev
08/13

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203
Phone: (303) 894-2100 Fax: (303) 894-2109



Document Number:

401477008

Date Received:

01/16/2018

Oil and Gas Location Assessment

☒ New Location ☐ Refile ☐ Amend Existing Location Location#: _____

This Oil and Gas Location Assessment is to be submitted to the COGCC for approval prior to any ground disturbance activity associated with oil and gas operations. Approval of this Oil and Gas Location Assessment will allow for the construction of the below specified Location; however, it does not supersede any land use rules applied by the local land use authority. Please see the COGCC website at <http://cogcc.state.co.us/> for all accompanying information pertinent this Oil and Gas Location Assessment.

Location ID:

455317

Expiration Date:

05/31/2021

☒ This location assessment is included as part of a permit application.

CONSULTATION

- ☐ This location is included in a Comprehensive Drilling Plan. CDP # _____
- ☐ This location is in a sensitive wildlife habitat area.
- ☐ This location is in a wildlife restricted surface occupancy area.
- ☐ This location includes a Rule 306.d.(1)A.ii. variance request.

Operator

Operator Number: 10459

Name: EXTRACTION OIL & GAS INC

Address: 370 17TH STREET SUITE 5300

City: DENVER State: CO Zip: 80202

Contact Information

Name: Alyssa Andrews

Phone: (720) 481-2379

Fax: ()

email: aandrews@extractionog.com

RECLAMATION FINANCIAL ASSURANCE

☒ Plugging and Abandonment Bond Surety ID: 20130028 ☐ Gas Facility Surety ID: _____

☐ Waste Management Surety ID: _____

LOCATION IDENTIFICATION

Name: Livingston Pad Number: _____

County: BROOMFIELD

QuarterQuarter: NWSE Section: 7 Township: 1S Range: 68W Meridian: 6 Ground Elevation: 5315

Define a single point as a location reference for the facility location. When the location is to be used as a well site then the point shall be a well location.

Footage at surface: 2332 feet FSL from North or South section line

1528 feet FEL from East or West section line

Latitude: 39.978564 Longitude: -105.040122

PDOP Reading: 1.2 Date of Measurement: 11/10/2017

Instrument Operator's Name: T. WINNICKI

RELATED REMOTE LOCATIONS

(Enter as many Related Locations as necessary. Enter the Form 2A document # only if there is no established COGCC Location ID#)

This proposed Oil and Gas Location is:

LOCATION ID #

FORM 2A DOC #

Well Site is served by Production Facilities

401606738

401606721

FACILITIES

Indicate the number of each type of oil and gas facility planned on location

Wells	19	Oil Tanks*		Condensate Tanks*		Water Tanks*		Buried Produced Water Vaults*	
Drilling Pits		Production Pits*		Special Purpose Pits		Multi-Well Pits*		Modular Large Volume Tanks	
Pump Jacks		Separators*	19	Injection Pumps*		Cavity Pumps*		Gas Compressors*	4
Gas or Diesel Motors*		Electric Motors		Electric Generators*		Fuel Tanks*		LACT Unit*	
Dehydrator Units*		Vapor Recovery Unit*		VOC Combustor*		Flare*		Pigging Station*	

OTHER FACILITIES*

Other Facility Type

Number

Transformer	1
Maintenance Vessel	1
Emission Control Device	1
Produced Water Surge Drum	1
Gas Lift Metering Building	2
Piperack Modules	9
Compressor Drain Tank	1
Oil Surge Drum	1
Air Compressor	1
Fuel Gas Scrubber	1
Sales Gas Meter	1
Gas Lift Suction Scrubber	1
Electrical Switchrack	2

Those facilities indicated by an asterisk () shall be used to determine the distance from the Production Facility to the nearest cultural feature on the Cultural Setbacks Tab.

Per Rule 303.b.(3)C, description of all oil, gas, and/or water pipelines:

Extraction will trench flowlines in one piping corridor that runs between the drill pad and the separator pad and be placed at 12" centers. These lines will most likely be 2" or 3" fusion bonded SCH160 steel pipe and have proper cathodic protection throughout the run. Extraction will then sweep up with a long radius that will tie off each line to the appropriate separator. All welds on these are 100% x-ray and hydro tested to the API and Manufactures specs for a class 1500 series flange. Also meets ASME code B31.4.

CONSTRUCTION

Date planned to commence construction: 06/01/2018 Size of disturbed area during construction in acres: 19.77
Estimated date that interim reclamation will begin: 09/01/2018 Size of location after interim reclamation in acres: 19.77
Estimated post-construction ground elevation: 5315

DRILLING PROGRAM

Will a closed loop system be used for drilling fluids: Yes

Is H₂S anticipated? No

Will salt sections be encountered during drilling: No

Will salt based mud (>15,000 ppm Cl) be used? No

Will oil based drilling fluids be used? Yes

DRILLING WASTE MANAGEMENT PROGRAM

Drilling Fluids Disposal: OFFSITE Drilling Fluids Disposal Method: Commercial Disposal

Cutting Disposal: OFFSITE Cuttings Disposal Method: Commercial Disposal

Other Disposal Description:

Beneficial reuse or land application plan submitted?

Reuse Facility ID: or Document Number:

Centralized E&P Waste Management Facility ID, if applicable:

SURFACE & MINERALS & RIGHT TO CONSTRUCT

Name: CITY&COUNTY OF BROOMFIELD

Phone:

Address: ONE DESCOMBES DR

Fax:

Address:

Email:

City: BROOMFIELD State: CO Zip: 80020

Surface Owner: ☒ Fee ☐ State ☐ Federal ☐ Indian

Check all that apply. The Surface Owner: ☐ is the mineral owner

☐ is committed to an oil and Gas Lease

☐ has signed the Oil and Gas Lease

☐ is the applicant

The Mineral Owner beneath this Oil and Gas Location is: ☒ Fee ☐ State ☐ Federal ☐ Indian

The Minerals beneath this Oil and Gas Location will be developed from or produced to this Oil and Gas Location: Yes

The right to construct this Oil and Gas Location is granted by: Surface Use Agreement

Surface damage assurance if no agreement is in place: Surface Surety ID:

Date of Rule 306 surface owner consultation

CURRENT AND FUTURE LAND USE

Current Land Use (Check all that apply):

Crop Land: ☐ Irrigated ☒ Dry land ☐ Improved Pasture ☐ Hay Meadow ☐ CRP

Non-Crop Land: ☐ Rangeland ☐ Timber ☐ Recreational ☐ Other (describe):

Subdivided: ☐ Industrial ☐ Commercial ☐ Residential

Future Land Use (Check all that apply):Crop Land: ☐ Irrigated ☒ Dry land ☐ Improved Pasture ☐ Hay Meadow ☐ CRPNon-Crop Land: ☐ Rangeland ☐ Timber ☐ Recreational ☐ Other (describe): _____Subdivided: ☐ Industrial ☐ Commercial ☐ Residential**CULTURAL DISTANCE INFORMATION**

Provide the distance to the nearest cultural feature as measured from Wells or Production Facilities onsite.

	From WELL	From PRODUCTION FACILITY
Building:	824 Feet	1004 Feet
Building Unit:	1308 Feet	1486 Feet
High Occupancy Building Unit:	5280 Feet	5280 Feet
Designated Outside Activity Area:	5280 Feet	5280 Feet
Public Road:	447 Feet	205 Feet
Above Ground Utility:	1237 Feet	1426 Feet
Railroad:	5280 Feet	5280 Feet
Property Line:	282 Feet	172 Feet

INSTRUCTIONS:

- All measurements shall be provided from center of nearest Well or edge of nearest Production Facility to nearest of each cultural feature as described in Rule 303.b.(3)A.

- Enter 5280 for distance greater than 1 mile.

- Building - nearest building of any type. If nearest Building is a Building Unit, enter same distance for both.

- Building Unit, High Occupancy Building Unit, and Designated Outside Activity Area - as defined in 100-Series Rules.

- For measurement purposes only, Production Facilities should only include those items with an asterisk(*) on the Facilities Tab.

DESIGNATED SETBACK LOCATION INFORMATION

Check all that apply. This location is within a:

- ☐ Buffer Zone
- ☐ Exception Zone
- ☐ Urban Mitigation Area

Pre-application Notifications (required if location is within 1,000 feet of a building unit):

Date of Rule 305.a.(1) Urban Mitigation Area Notification to Local Government: _____

Date of Rule 305.a.(2) Buffer Zone Notification to Building Unit Owners: _____

- Buffer Zone - as described in Rule 604.a.(2), within 1,000' of a Building Unit.

- Exception Zone - as described in Rule 604.a.(1), within 500' of a Building Unit.

- Urban Mitigation Area - as defined in 100-Series Rules.

- Large UMA Facility - as defined in 100-Series Rules.

FOR MULTI-WELL PADS AND PRODUCTION FACILITIES WITHIN DESIGNATED SETBACK LOCATIONS ONLY:

- ☐ Check this box if this Oil and Gas Location has or will have Production Facilities that serve multiple wells (on or offsite) and the Production Facilities are proposed to be located less than 1,000 feet from a Building Unit. *(Pursuant to Rule 604.c.(2)E.i., the operator must evaluate alternative locations for the Production Facilities that are farther from the Building Unit, and determine whether those alternative locations were technically feasible and economically practicable for the same proposed development.)*
- ☐ By checking this box, I certify that no alternative placements for the Production Facilities, farther from the nearest Building Unit, were available based on the analysis conducted pursuant to Rule 604.c.(2)E.i.

In the space below, explain rationale for siting the multi-well Production Facility(ies) that supports your Rule 604.c.(2)E.i determination. Attach documentation that supports your determination to this Form 2A.

SOIL

List all soil map units that occur within the proposed location. attach the National Resource Conservation Service (NRCS) report showing the "Map Unit Description" report listing the soil typical vertical profile. This data is to be used when segregating topsoil.

The required information can be obtained from the NRCS web site at <http://soildatamart.nrcs.usda.org/> or from the COGCC web site GIS Online map page found at <http://colorado.gov/cogcc>. Instructions are provided within the COGCC web site help section.

NRCS Map Unit Name: ShF—Samsil-Shingle complex, 3 to 35 percent slopes

NRCS Map Unit Name: ReD—Renohill loam, 3 to 9 percent slopes

NRCS Map Unit Name: UIC—Ulm loam, 3 to 5 percent slopes

PLANT COMMUNITY:

Complete this section only if any portion of the disturbed area of the location's current land use is on non-crop land.

Are noxious weeds present: Yes ☐ No ☒

Plant species from: ☒ NRCS or, ☐ field observation Date of observation: _____

List individual species:

Check all plant communities that exist in the disturbed area.

- ☐ Disturbed Grassland (Cactus, Yucca, Cheatgrass, Rye)
- ☒ Native Grassland (Bluestem, Grama, Wheatgrass, Buffalograss, Fescue, Oatgrass, Brome)
- ☐ Shrub Land (Mahogany, Oak, Sage, Serviceberry, Chokecherry)
- ☐ Plains Riparian (Cottonwood, Willow, Aspen, Maple, Poplar, Russian Olive, Tamarisk)
- ☐ Mountain Riparian (Cottonwood, Willow, Blue Spruce)
- ☐ Forest Land (Spruce, Fir, Ponderosa Pine, Lodgepole Pine, Juniper, Pinyon, Aspen)
- ☐ Wetlands Aquatic (Bullrush, Sedge, Cattail, Arrowhead)
- ☐ Alpine (above timberline)
- ☐ Other (describe): _____

WATER RESOURCES

Is this a sensitive area: ☐ No ☒ Yes

Distance to nearest

downgradient surface water feature: 0 Feet

water well: 3450 Feet

Estimated depth to ground water at Oil and Gas Location 30 Feet

Basis for depth to groundwater and sensitive area determination:

Nearest surface water feature: Ditch 0' SW
Nearest water well: Permit 169501- -, 3450' NW, no depth to ground water provided
The depth to ground water is 30' as per water well permit 128950.

Is the location in a riparian area: ☒ No ☐ Yes

Was an Army Corps of Engineers Section 404 permit filed ☒ No ☐ Yes If yes attach permit.

Is the location within a Rule 317B Surface Water Supply Area buffer No zone:

If the location is within a Rule 317B Surface Water Supply Area buffer have all public water supply systems within 15 miles been notified: _____

Is the Location within a Floodplain? ☒ No ☐ Yes Floodplain Data Sources Reviewed (check all that apply)

☐ Federal (FEMA)

☒ State

☐ County

☐ Local

☐ Other _____

GROUNDWATER BASELINE SAMPLING AND MONITORING AND WATER WELL SAMPLING

Water well sampling required per Rule 318A

WILDLIFE

☐ This location is included in a Wildlife Mitigation Plan

☐ This location was subject to a pre-consultation meeting with CPW held on _____

DESIGNATED SETBACK LOCATION EXCEPTIONS

Check all that apply:

☐ Rule 604.a.(1)A. Exception Zone (within 500' of a Building Unit) and is in an Urban Mitigation Area

☐ Rule 604.b.(1)A. Exception Location (existing or approved Oil & Gas Location now within a Designated Setback as a result of Rule 604.a.)

☐ Rule 604.b.(1)B. Exception Location (existing or approved Oil & Gas Location is within a Designated Setback due to Building Unit construction after Location approval)

☐ Rule 604.b.(2) Exception Location (SUA or site-specific development plan executed on or before August 1, 2013)

☐ Rule 604.b.(3) Exception Location (Building Units constructed after August 1, 2013 within setback per an SUA or site-specific development plan)

RULE 502.b VARIANCE REQUEST

☐ Rule 502.b. Variance Request from COGCC Rule or Spacing Order Number _____

ALL exceptions and variances require attached Request Letter(s). Refer to applicable rule for additional required attachments (e.g. waivers, certifications, SUAs).

OPERATOR COMMENTS AND SUBMITTAL

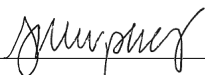
Comments	<p>Single point location reference in the Location Identification section is the proposed Livingston S19-25-1N well.</p> <p>Notification Zone Drawing and UMA Check Exhibit both attached as "OTHER". This location is not in a buffer zone or UMA.</p> <p>The interim reclamation plan is not as extensive due in part to the large amount of grading and topography in this area. The objective was to minimize the removal of Broomfield Open Space material from this area and make it a balanced location.</p>
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I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct and complete.

Signed: _____ Date: 01/16/2018 Email: aandrews@extractionog.com

Print Name: Alyssa Andrews Title: Regulatory Analyst

Based on the information provided herein, this Application for Permit-to-Drill complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved:  Director of COGCC Date: 6/1/2018

Conditions Of Approval

All representations, stipulations and conditions of approval stated in this Form 2A for this location shall constitute representations, stipulations and conditions of approval for any and all subsequent operations on the location unless this Form 2A is modified by Sundry Notice, Form 4 or an Amended Form 2A.

COA Type

Description

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Best Management Practices

No	BMP/COA Type	Description
1	Planning	Flammable Material. All ground within twenty-five (25) feet 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.
2	Planning	803. Permanent lighting will be installed around the facility to allow both the operator and haulers to conduct safe operations at night. All lights will be directed downward, inward and shielded so light pollution is minimized. During the Drilling and Completion Phases, consistent with applicable law, Operator will construct a 32 foot perimeter wall surrounding the well pads and operations area to reduce light escaping from the site.
3	Planning	This location is subject to a Comprehensive Development Plan (CDP), as set forth in the Operator Agreement between Extraction Oil and Gas, Inc. and the City and County of Broomfield, dated October 24, 2017. Operator is currently working through the CDP with the City and County of Broomfield staff.
4	Planning	Blowout Prevention Equipment ("BOPE"): A double ram and annular preventer will be used during drilling. Stabbing valves shall be installed in the event of reverse circulation and shall be prior tested with low and high pressure fluid.
5	Planning	Extraction maintains a Tactical Response Plan (TRP), also at times referred to as the Emergency Response Plan, which is designed to provide Extraction employees and designated Emergency Response Team (ERT) members with the information necessary to respond to incidents in a safe, rapid, effective, and efficient manner. The TRP is kept at Extraction's office and a copy is provided to the North Metro Fire Rescue District and the City of Broomfield. Extraction will place the TRP summary card in strategic places on the facilities during specific operations and copies of the summary card is provided to the North Metro Fire Rescue District to be kept in the responding fire engines.

6	Planning	<p>Extraction will establish a live, 24-hour telephone hotline, as well as an email address, to receive feedback on our drilling and completion activities with the goal of having a tool for us to immediately investigate and address any complaints that arise.</p> <p>Prior to the initiation of 24-hour operations (drilling) Extraction will mail a post card (to include the email address and 24 hour manned phone number) to residents within 1/2 mile of the location.</p>
7	Planning	<p>This location is designed without permanent tanks. Oil, Gas, and produced water will be transported through a pipeline gathering to a Central Gathering Facility. Saleable gas will not be flared, it will be sent downline. For maintenance or upset conditions the use of a maintenance vessel and emission control devices will be utilized. Uncontrolled venting is prohibited other than where necessary for safety.</p> <p>Production will be piped to the Central Gathering System. If the CGF is not ready at the time of production, the wells will be temporarily shut in.</p>
8	Planning	All loadlines shall be bull plugged or capped.
9	Traffic control	<p>Access Roads: The access road will be constructed to accommodate local emergency vehicles. This road will be maintained for access at all times. Traffic will be routed to minimize local interruption. During construction and through the life of this location, Operator will utilize watering, via water trucks, to control fugitive dust. Additionally, the access road will be constructed with aggregate road base material and recycled asphalt and vehicle speeds will be limited to twenty five miles per hour to reduce dust. No untreated produced water or other process fluids shall be used for dust suppression.</p>
10	Traffic control	A traffic plan is required by the City and County of Broomfield and shall be coordinated with the local jurisdiction prior to commencement of move in and rig up. Any subsequent modification to the traffic plan must be coordinated with the local jurisdiction.
11	General Housekeeping	<p>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. Maintain appearance with garbage clean-up; a trash bin will be located on site to accumulate waste by the personnel drilling the wells. Site will have unused equipment, trash and junk removed immediately and legally disposed of as applicable.</p>
12	General Housekeeping	Site security will be maintained at all times. Location will be adequately fenced to restrict access by unauthorized persons. The site will have gated access to keep unauthorized vehicles out and fencing will be placed around all production equipment.
13	Storm Water/Erosion Control	Implement and maintain BMPs to control stormwater runoff in a manner that minimizes erosion, transport of sediment offsite, and site degradation. Co-locate flowlines and/or gathering lines whenever feasible, and mitigate any erosion problems that arise due to the construction of any gathering lines. Location will be covered under Extraction Oil & Gas's field wide permit, permit number COR03M013. Typical stormwater BMPs installed include a diversion ditch and berm with sediment traps and installation of wattles where necessary. Please see the attached Stormwater BMP drawings.
14	Material Handling and Spill Prevention	<p>Leak Detention Plan: Extraction will monitor production facilities weekly at a minimum to a maximum of daily to identify fluid leaks, including, but not limited to, visually inspecting all wellheads, tanks and fittings. Additionally annual SPCC inspections will be conducted and documented. Annual flowline testing will also occur according to COGCC rules 1101 and 1102. Inspection and record retention of flowline testing will be in accordance per COGCC regulation. All records will be made available to the COGCC upon request.</p>
15	Material Handling and Spill Prevention	The location will be completely automated to monitor all production operations remotely. In the event that the facility is not operating under normal conditions, the automation system will immediately notify the operator. The automation system also has the ability to remotely perform an emergency shut down if necessary.

16	Material Handling and Spill Prevention	Automatic Safety Protective Systems and Surface Safety Valve. 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 provides the ability to remotely shut-in wells on demand through operator remote intervention. The SSV will have documented quarterly testing to ensure functionality.
17	Dust control	805.c. Operator shall employ practices for control of fugitive dust caused by their operations. Such practices shall include but are not limited to the use of speed restrictions, regular road maintenance, restriction of construction activity during high-wind days, and silica dust controls when handling sand used in hydraulic fracturing operations. Additional management practices such as road surfacing, wind breaks and barriers may be used. No untreated produced water or other process fluids shall be used for dust suppression.
18	Construction	Containment Berms. The Operator shall utilize steel-rim berms around all separators at the Well Site with sufficient capacity to contain 1.5 times the maximum volume of all liquids that will be contained at a facility 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 in addition to tankless and secondary containment around surface vessels. Permanent containment berms shall be constructed of steel rings, designed and installed to prevent leakage and resist degradation from erosion or routine operation. Secondary containment for separators 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. By request of the City and County of Broomfield, Extraction agrees to test pressure test flowlines according to the COGCC flowline rules bi-annually.
19	Construction	All new well equipment will be secured to the extent necessary to resist flotation collapse, lateral movement, or subsidence.
20	Construction	Base beams will be used and not guy line anchors.
21	Noise mitigation	Quiet Technology. The Operator agrees to use the Liberty Quiet Fleet or comparable technology from an alternative vendor on all Well Sites for completion activities.
22	Noise mitigation	To provide long term noise mitigation at this location, all production equipment will be powered by electricity. If needed, sound mitigation panels will be installed around the compressors during production operations to shield sensitive areas.
23	Noise mitigation	Thirty-two foot sound walls will be used during drilling and completion operations. Sound walls will be installed on the edges impacting nearest neighbors. Sound walls will wrap the pad except for the southwest corner.

24	Noise mitigation	Baseline noise monitoring will be conducted prior to commencement of pad construction. Additional sound mitigation measures will be considered and implemented pursuant to third party recommendations. All noise survey data will be made available to the COGCC inspector upon request. The Operator shall continuously monitor noise and continuously collect and store noise readings with instruments placed between the Oil and Gas Location and residential Building Units. The Operator 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. The Operator shall conduct a 72 hour baseline noise survey from a minimum of three points prior to the commencement of construction.
25	Noise mitigation	Electrified Drilling Rig - Extraction is working with United Power to supply sufficient electrical power for the drilling rig to drill the wells. Easements are being procured from the Landowners and the existing infrastructure is being upgraded in order to handle the larger electrical loads. While Extraction plans on drilling these wells on electrical power only, the rig will have diesel-powered generators in the event of an upset condition with the electrical supply from United Power. At that point, Extraction would use the diesel generators to power the rig until service from United Power was restored.
26	Emissions mitigation	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. In addition, Operator shall comply with the following: A. 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. B. Operator shall comply with 40 CFR 60.5375(a)(1), (2) for green completions. C. Uncontrolled venting is prohibited other than where necessary for safety. D. Temporary flowback flaring and oxidizing equipment where allowed shall include the following: 1. 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; 2. Valves and porting available to divert gas to flaring and oxidizing equipment; pursuant to the above Rules 40 CFR 60.5375 & COGCC Rule 805; 3. 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 4. The Operator has a general duty to safely maximize resource recovery and minimize releases to the atmosphere during flowback and subsequent recovery/operation.
27	Emissions mitigation	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.
28	Emissions mitigation	Leak Detention Plan: Operator will monitor production facilities weekly at a minimum to a maximum of daily to identify fluid leaks, including, but not limited to, visually inspecting all wellheads and equipment. As part of Extraction's Leak Detection and Repair (LDAR) program, all equipment including above ground flowlines and piping will be inspected quarterly with an infra-red camera for the first 5 years of production.
29	Emissions mitigation	Operator will bring a new oil, gas, and water pipelines, to send produced volumes immediately down the pipeline. No production will flow to tanks on this location. Production will be piped to the Central Gathering System. If the CGF is not ready at the time of production, the wells will be temporarily shut in.

30	Odor mitigation	805. Oil & gas facilities and equipment shall be operated in such a manner that odors do not constitute a nuisance or hazard to public welfare. Extraction will use a mud cooling system to control the release of odors within the drilling and fracturing fluids. Odor preventing additives will be on site for use if and when needed. Extraction will use a base fluid that will decrease the measurable BTEX and aromatic properties by more than 50% of regular diesel. Operator is prohibited from masking odors from any oil and gas facility site by using masking fragrances.
31	Drilling/Completion Operations	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.
32	Drilling/Completion Operations	Bradenhead Monitoring. Operator will conduct bradenhead monitoring on the New Wells as required on the relevant Applications for Permit to Drill - Form 2.
33	Drilling/Completion Operations	Backup stabbing valves will be required on well servicing operations during reverse circulation. Valves shall be pressure tested before each well servicing operation using both low-pressure air and high-pressure fluid.
34	Drilling/Completion Operations	All fresh water for completions shall be transported to the well site via temporary water lines.
35	Drilling/Completion Operations	BOPE testing for drilling operations. Upon initial rig-up and at least once every thirty (30) days during drilling operations thereafter, pressure testing of the casing string and each component of the blowout prevention equipment including flange connections shall be performed to seventy percent (70%) of working pressure or seventy percent (70%) of the internal yield of casing, whichever is less. Pressure testing shall be conducted and the documented results shall be retained by the operator for inspection by the Director for a period of one (1) year. Activation of the pipe rams for function testing shall be conducted on a daily basis when practicable.
36	Drilling/Completion Operations	Closed chamber drill stem tests shall be allowed. All other drill stem tests shall require approval by the Director. None planned for this well.
37	Drilling/Completion Operations	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.
38	Drilling/Completion Operations	Flowback Monitoring System: Autonomous 4 gas monitors will be placed around the location during the flowback phase.
39	Interim Reclamation	Operator shall be responsible for segregating the topsoil, backfilling, re-compacting, reseeding, and re-contouring the surface of any disturbed area so as not to interfere with Owner's operations and shall reclaim such area to be returned to pre-existing conditions as best as possible with control of all noxious weeds.
40	Final Reclamation	Within 90 days subsequent to the time of plugging and abandonment of the entire site, superfluous debris and equipment shall be removed from the site. Identification of plugged and abandoned wells will be identified pursuant to 319.a.(5)The operator shall also inscribe or imbed the well number and date of plugging upon the permanent monument.
41	Final Reclamation	Reclamation. Operator must submit an oil and gas site 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.

Total: 41 comment(s)

Attachment Check List

<u>Att Doc Num</u>	<u>Name</u>
1009842	CORRESPONDENCE
1642219	CORRESPONDENCE
2316305	REFERENCE AREA PICTURES
2316326	EXHIBIT B
2316327	OTHER
2316329	CONST. LAYOUT DRAWINGS
2316334	OTHER
2478646	OPERATOR RESPONSE TO PUBLIC COMMENTS
401477008	FORM 2A SUBMITTED
401484674	ACCESS ROAD MAP
401484682	FACILITY LAYOUT DRAWING
401484685	HYDROLOGY MAP
401484699	LOCATION DRAWING
401484701	LOCATION PICTURES
401484702	MULTI-WELL PLAN
401484719	OTHER
401484728	REFERENCE AREA MAP
401484733	OTHER
401484738	WASTE MANAGEMENT PLAN
401484752	SURFACE AGRMT/SURETY
401484778	NRCS MAP UNIT DESC
401484780	NRCS MAP UNIT DESC
401484781	NRCS MAP UNIT DESC

Total Attach: 23 Files

General Comments

User Group	Comment	Comment Date
OGLA	<p>COGCC Response to Broomfield LGD Form 2A Questions</p> <p>The Broomfield LGD submitted a comment document to COGCC for the proposed Extraction Livingston location on March 1 2018. The full LGD comment is on the Form 2A. COGCC is providing the following responses to the four questions on the LGD comment document:</p> <p>1. The FACILITIES section indicates there are 2 gas compressors planned for the location. Extraction should provide information associated with the purpose of the compressors and how will they be fueled.</p> <p>COGCC Response: There are four gas compressors listed on the Facilities Section for the Livingston location. Gas compressors are common field equipment, in this case the compressors will be used to compress recovered flash gas to allow it to be sent down the gas sales line. The compressors will be powered by electricity.</p> <p>2. The CONSTRUCTION section indicates that the size of the location after interim reclamation will be the same as the disturbed area during construction. Why will the location size remain the same after interim reclamation?</p> <p>COGCC Response: COGCC Rule 1003.b requires the operator to reclaim the land to its original condition and re-leveled as close to the original contours as practicable. Due the topography, the Livingston pad planned will be constructed by cutting into the terrain to the east and placing fill to the west. The 19.77 permitted location includes the pad and the cut and fill slopes. The operator will stabilize and seed the slopes but will not re-grade those disturbed areas. The working surface of the pad will be somewhat reduced and stabilized during production operations, but the overall outline of disturbed area will not change.</p> <p>3. In the BEST MANAGEMENT PRACTICES section, Item 46 - Emissions mitigation 20. D. #4, #5 and #6 are not included</p> <p>COGCC Response: The emissions mitigation Best Management Practices on the Form 2A do not conflict with or prevent Extraction from complying the BMPs in Exhibit B of the Operator Agreement including BMP #20, which refers to all applicable rules and regulation promulgated by COGCC, CDPHE and US EPA. Extraction is reducing emissions on the pad through their use of pipelines for production, electric drill rig and production equipment, and other measures described in their BMPs. Additionally, Extraction has proposed additional leak detection and monitoring that will help reduce emissions.</p> <p>4. The waste management plan only addresses E&P Waste. It does not discuss secondary containment and stormwater measures as required by Item 41 in the Best Management Practices of the Operator Agreement.</p> <p>COGCC Response: Waste management plans are required on a Form 2A if a proposed Oil and Gas Location is less than 1,000 feet from a Building Unit (Rule 303.b.(3)J.ii). Although the planned Livingston location will be greater than 1,000 feet to a Building Unit, Extraction provided a waste management plan that addresses management of E&P waste under COGCC's regulatory authority in accordance with COGCC 907a. Secondary and tertiary containment are provided for this Location and the operator has submitted detailed stormwater plan design documents.</p>	06/01/2018
Permit	Final review complete.	06/01/2018
OGLA	Attached April 18, 2018 letter from Extraction to Broomfield LGD regarding the fire that occurred at an Extraction wellsite on December 22, 2017. Document ID#2316327	06/01/2018
OGLA	Operator provided an updated Response to Broomfield's Public Comments attachment.	06/01/2018

OGLA	COGCC staff met with Extraction personnel on 5/25/18. Discussed revision or addition of the following BMPs: fencing, anchoring equipment, flowline testing, air monitoring during flowback, and stormwater. Operator provided the BMP updates in a 5/31/18 email. Staff updated BMPs on 5/31/18	05/31/2018
OGLA	Original Reference area photo to the west was not the reference area photo for this location. Operator corrected and sent revised photos. Date on photos for submission is 12/2017 and revised of 3/2018. Operator confirmed pictures were taken in October 2017. Plants are not dormant and can identify vegetation to meet reference area photo requirements.	05/24/2018
OGLA	Added stormwater drawing as other (doc no 2316334) and Operators response to public comments on the 2A as other (doc no 2316335). Email correspondence with Operator regarding clarification of changes on the 2A.	05/23/2018
OGLA	OGLA review: No production for product, cultural distances to nearest above ground utility might be different, land use does not appear to be rangeland, water resources should be yes for sensitive area with surface water on the location and depth to water listed is nearest water well, not the most shallow groundwater. Most of the BMPs reference the City of Broomfield which is not enforceable by COGCC. First email sent to Operator on 2/26/18 – Operator responded on 3/6/18 and 3/21/18. Had a meeting with City of Broomfield 3/13/18 and 4/18 for BMPs. Met or spoke with Operator on 3/15/18 (in person), 4/9 (phone conversation), 4/11 (in person). Multiple email correspondence with Operator and City of Broomfield regarding BMPs.	05/22/2018
Permit	Permitting review complete.	04/26/2018
Permit	Permitting review complete pending review of 19 associated APDs.	04/20/2018
Agency	<p>Comment submitted by Tami Yellico, Broomfield LGD</p> <p>Extraction shall implement the following actions to its Emergency Plan for all Broomfield wellsites:</p> <ul style="list-style-type: none"> a. Develop enhanced hotwork planning and setback procedures b. Expand training and enforcement of hotwork permit implementation and management, re-issued STEPS alert to employees and vendors for hazard recognition and proper PPE. c. Add additional field management levels for specific flowback activities d. Implement stationary LEL monitoring grid with alarms on all flowback operations e. Evaluate and retrofitting sound wall placements or technologies to enhance ventilation f. Develop and implementing automated tank gauging on flowback operations g. Revise prestart-up safety review (PSSR) of Green Completion flowback setups, including, but not limited to: <ul style="list-style-type: none"> i. Site layout ii. Grounding requirements iii. Vessel depressurizing procedures h. Hold meetings with vendors regarding all corrective actions listed above and have scheduled ongoing meetings to continually discuss the process. i. Extraction shall provide a third party report of any incident as requested by Broomfield 	03/02/2018
LGD	By way of an update to the COGCC, on October 24, 2017, Extraction and Broomfield entered into an Amended and Restated Operator Agreement (Agreement). Section 9 of the Agreement provides that Extraction must submit a	02/28/2018

	<p>"Comprehensive Drilling Plan and Application" to Broomfield for such new wells or well sites (Plan). Per the Agreement, that Plan is subject to the review and approval by the City.</p> <p>Broomfield has not approved the Plan as required by the Agreement. Broomfield has been working diligently with Extraction on the Plan, through weekly meetings and timely and reasonable communications with Extraction. The COGCC spacing orders for these spacing units, dated as of October 31, 2017, indicate that any Permits for the wells within these spacing units must "comport with" the Agreement.</p> <p>As stated above, Section 9 of the Agreement provides that Extraction must submit a Comprehensive Drilling Plan for all of the well sites that is subject to Broomfield's approval. On December 15, 2017, Extraction submitted a draft Plan for the Livingston and Interchange B well pads. On January 22, 2018, Broomfield submitted 220 comments on that draft Plan, which included the comment that the Agreement requires the Plan to be for all of the well sites (Comments). On January 26, 2018, Extraction submitted a draft Plan for the Northwest A & B, United, and Interchange A & B Pads. On February 15, 2018, Extraction responded to Broomfield's comments, which relate to the Livingston and Interchange B portion of the Plan. Broomfield is in the process of reviewing Extraction's February 15th comments and providing comments on the second Plan submitted by Extraction on January 26, 2018.</p> <p>In both citizens' and staff comments we have identified areas where Broomfield is requesting additional information and where we believe the Plan is not complete. Broomfield believes that Extraction has an obligation to correct or update any deficient statements in the Plan. The issues that remain outstanding in the Plan include the following:</p> <p>[Liquid XAML Object]At meetings with Extraction on February 7, 2018, and February 14, 2018, Broomfield identified engineering issues that need to be resolved before permitting of the pipeline for all the well sites could go forward.</p> <p>[Liquid XAML Object]At a meeting on February 16, 2018, Broomfield outlined deficiencies in Extraction's proposed Traffic Plan that need to be corrected.</p> <p>[Liquid XAML Object]As of the date of these comments, Broomfield is still working with Extraction on required updates to its Emergency Response Plan and Risk Analysis Plan before those can be approved. Extraction has only provided a broad Risk Analysis Plan despite the requirement that risks and responses be identified.</p> <p>[Liquid XAML Object]Extraction has not identified each type of hazard for each location and specific responses by phases, including referencing Broomfield's Emergency Response Plan and the COGCC Emergency Response Plan.</p> <p>[Liquid XAML Object]It is Broomfield's understanding that Extraction has yet to talk with all Broomfield and Adams County residents to determine their desired mitigation measures for the well sites and truck roads to the north, even though Extraction committed to such individual communications.</p> <p>[Liquid XAML Object]Extraction has not committed in writing to any necessary specific mitigation measures between residents and well sites to the north and east of residents in Adams County and Broomfield.</p> <p>[Liquid XAML Object]Extraction has not yet committed in writing to necessary road improvements, stemming from increased truck traffic related to the Extraction operations.</p> <p>[Liquid XAML Object]Extraction has yet to identify all traffic signage or committed to install such signage on its traffic plans.</p> <p>[Liquid XAML Object]Extraction has yet to agree in the Plan that all class 7 and above vehicles are not allowed to operate on Public Roadways during the peak hours of 7-9 a.m. and 3-6 p.m. for Extraction activities</p>		
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<p>[Liquid XAML Object]Extraction has not submitted a final pavement design report for approval by the City and County Engineer.</p> <p>[Liquid XAML Object]Extraction has yet to agree in the Plan to ensure the safety of emergency response teams, construction workers and the general public. Extraction has yet to agree in the Plan that Buffers shall be created as required on site to shield dust, noise, and light from residents</p> <p>[Liquid XAML Object]Extraction has yet to provide a complete stormwater management plan.</p> <p>[Liquid XAML Object]Extraction has failed to provide a more detailed GANTT chart on timing for all well sites.</p> <p>[Liquid XAML Object]Extraction has not provided a long term reclamation plan.</p> <p>[Liquid XAML Object]Extraction has not included practices it will use to address weeds at the sites.</p> <p>[Liquid XAML Object]Extraction has not provided a complete explanation of its noise modeling approach.</p> <p>[Liquid XAML Object]Extraction has not detailed the noise reduction levels it can achieve.</p> <p>[Liquid XAML Object]Extraction has not provided written detail on the process of "Conduct Recovery Operations" including involvement of Broomfield's Public Health Division.</p> <p>[Liquid XAML Object]Despite the fact that many Broomfield and Adams County residents to the south of the well sites are on well water, Extraction has not included 12 additional requested requirements in its Water Quality Plan.</p> <p>[Liquid XAML Object]Extraction has not complied with 2 requirements for the Wetlands Plan.</p> <p>[Liquid XAML Object]Extraction has given only general responses to specific environmental site review requests.</p> <p>[Liquid XAML Object]Extraction has not provided details of planning and installation of electrical infrastructure at the well sites as required for the Electrification Plan and Extraction has indicated that they will be updating the plan.</p> <p>[Liquid XAML Object]Extraction has not provided a detailed visual mitigation plan for the well sites, service road, or pig launcher station.</p> <p>[Liquid XAML Object]Broomfield is requesting that the phrase "The meteorological data that was used are "regional" and could be applied to a range of sites in the area. If the proposed development is similar and has the same or fewer wells, then the results could be extended to further characterizations" be added to the Plan concerning air modeling.</p> <p>[Liquid XAML Object]Broomfield is requesting that the tank be removed from Figure 3 of the Plan since this tank will NOT be present. The diagram should correctly reflect what will be on site.</p> <p>[Liquid XAML Object]Extraction has not provided a list of the hazardous materials that will be used on-site.</p> <p>Other Comments concerning Form 2 and 2A include:</p> <p>Livingston Form 2A Comments and Questions</p> <p>[Liquid XAML Object]The FACILITIES section indicates there are 2 gas compressors planned for the location. Extraction should provide information</p>	
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	<p>associated with the purpose of the compressors and how will they be fueled.</p> <p>[Liquid XAML Object]The CONSTRUCTION section indicates that the size of the location after interim reclamation will be the same as the disturbed area during construction. Why will the location size remain the same after interim reclamation?</p> <p>[Liquid XAML Object]In the BEST MANAGEMENT PRACTICES section, Item 46 - Emissions mitigation 20. D. #4, #5 and #6 are not included</p> <p>[Liquid XAML Object]The waste management plan only addresses E&P Waste. It does not discuss secondary containment and stormwater measures as required by Item 41 in the Best Management Practices of the Operator Agreement.</p> <p>Livingston Form 2 Comments</p> <p>[Liquid XAML Object]Broomfield requests that the COGCC take a close look at the offset well evaluations provided by Extraction Oil and Gas to verify the estimates of offset distances of existing wells (including plugged and abandoned wells) from the new proposed horizontal wells. Broomfield was unable to confirm many of the distances indicated in the OPERATOR COMMENTS AND SUBMITTAL section of the Form 2s based on the OFFSET WELL EVALUATIONS spreadsheet or from the ANTI-COLLISION reports provided.</p> <p>[Liquid XAML Object]According to the OFFSET WELL EVALUATIONS spreadsheet provided in the Form 2s, there are many plugged and abandoned wells and several producing wells that have horizontal offsets of less than 150 feet from the proposed new horizontal wells and it is indicated that No Remediation Is Required for these wells. Broomfield is very concerned about the short offset distance for some of these wells, for example new well Livingston S19-25-4N has an offset distance of only 19 feet from plugged and abandoned well McClintock MA 19-3J (API# 05-014-09137). Therefore, Broomfield requests that the COGCC take a close look to verify the proposed mitigation measures indicated by Extraction Oil and Gas are appropriate as defined by the DJ Basin Horizontal Offset Policy.</p> <p>[Liquid XAML Object]For the Livingston S19-25-10N Form 2: In the SPACING AND UNIT INFORMATION section, the Distance from Completed Portion of Wellbore to Nearest Unit Boundary is blank.</p> <p>Interchange Form 2 A Comments</p> <p>[Liquid XAML Object]The FACILITIES section indicates there are 2 gas compressors planned for the location. Extraction should provide information associated with the purpose of the compressors and how will they be fueled.</p> <p>[Liquid XAML Object]Do CDOT and the Northwest Parkway Authority need to be notified since portions of I-25 and the Northwest Parkway are within the notification zone?</p> <p>[Liquid XAML Object]The waste management plan only addresses E&P Waste. It does not discuss secondary containment and stormwater measures as required by Item 41 in the Best Management Practices of the Operator Agreement.</p> <p>Interchange Form 2 Comments</p> <p>[Liquid XAML Object]Broomfield requests that COGCC take a close look at the offset well evaluations provided by Extraction Oil and Gas to verify the estimates of offset distances of existing wells (including plugged and abandoned wells) from the new proposed horizontal wells. Broomfield was unable to confirm many of the distances indicated in the OPERATOR COMMENTS AND SUBMITTAL section of the Form 2s based on the OFFSET WELL EVALUATIONS spreadsheet or from the ANTI-COLLISION reports provided.</p> <p>[Liquid XAML Object]According to the OFFSET WELL EVALUATIONS spreadsheet provided in the Form 2s, there are many plugged and abandoned wells and several producing wells that have horizontal offsets of less than 150 feet from the proposed</p>		
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	<p>new horizontal wells and it is indicated that No Remediation Is Required for these wells. Broomfield is very concerned about the short offset distance for some of these wells; therefore, Broomfield requests that COGCC take a close look to verify the proposed mitigation measures indicated by Extraction Oil and Gas are appropriate as defined by the DJ Basin Horizontal Offset Policy.</p> <p>Broomfield asks that COGCC leave the comment period on the Permits open until all issues are resolved regarding the Plan. Broomfield will continue to work diligently with Extraction on the Plan.</p>		
OGLA	In accordance with Rule 305.d.(3), the Director has extended the comment period by five days; therefore, the new deadline for public comment on this Oil and Gas Location Assessment Permit is THURSDAY, MARCH 1, 11:00am.	02/23/2018	
OGLA	OGLA review: need more description on piping, interim reclamation is the same size as the construction area. Water resources sensitive with surface water within the disturbed area - distance to water well and depth to water needs to be corrected. BMPs from agreement with City of Broomfield being reviewed. Reference area photos are not during growing season.	02/21/2018	
Permit	Per Rule 305.d.(1)A. , the comment period has been extended from 20 days to 30 days at the request of the Broomfield County LGD; the comment period will end February 24, 2018.	01/26/2018	
Permit	Passed Completeness.	01/25/2018	

Total: 16 comment(s)