LARIMER COUNTY | COMMUNITY DEVELOPMENT DEPARTMENT

P.O. Box 1190, Fort Collins, Colorado 80522-1190, Larimer.org

February 9, 2022

TO: Julie Murphy, COGCC Director
Email: julie.murphy@state.co.us
John Noto, COGCC Oil and Gas Location Assessment Supervisor
Email: john.noto@state.co.us
Doug Andrews, Northeast Location Specialist
Email: doug.andrews@state.co.us
Sabrina Trask, COGCC Planning and Permitting Manager
Email: sabrina.trask@state.co.us
Greg Deranleau, Environmental Manager
Email: greg.deranleau@state.co.us
Sean Hackett, Oil and Gas Liaison, CDPHE
Email: sean.hackett@state.co.us

RE: Comment on Form 2 - Doc # 402704523 – MSSU 30-8 located in Sec 30, Township 8N, Range 68W, within an urban mitigation area and a disproportionately impacted community, and only 290 feet from the closest residential building unit.

Dear Colorado Oil and Gas Conservation Commission (COGCC),

Larimer County respectfully submits this comment letter on the Form 2 Doc # 402704523 – an application for the MSSU 30-8 well, operated by Prospect Energy LLC, to be recompleted into the Codell Formation. Although it is surrounded on two sides by the City of Fort Collins, the MSSU 30-8 well is located in unincorporated area of the county and therefore Larimer County is the relevant local government.

A FORM 2A SHOULD BE REQUIRED BECAUSE IT IS A "SIGNIFICANT CHANGE"

Given the location, and the proposed change of operations, Larimer County believes this Form 2 is proposing a significant change requiring a Form 2A. The Form 2 is a proposal to recomplete this 1985 well, currently producing the Muddy formation, into the Codell formation. The well is 290 feet from the closest residential building unit, and within 1,000 feet of more than 22 homes – making it an Urban Mitigation Area. The well is also located within a disproportionately impacted community. Pursuant to Rule 304.a.(3), a Form 2A is required if there is a significant change to the design and operation of an oil and gas location.

LARIMER COUNTY

Rule 304.a states:

> **304. FORM 2A, OIL AND GAS LOCATION ASSESSMENT APPLICATION**
>
> **a. Submitting Form 2A.** Operators will submit a completed Form 2A, Oil and Gas Location Assessment as part of their Oil and Gas Development Plan application, as required by Rule 303.a.(2). Operators will submit and obtain approval of a Form 2A prior to:
>
> **(1)** Surface disturbance at a site previously undisturbed by Oil and Gas Operations;
>
> **(2)** Surface disturbance for purposes of expanding an existing Working Pad Surface or Oil and Gas Location; or
>
> **(3)** Any significant change to the design and operation of an Oil and Gas Location, including but not limited to the addition of a Well or a Pit, except an Emergency Pit or a lined Plugging Pit. The Director will determine if a Form 2A is required for significant changes at an existing Oil and Gas Location made in response to new requirements or regulations from other state or federal agencies or the Relevant Local Government.

The question is whether the proposed change is "significant." When the County met with the COGCC and City of Fort Collins staff on September 28, 2021, Environmental Manager Greg Deranleau stated that there is written COGCC policy that describes when a proposed change to a location is considered "significant" and therefore requiring a new Form 2A location assessment. We have downloaded the operator guidance document (attached as Exhibit A). The very top of the first page lists "**IMPORTANT NOTES**" in bold capital letters. The first "Important Note" states,

> • If the Location is in a Designated Setback Location (DSL) or Urban Mitigation Area (UMA), any change is considered significant.

In this case, the Location is clearly in both a designated Setback Location and within an Urban Mitigation Area and therefore is a "significant change" requiring a Form 2A.

1) **The well is within a designated setback location – within 500 feet of four homes.** (Figure 1). The Working Pad Surface and Production Facilities are within 500 feet of at least 12 homes. (Figure 2).

Figure 1. Google Earth image depicting 500-foot setback

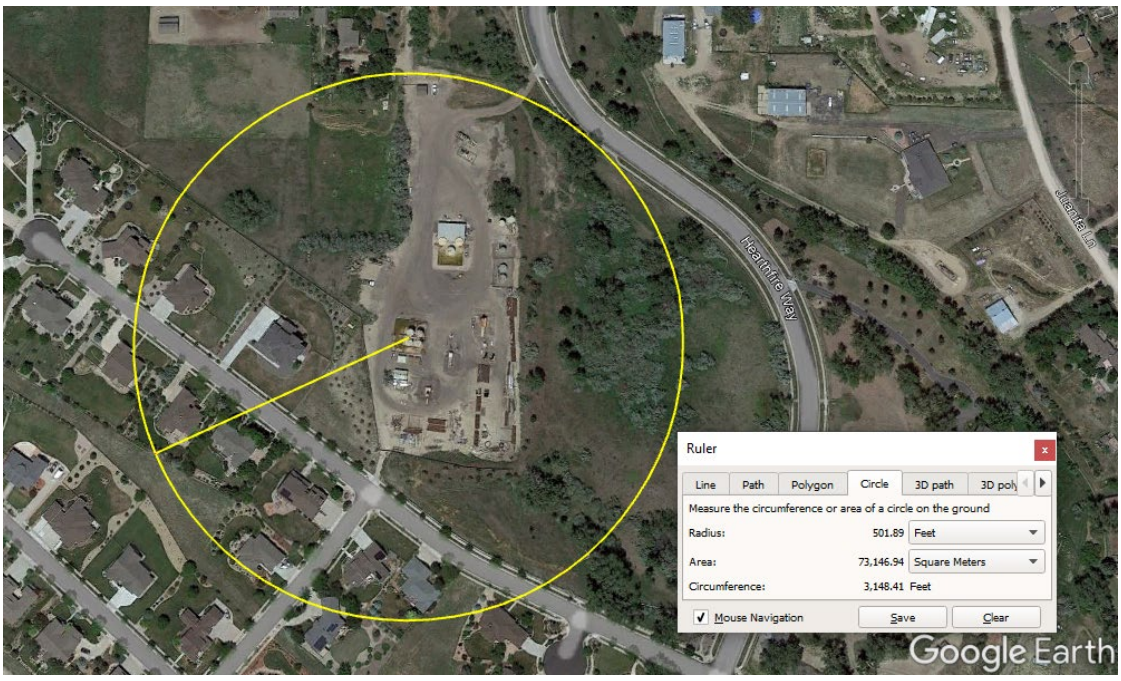

Figure 2. Google Earth image depicting 500-foot setback from southern tank battery

2) **The well and production facilities are within an Urban Mitigation Area** because they are within 1,000 feet of 22 homes or 11 homes within a semi-circle. In this case, the production facility is within 1,000 feet of **40 homes** and the well itself is within 1,000 feet of at least 25 homes. (Figure 3).

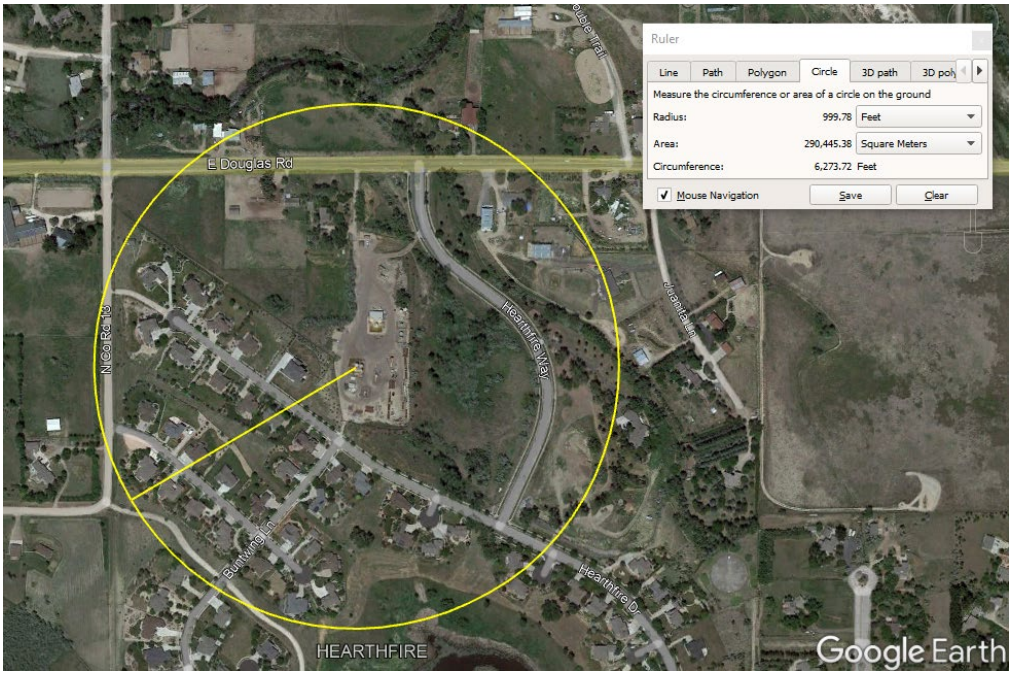

Figure 3. Google Earth image depicting 1,000-foot setback from southern tank battery

Because the location is 1) within 500 feet of numerous homes, and 2) within an Urban Mitigation Area, the proposal is clearly a "significant change" according to COGCC guidance. We believe the analysis should end there and a Form 2A should be required.

HUMAN HEALTH CONCERNS

The reason the COGCC generally requires a Form 2A for a modification within in a Designated Setback Location or Urban Mitigation Area, is out of concern for public health. The COGCC, in consultation with Colorado Department of Public Health and Environment (CDPHE), has determined that 500 feet is the absolute minimum distance required to protect human health. Proposing changes to operations closer than 500 feet to homes requires a Form 2A analysis to ensure public health will be protected.

In 2018, a peer-reviewed Colorado School of Public Health study analyzing air samples collected across Colorado's Northern Front Range showed an elevated health risk for residents within 500 feet of oil and gas development. [1] The study found that the lifetime cancer risk for people living within 500 feet of an

[1] Lisa M. McKenzie, B. Blair, Ambient Nonmethane Hydrocarbon Levels Along Colorado's Northern Front Range: Acute and Chronic Health Risk, *Environmental Science & Technology* **2018** *52* (8), 4514-4525 DOI: 10.1021/acs.est.7b05983.

oil and gas facility is eight times higher than the Environmental Protection Agency's upper risk threshold. The study also concluded that people living within 500 feet of oil and gas locations "are more likely to experience neurological, hematological, and developmental health effects from acute inhalation exposures to benzene and alkanes."[2]

One year later, the CDPHE Health Risk Assessment produced similar findings. Emission samples were collected from oil and gas locations in Weld County and in Garfield County in 2014 and 2015. The modeled data showed that emissions from oil and gas development are *not* likely to pose subchronic (multi-day) or chronic (long term) health risks. However, the study concluded that "At the most-exposed (downwind) locations at 500 ft from the well pads, the highest estimated 1-hour exposures *exceeded guideline levels* for a small number of chemicals, including benzene during development and production activities, and toluene and ethyltoluenes during development activities... One-hour exposures decreased rapidly with distance from the hypothetical facilities, but some remained above guideline levels out to 2,000 ft."[3] Acute exposures to these chemicals "can be associated with headaches, nosebleeds, fatigue, dizziness, etc., depending on the chemical, intensity of exposure, and sensitivity of the individual."[4]

Another published study from the Colorado School of Public Health further questioned the ability of a 500-foot setback to protect public health. The B. Blair 2017 fire and explosion risk study concluded,

> "the current setback regulations to address fire and explosion risks at O & G operation sites need further scrutiny. Resident evacuations were reported and those incidents may increase stress for those living in close proximity to industrial sites. To further discuss the concern that current setbacks may not adequately protect from fire and explosions, an incident in Utah reported an explosion that "blew the top of the water tank approximately 500 ft [152 m] down into the draw below location." Also, a blowout in the Texas Barnett Shale led to an explosion that produced a 750 foot crater. These incidents demonstrate that residences at the 500-foot distance can be impacted by accidents at these sites."[5]

The proposed completion activities, into a new oil and gas bearing formation, will create potentially severe adverse impacts to the adjacent neighborhoods. These adverse impacts must be avoided, and if they cannot be avoided, they must be minimized "to the extent necessary and reasonable to protect public health, safety, and welfare, the environment, and wildlife resources." C.R.S. § 34-60-103(5.5) (2020). If the potential impacts to public health cannot be adequately minimized, the Director must

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[2] Id.

[3] Ed Carr, et al. Final Report: Human Health Risk Assessment for Oil & Gas Operations in Colorado, submitted to Colo. Dept. of Public Health and Env., October 17, 2019; Chris Holder, John Hader, Raga Avanasi, Tao Hong, Ed Carr, Bill Mendez, Jessica Wignall, Graham Glen, Belle Guelden & Yihua Wei (2019) Evaluating Potential Human Health Risks from Modeled Inhalation Exposures to Volatile Organic Compounds Emitted from Oil and Gas Operations, Journal of the Air & Waste Management Association, DOI: 10.1080/10962247.2019.1680459

[4] Holder 2019, p. 1505.

[5] B Blair, L McKenzie, WB Allshouse, J Adgate. Is reporting "significant damage" transparent? Assessing fire and explosion risk at oil and gas operations in the United States. Energy Research and Social Science 29 (2017) 365-43. p. 41.

deny the application. (Rule 3401.b).

QUESTIONS TO BE ANSWERED BY A FORM 2A

Without a Form 2A location analysis, the COGCC, local governments, and affected public cannot adequately assess the potential impacts of the proposal. The following questions were raised by the local governments during the September 28th meeting and have yet to be answered by either the COGCC staff or the Form 2 application materials. These questions are appropriately answered through a Form 2A analysis and review:

1) **Surface Impacts:** What new surface impacts and equipment will be required by this proposal? Will there be new tanks, separators, emission control units?

2) **Electricity Generation:** We understand that there is no pipeline to transport natural gas produced from the Codell formation well. A "gas capture plan" is required by Rule 903.e to capture and utilize gas that is not placed into a pipeline. The Form 2 states that, "When commercial quantities of salable quality gas are achieved, the gas will be directed for commercial use by a 350kw generator at the Fort Collins battery." Is the Operator going to submit a gas capture plan as part of this Form 2 application? Will that gas capture plan describe all the potential impacts of the proposed burning of natural gas for power generation? Where exactly will that be generator be located? What are the impacts of burning unrefined natural gas at a generator? What are the impacts to air quality? How much noise will that activity generate? Will it run 24 hours a day? For how many years?

3) **Cumulative Impacts:** What is the baseline air quality in this neighborhood? Prospect Energy's operations have caused frequent complaints about leaking tanks and odors. Will this proposal improve the current situation or make matters worse? Prospect Energy is considering several other recompletions in the area. Shouldn't those be considered through a more comprehensive Oil and Gas Development Plan or a Comprehensive Area Plan rather than considering recompletions within neighborhoods individually?

4) **Alternative Locations:** There are numerous existing locations in the area that could be utilized to recomplete into the Codell or other oil and gas bearing formations. Why is the location that is closest to dozens of homes, within a disproportionately impacted community, the Operator's first choice? Throughout the front range, operators are having success producing the Codell formation through horizontal drilling. Horizontal drilling gives the Operator much greater flexibility to finding a location farther away from homes. Why isn't horizontal drilling being considered in this instance?

5) **Transportation Impacts:** The increased traffic anticipated during the completion operations is part of the application, but what about during production? How much oil is going to be generated and for how long? How is that oil and produced water going to be transported? Where is it being transported? How often?

6) **Wellbore Integrity:** The well was first drilled in 1985 and has spent the last 37 years producing mostly saline water and some oil. Larimer County wants to better understand how the COGCC can ensure that the well has integrity to withstand the hydraulic fracturing pressures necessary complete the Codell formation.

7) **Updated CDPHE Consultation:** The CDPHE submitted a comment letter in May of 2019 that contained several recommendations – some of which have been addressed and others have not. That comment letter was written about an earlier version of the Form 2 application, and prior to several Air Quality Control Commission rulemakings and the COGCC Mission Change rulemaking. **For those reasons, Larimer County is requesting an updated consultation from the CDPHE.**

LOCAL GOVERNMENT PERMIT

At the September 28th meeting, County staff raised concerns about inaccurate information that was contained within the Form 2 that stated that the relevant local government (Larimer County) did not regulate the siting of oil and gas locations. In response to that concern, Mr. Deranleau stated, "We cannot approve [the Form 2] with information that we know to be false."

A new Form 2 was submitted on October 29, 2021. However, the new Form 2 that contains the same inaccurate information. (Figure 4).

LOCAL GOVERNMENT PERMITTING INFORMATION

County: LARIMER Municipality: Fort Collins

Is the Surface Location of this Well in an area designated as one of State interest and subject to the requirements of § 24-65.1-108 C.R.S.? Yes

Per § 34-60-106(1)(f)(I)(A) C.R.S., the following questions pertain to the Relevant Local Government approval of the siting of the proposed Oil and Gas Location.

SB 19-181 provides that when "applying for a permit to drill," operators must include proof that they sought a local government siting permit and the disposition of that permit application, or that the local government does not have siting regulations. § 34-60-106(1)(f)(I)(A) C.R.S.

Does the Relevant Local Government regulate the siting of Oil and Gas Locations, with respect to this Location? ☐ Yes ☒ No

☐ If yes, in checking this box, I hereby certify that an application has been filed with the local government with jurisdiction to approve the siting of the proposed oil and gas location.

The disposition of the application filed with the Relevant Local Government is: Other Date of Final Disposition:

Comments: Re-siting of the location cannot be considered because the permit application is for a recomplete of an already built well.

Figure 4. From the Prospect Energy Form 2 (Doc # 402704523) submitted on Oct. 29, 2021.

The Form 2 states that the relevant local government **does not** regulate the siting of Oil and Gas Locations, with respect to this Location. That is clearly a false statement. Please see Exhibit B – Article 11 of the Larimer County Land Use Code that states a "substantial modification" at an existing oil and gas facility is required to go through the Special Review Application process.

11.2.9 Application to Existing Facilities.

O&GFs that were legally established prior to the effective date of this Article will be allowed to

continue but will be subject to public health, safety, welfare, and environmental requirements as specified in this Article.

A. Any modification of oil and gas operations or facilities that the Director determines to be substantial requires a separate Special Review Application under this Article. A substantial modification is any permanent physical change not required by law that substantially increases the site footprint, air emissions, traffic, noise, or risk of spills, or will significantly change the operations of the O&GF. **Use of a drilling rig or hydraulic fracturing equipment to deepen or recomplete an existing well into a new geologic formation is a substantial modification.** Maintenance activities, the replacement of existing equipment, installation of emission control equipment, and the addition of equipment to fulfill mandated regulatory requirements are not substantial modifications.

The Larimer County Land Use Code directly addresses this situation: "Use of a drilling rig or hydraulic fracturing equipment to deepen or recomplete an existing well into a new geologic formation is a substantial modification." The language is clear. Prospect Energy is required to go through the Special Review Application process for a recompletion into a new geologic formation. We agree with Mr. Deranleau that the COGCC cannot approve a Form 2 application containing information that it knows to be false.

CONCLUSION

Larimer County truly appreciates the expertise of COGCC staff and the time they have taken to discuss these issues with Larimer County. We hope the COGCC will agree that, because of its proximity to multiple homes, and the number of questions that remain unanswered, this application requires a Form 2A review.

Sincerely,

Lesli Ellis, AICP CEP
Community Development Director

Exhibits

1) Exhibit A – COGCC policy to determine when a Form 2A is necessary
2) Exhibit B – Article 11 Larimer County Land Use Code

Exhibit A

Approved Form 2A Change Guidance - Rule 303.d: Sundry or New Form 2A

IMPORTANT NOTES:
• If the Location is in a Designated Setback Location (DSL) or Urban Mitigation Area (UMA), any change is considered significant.
• If the change puts the Location in a DSL or UMA, it is a substantive change and requires a New Form 2A to amend the approved Location.

eForm Tab/ Change Reference Number	Requested Change to Approved Form 2A	Requires *Prior* Approval?	Sundry Notice, Form 4	New Form 2A (Amend the Location)	What Determines Sundry or New Form 2A	Consult with Oil & Gas Location Asssessment (OGLA) Group	Attachments Required
Consultation and Contact Info Tab							
1	Build New Location	Yes	Never	Always	Rule 303.b.(1)A.	Staff	
2	Move Into a Senstive Wildlife Habitat Area	Yes	Never	Always	Rule 306.c Consult	Staff	
3	Move Out of a Senstive Wildlife Habitat Area	No	Sometimes	Sometimes	Always at least a sundry. • OGLA Staff will determine if substantive depending on site-specific circumstances.	Staff	
4	Move Into a Restricted Surface Occupancy Area	Yes	Never	Always	Rule 306.c Consult	Staff	
5	Move Out of a Restricted Surface Occupancy Area	No	Sometimes	Sometimes	Always at least a sundry. • OGLA Staff will determine if substantive depending on site-specific circumstances.	Staff	
6	Add or remove a variance request included in the 306.d.(1)A.ii. list.	Yes	Sometimes	Sometimes	Always at least a sundry. • OGLA Staff will determine if substantive depending on site-specific circumstances.	Staff	
Location Identification Tab							
1	Location Name/Number	No	Always	Never		Staff	
2	County	Yes	Never	Always		Staff	
3	Legal Location: QtrQtr, Section, Twp, Rng	Yes	Sometimes	Sometimes	Always at least a sundry. • OGLA Staff will determine if substantive depending on site-specific circumstances.	Staff	
4	Footages, Latitude & Longitude	Yes	Sometimes	Sometimes	Always at least a sundry. • OGLA Staff will determine if substantive depending on site-specific circumstances.	Staff	
5	Related Remote Location (Add or Remove)	Yes	Always	Never		Staff	
Facilities Tab							
1	Increase Number of Wells	Yes	Never	Always	Rule 303.b.(1)C.	Staff	Multiwell Plan
2	Lost Hole Rig Skid - Add a Well	No	Always	Never	Lost Hole Rig Skid guidance	Staff	
3	Decrease Number of Wells	No	Always	Never		Staff	Multiwell Plan
4	Add a Pit	Yes	Never	Always	Rule 303.b.(1)C.	Staff	Form 15 concurrently submitted
5	Remove a Pit	No	Always	Never	Always a sundry.	Staff	
6	Increase Production Equipment - other than tanks	Yes	Usually	Rarely	Always at least a sundry. • Site-specific circumstances.	Staff	
7	Increase Number of Tanks - *not* in a DSL	Yes	Sometimes	Sometimes	Always at least a sundry. • Site-specific circumstances.	Supervisor	

eForm Tab/ Change Reference Number	Requested Change to Approved Form 2A	Requires ***Prior*** Approval?	Sundry Notice, Form 4	New Form 2A (Amend the Location)	What Determines Sundry or New Form 2A	Consult with Oil & Gas Location Asssessment (OGLA) Group	Attachments Required
8	Increase Number of Tanks - in a DSL	Yes	Rarely	Usually	Always at least a sundry. • Site-specific circumstances. • If becomes a Large UMA Facility or changes setback designation, then Form 2A required.	Supervisor	New Facility Layout Drawing
9	Decrease Production Equipment	No	Sometimes	Never	Operator Discretion	Staff	
10	Decrease Number of Tanks - no change in setback designation	No	Rarely	Never	Operator Discretion & Magnitude of Change	Staff	
11	Decrease Number of Tanks - change in setback designation or no longer a Large UMA	No	Usually	Rarely	Magnitude of Change	Staff	
12	Pipeline description	No	Sometimes	Never	Magnitude of change and setting of Location	Staff	
Construction, Drillling & Waste Tab							
1	Construction Commencement Date	Sometimes	Rarely	Never	Impact on Timing Stipulations	Staff	None
2	Interim Reclamation Commencement Date	Sometimes	Rarely	Never	Impact on Timing Stipulations	Staff	None
4	Increase Size of Disturbed Area During Construction	Yes	Sometimes	Sometimes	Magnitude of change and setting of Location; Greater than 10% needs a sundry for approval; Change to UMA or LUMA needs a new Form 2A.	Staff	
5	Increase Size of Disturbed Area due to landscaping requirements of local government	Yes	Usually	Rarely	Magnitude of change and setting of Location; Change to UMA or LUMA needs a new Form 2A.	Supervisor	
6	Decrease Size of Disturbed Area During Construction	No	Never	Never	No form needed.	Staff	
7	Increase Size of Location After Interim Reclamation	Sometimes	Sometimes	Never	Magnitude of change and setting of Location; Greater than 10% needs a sundry for approval.	Staff	
8	Decrease Size of Location After Interim Reclamation	No	Never	Never	No form needed.	Staff	
9	Change *to* Closed Loop System (from "No" to "Yes")	Sometimes	Sometimes	Never	Site-specific circumstances. A waste managemnt plan for cuttings managment may be required.	Staff	
10	Change *from* Closed Loop System (from "Yes" to "No")	Yes	Rarely	Usually	This change would most likely require addition of a pit; addition of a pit always requires a Form 2A and sometimes a Form 15.	Staff	
11	Hydrogen Sulfide (H2S)	No	Sometimes	Never	If DSL, file sundry with H2S Plan for Location	Staff	H2S Contigency Plan
12	Salt Sections	Yes	Always	Never		Staff	
13	Change to Salt Based Mud	Yes	Sometimes	Never	If Commercial Disposal, no approval needed.	Staff	Waste Management Plan
14	Change *to* Oil Based Mud - *not* in a DSL	Yes	Usually	Rarely	Always at least a sundry. • Site-specific circumstances (Sensitive Area, pits, etc.)	Staff	Waste Management Plan

eForm Tab/ Change Reference Number	Requested Change to Approved Form 2A	Requires *Prior* Approval?	Sundry Notice, Form 4	New Form 2A (Amend the Location)	What Determines Sundry or New Form 2A	Consult with Oil & Gas Location Asssessment (OGLA) Group	Attachments Required
15	Change *to* Oil Based Mud - in a DSL	Yes	Sometimes	Sometimes	Always at least a sundry. • Site-specific circumstances (population density, existing BMPs, etc.)	Staff	Waste Management Plan
16	Cuttings disposal *from* Commercial *to* Onsite - *not* in a DSL	Yes	Usually	Rarely	Site-specific circumstances.	Supervisor	Waste Management Plan
17	Cuttings disposal *from* Commercial *to* Onsite - in a DSL	Yes	Sometimes	Sometimes	Site-specific circumstances.	Supervisor	Waste Management Plan
18	Cuttings disposal *from* Onsite *to* Commercial	No	Always	Never	Always a sundry.	Staff	
Surface & Minerals Tab							
1	Right to Construct *from* Bond *to* SUA	No	Always	Never	Sundry is Submitted for Well on Location	Staff	
Cultural Setbacks Tab							
1	Move Well or Production Equipment closer to Building Unit - not in a DSL	No	Usually	Never	Site-specific circumstances; no action for small distances	Staff	
2	Move Well or Production Equipment closer to Building Unit - now in a DSL	Yes	Rarely	Usually	Site-specific circumstances; LACT gets special consideration.	Supervisor	
3	Move Well or Production Equipment closer to Building Unit - in a DSL	Yes	Usually	Rarely	Site-specific circumstances; LACT gets special consideration. If change from BZ to EZ, then Form 2A.	Supervisor	
4	Move Well or Production Equipment farther from Building Unit - *not* in a DSL	No	Rarely	Never	Site-specific circumstances; no action for small distances	Staff	
5	Move Well or Production Equipment farther from Building Unit - now out of DSL	No	Usually	Rarely	Site-specific circumstances; may need new comment period, may drop BMPs	Supervisor	
6	Move Well or Production Equipment farther from Building Unit - in a DSL	No	Usually	Rarely	Site-specific circumstances.	Supervisor	
7	Removing tanks - changing fluids takeaway to liquids pipeline	No	Usually	Rarely	Site-specific circumstances, will review with other necessary changes.	Staff	
Water Resources Tab							
1	Sensitive Area Determination	No	Usually	Rarely	Site-specific circumstances.	Supervisor	
Operator BMP/COA Tab							
1	Nuisance BMP	Sometimes	Usually	Rarely	No form needed for minor changes. • Site-specific circumstances.	Supervisor	
COGCC COAs Tab							
1	Remove a COA	Yes	Usually	Rarely	Site-specific circumstances.	Supervisor	
Attachments Tab							
1	Modify Access Road	Sometimes	Usually	Rarely	Site-specific circumstances.	Staff	Access Road Map

Article 11.0 Oil and Gas Facilities

11.1. Intent and Purpose

11.1.1. Intent

The intent of this section of the Land Use Code is to protect public health, safety, and general welfare, the environment, and wildlife resources by establishing a regulatory framework for new and existing oil and gas facilities (O&GFs) that are proposed or located in the unincorporated areas of Larimer County.

11.1.2. Authority

This article is authorized by C.R.S. §§ 25-8-101 et seq., 29-20-101 et seq., 30-28-101 et seq., 34-60-101 et seq., 25-7-101 et seq., 30-15-401, Colorado common law related to public nuisances, and other authority as applicable.

11.1.3. Purpose

These regulations are necessary to:

- **A.** Protect public health, safety, and welfare, and environment and wildlife resources.
- **B.** Ensure a comprehensive land use process and transparent public process for the development of new O&GFs, in the unincorporated areas of the County, and establish criteria for the review and approval or denial of O&GF applications in the County.
- **C.** Avoid impacts to public health, safety, welfare and the environment and wildlife resources through application of reasonable siting requirements and land use regulations.
- **D.** Minimize to the maximum extent possible the nuisance effects of O&GFs through the application of best available techniques and technologies.
- **E.** Maximize protection of natural and cultural resources and public facilities.
- **F.** Confirm the financial, indemnification and insurance capacities of the oil and gas developer/operator to ensure timely and effective construction, production, removal and reclamation of O&GFs and infrastructure.

11.1.4. Applicability

These regulations shall apply to all new O&GFs to be constructed on any property in the unincorporated portions of Larimer County. Regulations shall be applied to existing O&GFs as specified in §11.2.9.

11.1.5. Severability

If any section, clause, provision, or portion of these regulations should be found to be unconstitutional or otherwise invalid by a court of competent jurisdiction, the remainder of the regulations in this section shall not be affected thereby and is hereby declared to be necessary for

the public health, safety, and welfare.

11.2. Review Procedures and Required Permits

11.2.1. General Requirements

No person, firm or corporation shall establish, construct, or build a new O&GF, or modify an existing O&GF subject to the provisions of this Code, without first having obtained required land use approval(s) and permits as required by this Code. Applications to the County for new O&GFs, may be submitted simultaneously with the Colorado Oil and Gas Conservation Commission (COGCC) permitting process. So long as they meet County requirements, application submissions to the COGCC or Colorado Department of Public Health and Environment (CDPHE) may be used to satisfy County application submittal requirements.

11.2.2. County Review Process – Administrative Special Review

The following oil and gas processes and facilities will go through an Administrative Special Review application process as set forth in §6.4.3 *Administrative Special Review* of this Code.

A. Seismic Survey Operations Permit: is required to ensure critical infrastructure is protected, traffic is managed, and the public is adequately notified. Seismic Survey Operations must meet all site-specific conditions as are necessary to protect public health, safety, welfare and the environment. As a part of the Administrative Special Review process, applicants will provide to the County:

1. A timeline for work to be accomplished;
2. A map of any existing mines underlying the project area, and within 2,000-feet of the project boundary;
3. A map of any dams or reservoirs within 2,000 feet of the project boundary;
4. Plan to monitor and control peak particle velocity to prevent damage any mines, dams, or other infrastructure;
5. A map of the seismic study area showing planned source and receiving locations;
6. A map of the seismic study area showing planned source locations and water wells. Source locations must be at least 300 feet from water wells;
7. A public notification plan for the homes along the vibriosis truck route;
8. An assessment by a certified engineer demonstrating that the roads to be utilized in the project are able to endure the vibrations generated by the project;
9. Proof of adequate insurance for any potential damage caused by the testing;
10. Certification that written permission was obtained from all landowners whose land will be utilized for the survey;
11. A traffic control plan; and
12. Other information as the County deems as necessary and reasonable to protect public health, safety, welfare and the environment.

B. Oil and Gas Pipeline Permit: is required for pipelines related to oil and gas development (that carry gas, oil, or produced water) to ensure residential areas are avoided, traffic is managed, and the environment is protected. Oil and gas pipelines must meet all

requirements in 11.3.23 as well as site specific conditions necessary to protect public health, safety, welfare and the environment. As a part of the Administrative Special Review process, applicants will provide to the County:

1. A timeline for work to be accomplished;
2. Sketch Plan Review Application and Submittal Requirements for Oil and Gas Facilities as described below;
3. A reclamation plan for entire pipeline route;
4. Pipelines that enter County property or public right-of-way in the County must also obtain a public right-of-way permit and/or license from the County Engineer; and
5. Other information as the County deems as necessary and reasonable to protect public health, safety, welfare, and the environment.

11.2.3. County Review Process – Special Review

All new O&GFs, in the unincorporated portions of Larimer County shall require approval of a Special Review application for the proposed facility as set forth in §6.4.2 *Special Review*, of this Code. Application and submittal requirements for O&GFs are specified in the following Community Development Department application handouts:

A. Sketch Plan Review Application and Submittal Requirements for Oil and Gas Facilities.

1. The requirements found in 6.3.3;
2. Preliminary Site Analysis. The applicant shall prepare and submit a Preliminary Site Analysis to the County for the Sketch Plan Review. The Preliminary Site Analysis shall include maps with the following information:
   - **a.** All drilling and spacing units proposed by the applicant within one (1) mile of the County's boundaries;
   - **b.** The proposed location of the oil and gas facility and all features defined below, completely contained within, or within ½ mile (2,640 feet) of all drilling and spacing units proposed by the applicant;
   - **c.** Any residences or platted residential properties;
   - **d.** Any facility classified as a high occupancy building as defined by the COGCC;
   - **e.** Any licensed school, nursing facility as defined in § 25.5-4-103(14), C.R.S., hospital, life care institutions as defined in § 12-13-101, C.R.S., or correctional facility as defined in § 17-1-102(1.7), C.R.S.;
   - **f.** Any licensed operating child/elderly care center or child/elderly care home as defined in the Land Use Code;
   - **g.** Community Park Land, Public Parks, Regional Park Land, as defined in the Land Use Code and publicly-maintained trails and trailheads;
   - **h.** Existing and approved O&GFs and pipelines;
   - **i.** Areas within the FEMA 100-Year Floodplain boundary;
   - **j.** The centerline of all USGS perennial and intermittent streams and the map will indicate which surface water features are downgradient;
   - **k.** Active reservoirs and public and private water supply wells of public record;
   - **l.** Wetlands;
   - **m.** High priority habitat as defined by the COGCC; and
   - **n.** Disproportionately impacted communities, as defined by the COGCC.

3. Alternative Location Analysis. All applicants must submit an alternative location analysis. The alternative location analysis will include, at a minimum, the following information:
   - **a.** A map depicting the following elements within three (3) miles of the proposed surface location. (This requirement is limited to one (1) mile for a proposed single vertical or directional well):
     - **i.** All mineral rights held or controlled by the applicant;
     - **ii.** All drilling and spacing units proposed by the applicant; and
     - **iii.** The location of all features listed in the "Preliminary Site Analysis."
   - **b.** Unless waived by the Community Development Director ("Director"), the analysis shall evaluate a minimum of three potential locations that can reasonably access the mineral resources within the proposed drilling and spacing unit(s), including the following information for each site:
     - **i.** General narrative description of each location;
     - **ii.** Any location restrictions that the site does not satisfy;
     - **iii.** Off-site impacts that may be associated with each site;
     - **iv.** Proposed truck traffic routes and access roads for each location; and
     - **v.** Any information pertinent to the applicable review criteria that will assist the Director in evaluating the locations.

B. Neighborhood Meeting Submittal Requirements and Guidelines for Oil and Gas Facilities.
C. Special Review Application and Submittal Requirements for Oil and Gas Facilities.
D. Registration and Submittal Requirements for Oil and Gas Facilities.

11.2.4. Oil and Gas Application Review Criteria

In reviewing a proposed special review oil and gas application, the review bodies shall consider the general approval criteria in §6.3.6: *General Review Criteria*, the *Special Review Criteria* listed in §6.4.2D, and the following Oil and Gas Review Criteria:

A. The proposal will not negatively impact public health and safety.
B. The proposal will, to the extent necessary and reasonable, avoid adverse impacts on public health, safety, welfare, and the environment, including wildlife resources, or will adequately minimize and mitigate potential adverse impacts.
C. The proposal is consistent with any applicable intergovernmental agreements affecting land use and development.
D. The applicant has adequately considered reasonable siting and design alternatives.
E. The proposal conforms with adopted county standards, review criteria and mitigation requirements concerning environmental impacts, including but not limited to those contained in this Code.
F. The proposal will not adversely affect any sites and structures listed on the State or National Registers of Historic Places.

Public Conservation Lands: The County, local municipalities, and land trusts have a long history of using public funds to purchase fee title or conservation easements to protect conservation values such as natural, cultural, agricultural, or scenic values. A map of these Public Conservation

Lands is available from the Natural Resource Department. Proposed oil and gas development proposed for these Public Conservation Lands must meet the following additional standards:

G. Larimer County, municipal, and other government-owned conserved lands will be granted a no surface occupancy status unless the applicant can demonstrate natural, cultural, agricultural, scenic and recreation values of equal or greater value exist in the surrounding non-conserved area being considered for oil and gas facilities. The County may consider reasonable siting alternatives to locate O&GFs on Public Conservation Lands after the applicant works with the local lead entity (county, municipal, etc. and/or land trust) to perform a resource assessment planning process. The report titled "Mountains to Plains Energy by Design, Report to the Colorado State Land Board" (January 2013) outlines a planning process to be used to provide guidance for best management and compensatory mitigation requirements.

H. The proposal, including any on-site or off-site mitigation, will result in no net loss in natural, cultural, agricultural, recreational, or scenic values on the public conservation land as determined by the Board of County Commissioners or their designee.

11.2.5. Notification

All O&GF special review applications shall be required to notify property owners and tenants a minimum of ½ mile (2,640 feet) from the proposed oil and gas location for all neighbor referral, neighborhood meeting and public hearing notices, as outlined §6.3 *Common Review Procedures.*

11.2.6. County Permits

Prior to the commencement of any construction activity for an O&GF, all required permits for such facilities shall be approved. Required permits include, but are not limited to:

A. Access permits,
B. Development construction permit,
C. Building permits for all qualifying buildings and structures,
D. Electrical permits, and
E. All federal, state, and local permits.

11.2.7. Non-County Permits

County approval of an O&GF shall not relieve the landowner or applicant of the responsibility for securing other permits or approvals required by any other applicable County Departments, local fire district, municipalities, or other applicable federal, state and public agencies.

11.2.8. Technical Expert Review

Applications for O&GFs or analysis of notices or reporting required by this article, may involve complex technical issues that require review and input that is beyond the expertise of County staff. If such a situation arises, the Community Development Director ("Director") may commission a third-party review of the relevant subject matter and require the applicant to pay reasonable costs for the third-party review. Selection of a third-party expert(s) to review portions the proposal will be at the discretion of the County.

11.2.9. Application to Existing Facilities.

O&GFs that were legally established prior to the effective date of this Article will be allowed to

continue but will be subject to public health, safety, welfare, and environmental requirements as specified in this Article.

A. Any modification of oil and gas operations or facilities that the Director determines to be substantial requires a separate Special Review Application under this Article. A substantial modification is any permanent physical change not required by law that substantially increases the site footprint, air emissions, traffic, noise, or risk of spills, or will significantly change the operations of the O&GF. Use of a drilling rig or hydraulic fracturing equipment to deepen or recomplete an existing well into a new geologic formation is a substantial modification. Maintenance activities, the replacement of existing equipment, installation of emission control equipment, and the addition of equipment to fulfill mandated regulatory requirements are not substantial modifications.

B. Annual Operator Registration. Operators with existing O&GFs in Larimer County prior to the effective date of this Article will submit the Annual Operator Registration submittal requirements within 90 days after the effective date of this article; or, if not already operating wells in Larimer County, within 60 days after assuming responsibility for operating existing O&GFs. Operator registration must be updated and renewed annually by July 1.
Annual Operator Registration submittal requirements shall include:

1. Updated Emergency Response Plans as required by 11.3.8;
2. Updated leak detection and repair plan as required by 11.3.4;
3. List of all wells and production within Larimer County within the past three (3) years;
4. List of any reportable safety events over the past three (3) years as defined by COGCC Rule 602(g) as may be amended. Operator shall also list any root cause analyses conducted and corrective actions taken in response to the incidents, including internal changes to corporate practices or procedures;
5. List of any spills or releases over the past three (3) years; and
6. List of any notices of alleged violations issued by the COGCC or CDPHE over the past three (3) years.

11.3. Standards Required for Oil and Gas Facilities.

11.3.1. General

A. In addition to the standards and requirements of this section, Operators must comply with all other applicable standards and regulations set forth in this Code.

B. All applications for new O&GFs, shall meet all applicable federal, state, and local standards and regulations pertaining to the development and operation of such facilities.

11.3.2. Location Restrictions:

A. Oil and gas locations (well sites and production facilities) shall only be located within the following zoning districts unless a variance is obtained under Section 6.7.3.: A – Agriculture; ACE – Agricultural Commercial Enterprise; O - Open; IH – Heavy Industrial; AP – Airport; and PD-Planned Development and RPD – Rural Planned Development where oil and gas development is a specified use. Class II Water Disposal Wells may only be located in IH – Heavy Industrial Zones.

B. Oil and gas locations shall be at least two thousand (2,000) feet from the property line of any

school facility, hospital, medical clinic, senior living or assisted living facility, multi-family dwelling, or state license daycare as defined by Colorado state law.

C. Oil and gas locations shall be at least two thousand (2,000) feet from the following unless alternative compliance is granted by the Board of County Commissioners as part of a special review application:

1. Building unit(s) that are not subject to a waiver from all building unit owner(s) and tenants explicitly agreeing with informed consent to the proposed oil and gas location;
2. Publicly-maintained trails and trailheads, and Community Park Land, Public Parks, and Regional Park Land as defined in the Land Use Code; and
3. Public water supply surface intakes or public water supply wells.

D. No oil and gas locations may be located between one thousand 1,000' and two thousand 2,000' of any existing or platted residential building units, unless one or more of the following conditions are satisfied:

1. All existing building unit owners and tenants of any of the affected residential properties within 2,000' of the relevant point of measurement explicitly agree with informed consent to the proposed oil and gas location;
2. Any wells, tanks, separation equipment, or compressors proposed on the oil and gas location will be located more than 2,000' from the relevant point of measurement; or
3. The Board of County Commissioners finds, as part of their Special Review of an application, that the proposed oil and gas location and conditions of approval will provide substantially equivalent protections for public health, safety, welfare, the environment, and wildlife resources. The Board of County Commissioners will consider, without limitation:
    a. The extent to which the operator provides an alternative compliance proposal through oil and gas location design and any planned practices, preferred control technologies, and conditions of approval to avoid, minimize, and mitigate adverse impacts, considering:
        i. Geology, technology, and topography;
        ii. The location of receptors and proximity to those receptors; and
        iii. The anticipated size, duration, and intensity of all phases of the proposed oil and gas operations at the proposed oil and gas location.
    b. The Operator's alternative location analysis conducted pursuant to §11.2.2.B;
    c. Related oil and gas location siting and infrastructure proposed;
    d. How O&GFs associated with the proposed oil and gas location are designed to avoid, minimize, and mitigate impacts on the affected properties; and
    e. The Operator's actual and planned engagement with nearby residents, property owners, and businesses to consult with them about the planned oil and gas operations.
4. All working pad surfaces proposed within the County shall be at least five hundred (500) feet from the following unless a variance is obtained:
    a. Centerline of any stream, creek, or river identified on a U.S.G.S. quadrangle map;
    b. Existing Water Storage Facilities and approved future Water Storage Facilities as defined in the Land Use Code; and
    c. Ditches that are located downgradient and transport water used by, or to augment, a public water supply system.

5. Locating O&GFs within a Federal Emergency Management Agency (FEMA) designated 100-year floodplain shall not be allowed.
6. All existing equipment at an oil and gas location located within a 100-year floodplain shall be anchored as necessary to prevent flotation, lateral movement or collapse or shall be surrounded by a berm with a top elevation at least one (1) foot above the level of a 100-year flood.

E. Required Easements. Prior to the issuance of an oil and gas permit, an Operator must obtain a surface use agreement from the surface owner, or otherwise demonstrate legal right to occupy the surface, as well as demonstrate that easements or other protections are in place that will prevent the prohibited land uses within the "Setbacks from Oil and Gas Facilities" listed in §2.9.4.G.

11.3.3. Air Quality

A. **An Air Quality Mitigation Plan** shall be submitted with all O&GF applications to demonstrate how the development and operation of the facility will minimize and mitigate adverse impacts to air quality, and will demonstrate compliance with and implementation of standards in §§11.3.3 and 4.11 of this Code.

B. Air Quality Monitoring. The air quality mitigation plan will include a section on air quality monitoring that describes how the Operator will conduct baseline monitoring prior to construction of the O&GF. The monitoring plan shall also describe how the Operator will conduct high frequency monitoring and collect periodic canister samples (or equivalent method capable of speciating air samples) during the drilling, completion, and production phases of development. Air pollutants monitored shall include methane and total VOCs (including BTEX). At Operator's cost, a third-party consultant approved by the County shall conduct baseline and ongoing air sampling and monitoring. Such sampling and monitoring shall comply with the following requirements:

1. Baseline monitoring shall be conducted within 500 feet of a proposed O&GF over a 30-day period. Baseline monitoring shall track levels and changes in monitored air pollutant concentrations. Baseline monitoring data shall be provided as part of the Oil and Gas permit submittal.

2. High frequency monitoring for hydrocarbons shall occur at frequencies of no less than once per hour during drilling and completion activities. Each hydrocarbon monitor shall include a sampling device to automatically collect a speciated air sample when the monitor levels reach a threshold concentration level defined by the third-party consultant or in response to a request by Larimer County Department of Health and Environment (LCDHE). Meteorological monitoring is also required during the time period that air quality monitoring is conducted. High frequency monitoring of production operations will continue until three years have passed from the date the last well drilled on the site has entered the production phase, unless a school, licensed child care center, hospital, or residence is within 1,000' of the edge of the well site. In such instance, high frequency monitoring shall be required until all wells are plugged and abandoned. Continuation of high frequency monitoring may also be required at the discretion of the Director if repeated emissions at threshold concentrations are detected or as a result of repeated odor violations.

3. In the event a speciated sample is triggered, the County shall be notified as required by

the Director. Depending on the circumstances, expedited lab analysis may be required.

4. The air quality monitoring plan shall meet the minimum requirements of AQCC Regulation 7 section VI.C. and receive approval from the Air Pollution Control Division prior to beginning air quality monitoring at the permitted site of the O&GF.
   a. When submitting the air quality monitoring plan to APCD, the operator shall submit at least 90 days in advance of the pre-drilling monitoring to account for the County's 30-days of pre-drilling air quality monitoring requirement.
   b. The air quality monitoring plan submitted to APCD for review shall include the pollutants identified in § 11.3.3.B.
   c. APCD will review the monthly reports of the air quality monitoring plan through the 6 months of early production. After the 6-months, the Operator shall retain a third-party consultant to implement the approved monitoring plan to monitor air quality for the timelines identified in § 11.3.3.B.2. Monthly reports would then be submitted to the County rather than APCD by the last day of the month.

C. The Air Quality Mitigation Plan must consider the cumulative impacts to existing air quality including ambient air quality standards for ground-level ozone, meeting oil and gas sector greenhouse gas reduction targets, and the cumulative impacts of all approved and existing oil and gas operations within the County. The cumulative impacts plan prepared for the COGCC may be used to meet this requirement.

D. In addition to all federal and state laws, rules and regulations, applications for O&GFs shall demonstrate how exploration, construction, and standard operations of an O&GF will comply with the rules and regulations of the Colorado Air Quality Control Commission (AQCC). Information to be provided shall include all appropriate applications of notifications and permits for sources of emissions.

E. Reduced Emission (Green) Completions, as defined in COGCC Rule 903.c.1, as may be amended, shall be used for all completions and well workovers.

F. The Following Air Quality Best Management Practices shall be required unless an equal or better system exists:

1. Zero emission desiccant dehydrators.
2. Emission controls of 98% or better for glycol dehydrators.
3. Pressure-suitable separator and vapor recovery units.
4. Zero emission pneumatic devices.
5. Automated tank gauging.
6. Require dry seals on centrifugal compressors.
7. Routing of emissions from rod-packing and other components on reciprocating compressors to vapor collection systems.
8. Control emissions by 98% during storage tank hydrocarbon liquids loadout (i.e. loading out liquids from storage tanks to trucks).
9. Reduction or elimination of emissions from flowline maintenance activities such as pigging, including routing emissions to a vapor collection system.

G. To the extent used, all combustion devices including flares, thermal oxidizers, or emission control units shall be designed and operated as follows:

1. Any flaring or combustion shall utilize a flare that has a manufacturer specification of 98% destruction removal efficiency or better;

2. The flare and/or combustor 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 minute in any fifteen minute period during normal operation, pursuant to EPA Method 22. Visible emissions do not include radiant energy or water vapor;
3. The flare and or combustor shall be operated with a flame present at all times when emissions are vented to it;
4. All combustion devices shall be equipped with an operating auto-igniter;
5. If using a pilot flame ignition system, the presence of a pilot flame shall be monitored using a thermocouple or other equivalent device to detect the presence of a flame. A pilot flame shall be maintained in the flare's pilot light burner at all times when emissions are routed to the flare. A surveillance system shall be in place to monitor the pilot flame and shall activate a visible and audible alarm in the case that the pilot goes out; and
6. If using an electric arc ignition system, the arcing of the electric arc ignition system shall pulse continually and a device shall be installed and used to continuously monitor the electric arc ignition system.

H. 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.

I. O&GFs shall be equipped with electric-powered engines for motors, compressors, drilling and production equipment, and pumping systems unless no adequate electricity source is available, or it is technically infeasible.

J. Air quality requirements for both new and existing facilities.

1. New and existing O&GF shall utilize operational provisions to the extent practical to reduce emissions on Air Quality Action Advisory Days posted by the CDPHE for the Front Range area. The provisions shall include how alerts are received, outline specific emission reduction measures, and include requirements for documenting the measures implemented. Measures should include:
   a. Minimizing vehicle traffic and engine idling,
   b. Reducing truck and worker traffic,
   c. Delaying vehicle refueling,
   d. Suspending or delaying use of fossil fuel powered equipment,
   e. Postponing construction and maintenance activities unless repairing identified leaks or releases,
   f. Postponing well maintenance and liquid unloading that would result in emission releases to the atmosphere, and
   g. Postponing or reducing operations with high potential to emit VOCs of NOx.
2. Venting is prohibited except as allowed in COGCC rules.
3. Flaring is prohibited except as allowed in COGCC rules. When allowed, flaring shall comply with § 11.3.3.G.

11.3.4. Leak Detection and Repair

A. The provisions of §11.3.4 are applicable to both new and existing O&GF.

B. **A Leak Detection and Repair Plan** shall be submitted with all O&GF applications and updated at least once every three years as part of an Operator's annual registration. The plan shall disclose techniques, methods and protocols that will be utilized at the proposed O&GF to identify, prevent, contain, document, repair, and report leaks, and shall demonstrate how it will comply with and implement the standards in this §11.3.4.

C. Operators shall conduct leak detection and repair inspections at every O&GF a minimum of once every year or at greater frequencies as required by the APCD (Air Pollution Control Division) for the emission source using modern leak detection technologies (infrared cameras, etc.) and equipment. The results of said inspections, including all corrective actions taken, shall be reported to the LCDHE and County Local Government Designee (LGD) upon request.

D. Repair of leaks shall occur within 72 hours of detection. If a leak is not repaired within 72-hours, the Operator must use other means to stop the leak including, but not limited to, isolating the component or shutting in the well, unless such other means will cause greater emissions. If it is anticipated that a repair will take longer than 72 hours, the Operator shall provide a written explanation to the LCDHE and the LGD as to why more time is required and how the leak will be contained.

E. Equipment leaks that pose an imminent safety risk to persons, wildlife, or the environment require the Operator to take the most appropriate safety response action, which may include shut down of the affected equipment or facility and not be allowed to resume operation until the Operator has provided evidence that the leak has been repaired.

F. At least annually, Operators shall provide a 2-week notice of a routine leak inspection to the LCDHE and LGD inviting them to attend and observe the inspection.

11.3.5. Odors

A. **An Odor Mitigation Plan** shall be required for all O&GF applications indicating how the operations will prevent odors from adversely impacting the public and wildlife and further demonstrating compliance with the standards in this §11.3.5.

B. New and existing oil and gas operations shall comply with the AQCC Regulation No. 2 Odor Emission, 5 CCR 1001-4, Regulation No. 3, 5 CCR 1001-5, and Regulation No. 7, 5 CCR 1001-9 Sections VII and VIII and this §11.3.5.

1. If a resident within ½ mile (2,640 feet) of an O&GF complains of odor (either directly to the Operator, to the COGCC, or to the County) Operator shall determine whether the odor is caused by Operator's operations. Operator will provide a complete description of all activities occurring at the oil and gas facility at the time of the complaint. Operator shall report its conclusions, including the factual basis for the conclusions, to the County and the complainant within 72 hours of the complaint. If the Operator or County determines that the odor is caused by Operator's operations, Operator shall resolve the odor concern to the maximum extent practicable within 24 hours of receiving the complaint.

2. Oil and gas facilities must not emit odor detectable after dilution with two (2) or more volumes of odor free air at any occupied residence. Two odor measurements shall be made within a period of one hour – these measurements being separated by at least

fifteen (15) minutes and taken 25 feet from the exterior wall of the residence.

3. If it is determined that the operator caused odors in violation of County odor requirements, Operators may be required to cease or change operations, notify affected residents, and/or temporarily relocate residents until the O&GF is no longer causing a violation.
4. For both existing and new O&GF, the Operator shall communicate the schedule/timing of well completion activities to all residents within 2,000 feet by mail. Notifications shall be sent between seven and 21 calendar days prior to the start of completion activities.
5. If odor persists after an Operator complies with §11.3.5.B.1, and there are reasonable grounds to believe the O&GF is causing the odor, the County may require the Operator to conduct additional investigation, which may include audio, visual, and olfactory inspections or instrument based (e.g., infrared camera) leak inspections, and take appropriate corrective action based on the results of investigation and the severity of odor.
6. In response to odor complaints the County may require an Operator to collect and analyze a speciated air sample to measure for volatile organic compounds or hazardous air pollutants known to cause potential health risks and have acute health guideline values identified by the Agency for Toxic Substances and Disease Registry and/or CDPHE to further evaluate the risk of the odor. Speciated air sample collection shall be done utilizing a third-party vendor approved by the County.

C. The Odor Mitigation Plan shall include investigation and control strategies which shall be implemented upon receipt of an odor complaint(s), the determination that the O&GF is causing the odor, or as required by the County depending on the size, location, and nature of the facility. These odor control strategies may include the following:

1. Odorants, that are not a masking agent, shall be added to chillers and/or mud systems.
2. Additives to minimize odors from drilling and fracturing fluids except that Operators shall not mask odors by using masking fragrances.
3. The utilization of filtration systems and/or additives to minimize, not mask, odors from drilling and fracturing fluids in the drilling and flowback processes.
4. Increasing additive concentration during peak hours provided additive does not create a separate odor. Additives must be used per the manufacturer's recommended level.
5. The utilization of enclosed shale shakers to contain fumes from exposed mud where safe and feasible.
6. Drilling activities shall utilize minimum low odor Category III or better drilling fluid or non-diesel-based drilling muds that do not contain benzene, toluene, ethylbenzene, or xylene (BTEX). Operator will employ the use of drilling fluid with low to negligible aromatic content during drilling operations after surface casing is set.
7. Wipe down drill pipe as they exit the well bore each time.

11.3.6. Water Quality and Water Bodies

A. A Water Quality Report/Plan shall be submitted with all O&GF applications. The report/plan shall demonstrate how the development and operations of the facility will avoid adverse impacts to surface and ground waters in Larimer County, identify all private and community permitted water wells of public record within ½ mile (2,640 feet) and demonstrate compliance with and implementation of standards in §11.3.6 of this Code and

the LUC Supplemental Materials.

B. Baseline and subsequent water source tests, as required by and submitted to the COGCC and CDPHE, shall be provided to the LCDHE and the LGD for the life of the facility and any post-closure assessments, unless the owner(s) of the water well objects in writing.

1. Operators will test for analytes listed in Table 11-1 in addition to the analytes tested pursuant to COGCC rules.

2. Operator shall offer non-confidential baseline and subsequent water source tests free of charge to all well-owners of public record within ½ mile (2,640 Feet) from O&GF.

C. The application shall provide documentation indicating how the COGCC water quality protection standards are being implemented.

D. The requirements of this §11.3.6 shall not prevent discharges reviewed and permitted by the CDPHE Water Quality Control Division, the COGCC, the EPA, and the Army Corps of Engineers.

TABLE 11-1

GENERAL WATER QUALITY
Alkalinity, Conductivity & TDS, pH, Dissolved Organic Carbon (or Total Organic Carbon), Bacteria, Perfluorinated Compounds (PFCs), and Hydrogen Sulfide
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.

11.3.7. Risk Management

A Risk Management Plan shall be submitted with all O&GF applications. The plan shall include risk identification, frequency, 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 an accident/loss occurs. Operators shall periodically update and revise the plan, but at least every three years and after any incident listed in §11.3.9.

- **A.** Operator shall develop a risk identification in a risk table which will identify the particular site by name, describe the risk and its frequency, identify any health, safety, or environmental impact, identify any impact to Operator's development schedule, provide a description of the risk area and associated factors, and whether it is an unmitigated or mitigated risk.
- **B.** Operator shall assign persons or entities under its control or direction to have responsibility for managing the risk identified and the plans support the risk mitigation. Such assignment shall not limit the Operator's responsibility.
- **C.** Operator shall identify any planned mitigation response (including emergency response, tactical response, and notifications) for certain identified risks.
- **D.** Operator will implement a risk management compliance and audit program. Audits will be conducted at least every three years as part of the updating of the Risk Management Plan. The Operator will provide adequate supporting rationale when proposing an alternative audit frequency. 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 County.
- **E.** County may retain outside consultants, at Operator's cost, to review Risk Management Plan and may require modifications to Risk Management Plan based on its review.

11.3.8. Emergency Response

- **A.** **An Emergency Response Plan** shall be submitted by every Operator with its annual registration and with all O&GF applications. In preparation of the Emergency Response Plan, Operator shall engage with emergency responders and prepare a plan that includes, without limitation, documentation of the communications and coordination with the County and plans for the evacuation of schools and any person within a ½ mile (2,640 feet) radius from the oil and gas location. The Emergency Response Plan must detail all criteria for persons to be notified in the event of an emergency and training for first responders.

    1. Operator shall complete and implement all components of a detailed Emergency Response Plan subject to the approval of the County's Director of Emergency Management and the applicable fire district must approve of the Emergency Response Plan ("Plan") before the Drilling Phase commences.

    2. Operator shall review the plan annually and file any updates with the County's Emergency Manager and the applicable fire district. If no updates to the Plan are made then Operator shall provide notice of "No Change" in its annual registration.

    3. The Plan shall include:

a. Name, address and phone number, including 24-hour numbers for at least two (2) persons responsible for field operations as well as the contact information for any subcontractor of Operator engaged for well-control emergencies;

b. A process by which the Operator notifies neighboring residents and businesses within ½ mile (2,640 feet) to inform them about the on-site operations and emergencies and to provide sufficient contact information for surrounding neighbors to communicate with the Operator;

c. Detailed information addressing each category of emergency that has a reasonable potential to occur at the operation and to be severe enough to present an immediate danger to public health, safety or welfare, including without limitation: explosions; fires; gas; oil or water pipeline leaks or ruptures; hydrogen sulfide or other toxic gas emissions; hazardous material vehicle accidents or spills; and natural disasters. Examples of the most likely and worst-case scenarios should be provided, including information on the potential response scenarios;

d. An emergency evacuation plan for the working pad surface and a plan to evacuate any person up to ½ mile (2,640 feet) of the working pad surface;

e. 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 County-approved plan shall be reported to the local dispatch and the COGCC Director in accordance with COGCC regulations;

f. Detailed information identifying emergency access, and health care facilities anticipated to be used;

g. A project-specific plan for any project that involves drilling or penetrating through known zones of hydrogen sulfide gas;

h. A provision obligating the Operator to reimburse the appropriate agencies for their expenses incurred in connection to any emergency response in connection to an oil and gas facility;

i. 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; and

j. Emergency shutdown protocols and procedures to promptly notify the County of any shutdowns that would have an impact to any area beyond the confines of the working pad surface.

4. Within 60 days of the start of production, Operator will provide an as-built facilities map in a format suitable for input into the County'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. The information concerning flowlines and isolation valves shall be marked and treated as confidential and shall only be disclosed in the event of an emergency or to emergency responders or for the training of emergency responders.

5. The Operator shall have current Safety Data Sheets (SDS) for all chemicals used or stored on a Well Site. The SDS sheets shall be provided immediately upon request to County officials, a public safety officer, or a health professional as required by COGCC Rules.

6. All training associated with the Plan shall be coordinated with the County and the fire districts within the County.

B. **A Will-Serve Letter** from the applicable fire district(s) shall be submitted with all O&GF applications. The letter shall state that the Operator has agreed to provide adequate emergency response equipment, any necessary training, or fee-in-lieu satisfactory to the district, to adequately respond to potential events that may result from operations;

C. **A Resource Mobilization/Cache Plan** shall be submitted with all O&GF applications to ensure emergency responders have available the equipment necessary to respond to any emergency identified in the emergency response plan, which shall provide that the equipment be stationed in locations as to be readily available for any emergency for any O&GF covered by the plan.

11.3.9. Incident and Accident Reporting

A. Emergency reporting: If public health, safety, welfare, the environment, or wildlife resources are threatened, the Operator responsible for the operation causing such threat will immediately notify the appropriate emergency responders, the County, the COGCC, and the surface owner orally.

B. Safety Event reporting: Within twenty-four (24) hours of the cessation of any reportable safety event, as defined by the COGCC in Rule 602(g), as may be amended, or any accident or natural event involving a fire, explosion or detonation requiring emergency services or completion of a COGCC Form 22, Operator shall submit a report to the County that includes the following, to the extent available and relevant: fuel source, location, proximity to residences and 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 within a specified amount of time.

C. The County 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. The root cause analysis shall be prepared and submitted to the County no later than 30 days of the request.

D. Any spill or release of unrefined and refined petroleum products, hazardous substances, fracking fluids, E&P waste, or produced fluids of greater than 25 gallons outside of secondary containment areas on an O&GF, including those thresholds reportable to the COGCC and CDPHE, shall upon discovery, be immediately reported to the National Response Center and CDPHE as well as the following Local Emergency Response Authorities in Larimer County:

1. Larimer County Sheriff – Public Safety Answering Point (PSAP) (9-1-1)
2. Larimer County Department of Health and Environment,
3. Local Fire Department/District,
4. Local Municipal Police Department if within a ½ mile (2,640 feet) of a County or Town,
5. Larimer County Oil and Gas LGD, and
6. Larimer County Local Emergency Planning Committee (within 24-hours).

11.3.10. Spills and Releases

A. **A Spill Prevention and Containment Plan** shall be submitted with all O&GF applications. The plan shall disclose techniques, methods, and protocols to be utilized at the proposed O&GF to prevent, contain, document, and report any spills or releases, and shall demonstrate compliance with and implementation of the standards in this §11.3.10.

B. Secondary containment shall be required and shall conform to the requirements of the COGCC rules and standards.

C. Unloading areas shall be designed to contain potential spills or direct spills into other secondary containment areas

D. Containment systems constructed of steel rimmed berms, or similar impervious surfaces that are equal to or better, shall be used for all secondary containment areas. Operator will be required to provide a demonstration and/or data to support the use of "similar impervious surfaces."

E. All spills or releases, whether reportable or not, shall be cleaned up immediately and to the satisfaction of the local emergency response authorities, listed in the Spill Prevention and Containment Plan.

11.3.11. Noise

A. **A Noise Report and Mitigation Plan** shall be required for all O&GF applications. The plan shall demonstrate how the operations will mitigate noise and vibration impacts to comply with the noise standards contained in this §11.3.11. The report and plan shall include the following:

1. A minimum five-day (two days being the weekend day) baseline noise analysis.

2. Modeled maximum A- and C-weighted decibel levels for all phases of development shall be presented using contour maps from the O&GF site (combining noise sources) at 350 feet, 500 feet, 1000 feet, 2,000 feet, and to the property line of the adjacent properties. Contour maps shall be provided that demonstrate both unmitigated and mitigated decibel levels.

3. A plan of proposed mitigation measures to be implemented by the O&GF during each phase of development shall be provided to ensure compliance with the maximum permissible noise levels as listed in §11.3.11.B below.

B. Noise generated from both new and existing O&GFs shall comply with the following maximum permissible noise levels appropriate for the Zone Area Designation of the adjacent land uses as determined by the County. Zone Area Designations are defined by C.R.S. 25-12-102 Noise Abatement and will be used as part of the County's determination for surrounding land uses and may be different than the County's zone districts.

Table 11-2: Maximum Permissible Noise Levels		
Zone Area Designations	**7:00 am to next 7:00 pm**	**7:00 pm to next 7:00 am**
Residential/Agricultural/Rural	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)
All Areas	60db(C)	60 db(C)

In the hours between 7:00 a.m. and the next 7:00 p.m., the noise levels permitted above may be increased by ten (10) db(A) for a single period of not to exceed fifteen minutes in any one-hour period. Night-time levels between 7:00 p.m. and the next 7:00 a.m. shall not be exceeded therefore requiring strategic planning of noise-inducing activities to be conducted between 7:00 a.m. and 7:00 p.m. at the site.

C. Sound levels shall be measured at or within 25 feet of the parcel boundary line where the O&GF site is located. When evaluating a noise complaint, the County shall measure sound at or within 25 feet of the parcel boundary line of the O&GF site and other property boundaries which are more representative of the noise impact.

D. During construction, drilling, and completion activities, the County will require continuous noise monitoring for all oil and gas facilities located with ½ mile (2,640 feet) of any existing residences, schools, or state licensed child cares. The County may adjust this distance based on the location, nature, and size of the facility. The County may require continuous noise monitoring to be conducted by an approved third-party consultant.

E. O&GF activities shall be operated so the ground vibration inherently and recurrently generated does not constitute a nuisance at any point on a boundary line of the property on which the O&GF is located.

F. In situations where low frequency noise from an O&GF is reasonably believed to exceed the standards in Table 11-2, a sound level measurement shall be taken 25 feet from the exterior wall of the residence or occupied structure nearest to the noise source, using a noise meter calibrated to the db(C) scale. If this reading exceeds 60 db(C), the County shall require the Operator to obtain a low frequency noise impact analysis by a qualified sound engineer, including identification of any reasonable control measure available to mitigate such low frequency noise impact to be implemented by the O&GF. Such study shall be provided to the County for consideration and possible action.

G. Construction of O&GFs, including drilling/well completions, recompletions, and pipeline installations, shall be subject to the maximum permissible noise levels specified for light industrial zones for the period within which construction is being conducted. Construction activities directly connected with abatement of an emergency are exempt from the maximum permissible noise levels.

H. Quiet design mufflers (i.e., hospital grade or dual dissipative) or equal to or better than noise mitigation technologies shall be utilized for non-electrically operated equipment.

I. Motors, Generators, and engines shall be enclosed in acoustically insulated housings or covers.

J. To reasonably ensure the Operator controls noise to the allowable levels set forth above, one or more of the following may be required based on the location, nature, and size of the

facility and technical feasibility:

1. Noise mitigation plan identifying hours of maximum noise emissions, type, frequency, and level of noise to be emitted, and proposed mitigation measures;
2. Obtain all power from utility line power or renewable sources;
3. Utilize best practices to minimize noise impact during drilling, completions, and all phases of operation including the use of "quiet fleet" noise mitigation measures for completions;
4. Sound walls around well drilling and completion activities to mitigate noise impacts;
5. Restrictions on the unloading of pipe or other tubular goods between 6:00 p.m. and 8:00 a.m.;
6. The use of electric drill rigs;
7. The use of Tier 4 or better diesel engines, diesel and natural gas co-fired Tier 2 or Tier 3 engines, natural gas fired spark ignition engines, or electric line power for hydraulic fracturing pumps; and
8. The use of liquefied natural gas dual fuel hydraulic fracturing pumps.

K. At any time, the County may require continuous noise monitoring, conducted by an approved third-party consultant, until noise concerns are abated.

L. All noise studies and assessments required by the County shall be completed by a qualified sound professional.

11.3.12. Dust

A. **A Fugitive Dust Control Plan** shall be submitted with all O&GF applications. The plan shall disclose techniques and methods to be utilized at the proposed O&GF to prevent or mitigate fugitive dust generated by the construction and operations of the proposed O&GF and shall demonstrate compliance with and implementation of standards in §§11.3.12 and 4.11 of this Code. All fugitive dust (including dust generated from fracking sand) shall be contained to the maximum extent practicable.

B. Best management practices (BMPs) for the mitigation of dust associated with on-site operations and traffic activities shall be employed at the facility. The BMPs shall be outlined in the Fugitive Dust Control Plan

C. Safety Data Sheets (SDSs) shall be provided with the application for any proposed chemical-based dust suppressants.

D. Unless otherwise approved by the County Health and Engineering Departments, only water will be used for dust suppression activities within 300-feet of the ordinary high-water mark of any body of water.

E. Both new and existing operations shall be conducted in such a manner that dust does not constitute a nuisance or hazard to public health, safety, welfare or the environment.

1. If there is a complaint of dust by a nearby resident or business (including agriculture) that is made directly to the Operator, to the COGCC, or to the County, the Operator shall determine whether the dust is caused by Operator's operations. Operator will provide a complete description of all activities occurring at the oil and facility at the time of the complaint. Operator shall report its conclusions, including the factual basis for the conclusions, to the County and the complainant within 72 hours of the complaint. If the

Operator or County determines that the dust is caused by Operator's operations, Operator shall resolve the dust concern to the maximum extent practicable within 24 hours.

2. If the O&GF is determined to be causing dust that constitutes a nuisance or hazard to public health, safety, welfare or the environment, the County may require additional dust mitigation efforts as necessary and reasonable at any point during Operations.

11.3.13. Access

A. A Traffic Impact Analysis and Routing Plan shall be submitted with all O&GF applications. The plan shall disclose routing alternatives and transportation infrastructure improvements proposed for the proposed O&GF to mitigate projected transportation impacts and demonstrate compliance with and implementation of the standards in this §11.3.13. The Traffic Impact Analysis and Routing Plan will be prepared by a vendor approved by the County. The Traffic Impact Analysis and Routing Plan will include:

1. The proposed haul routes to and from the site, and public and private roads that traverse or provide access to the proposed operation;
2. The estimated number of vehicle trips per day for each type of vehicle, 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;
3. The identification of impacts to County roads and bridges related to O&GF construction, operations, and ongoing new traffic generation.
4. The Traffic Impact Analysis and Routing Plan shall plan to mitigate transportation impacts that will typically include, but not be limited to, a plan for traffic control, ongoing roadway maintenance, and improving or reconstructing County roads;
5. 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;
6. 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;
7. Restriction of non-essential traffic to and from any Well Site 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 2000' of school property.
8. Identification of need for any additional traffic lanes, which would be subject to the final approval of the County's engineer.

B. Designs for private access drives shall conform to the Local Low Volume cross section found in the Larimer County Rural Area Road Standards and shall include the following:

1. The first 50 feet of access drive from the edge of pavement of the adjacent road will be paved, or made of an approved all weather surface, and the remaining portions of the access drive shall be composed of a minimum of 6 inches of compacted Class 5 road base.
2. The access drive entrance shall include returns with a 30-foot radius.
3. A mud and debris tracking pad shall be located at the end of the paved portion of the access drive.

11.3.14. Wildlife

A. O&GF application must contain a map of ecologically important areas including critical wildlife habitat areas, riparian areas, rivers, water bodies, wetlands, potential conservation areas as identified by the Colorado Natural Heritage Program ("CNHP"), Species of Concern listing, Tier 1 and Tier 2 species as identified by the Colorado Parks and Wildlife ("CPW"), and of federally-designated threatened or endangered species, as mapped by other applicable federal and state governmental agencies or discovered upon inspection, on and within one mile of the parcel(s) on which the oil and gas facilities are proposed to be located.

B. New O&GFs will comply with §4.4.4 – Wildlife.

11.3.15. Chemical Handling

A. **A Chemical and Hazardous Materials Report and Handling Plan** shall be submitted with all O&GF applications. The plan shall disclose the type of hazardous and non-hazardous materials and chemicals that will be used on the site of the proposed O&GF, including how they will be handled to prevent spills and demonstrate compliance with and implementation of standards in this §11.3.14.

B. Prior to any hydraulic fracturing activity, the Operator shall provide the County with a copy of the Chemical Disclosure Registry form provided to the COGCC pursuant to the COGCC's "Hydraulic Fracturing Chemical Disclosure".

C. Drilling and completion chemicals shall be removed from the site within sixty (60) days of the drilling completion.

11.3.16. Waste Disposal

A. **A Waste Management and Disposal Plan** shall be submitted with all O&GF applications. The plan shall document the techniques and methods of the proposed O&GF to manage wastes generated on the site and demonstrate compliance with and implementation of the standards in this §11.3.16.

B. Wastewater. The plan shall estimate the amount of water required for each phase of operation, the amount of water expected to be disposed, techniques and methods of the proposed O&GF to manage wastes generated on the site and demonstrate compliance with and implementation of the standards in this §11.3.16.

1. Drilling, completion flowback, and produced fluids shall be recycled or reused whenever technically feasible.

2. If not to be recycled or reused onsite, exploration and production waste may be temporarily stored in tanks for up to 30-days while awaiting transport to licensed disposal or recycling sites. Where feasible, produced water shall be transported by pipeline.

3. The requirements of this §11.3.16 shall not prevent discharges or beneficial uses of water reviewed and permitted by the CDPHE Water Quality Control Division or another agency with jurisdiction.

C. The Operator shall take precautions to prevent adverse environmental impacts to air,

water, soil, or biological resources to the extent necessary to protect public health, safety, and welfare, including the environment and Wildlife Resources to prevent the unauthorized discharge or disposal of oil, gas, Exploration and Production Waste, chemical substances, trash, discarded equipment, or other oil field waste.

D. Oil and gas facilities shall remain free of debris and excess materials during all phases of operation.

E. Burning of debris, trash or other flammable material is not allowed.

F. Temporary storage of materials (up to 30-days) may be allowed with installation of screening to mitigate from aesthetic impacts from public rights-of-way or if requested by landowner.

11.3.17. Lighting and Visual Impacts

A. For all phases of the development of the site, the application shall demonstrate compliance with the visual and aesthetic rules of COGCC and this Code for landscaping, fencing, and lighting set forth in Article 4.0 *Development Standards.*

B. All O&GFs shall be painted with colors that are matched to or slightly darker than the surrounding landscape, and shall utilize paint with uniform, non-contrasting, nonreflective color tones based upon the Munsell Soil Color Coding System.

C. The location of all outdoor lighting shall be designed to minimize off-site light spillage and glare using best practices recognized by the International Dark-Sky Association. See §4.10 *Exterior Lighting*.

D. For all phases of site development, fencing shall be installed for security and visual aesthetics of the use.

E. Sound or screening wall to mitigate for noise during construction and well completion may be required if the O&GF is within 2,000 feet of residential buildings or lots, or if electric requirement is appealed.

F. O&GFs applications shall minimize removal of trees and vegetation on the site.

G. Landscaping and/or fencing for screening and visual quality as viewed from public rights-of-way and neighboring residential areas shall be required within 6 months from the time of well completion and in accordance with requirements for the zoning district.

H. O&GF applications shall demonstrate compliance with weed control requirements of the County Weed District and Forestry Services Department, including for access roads serving the facility.

11.3.18. Well Plugging and Abandonment

A. A Reclamation Plan shall be submitted with an application. The plan shall demonstrate how well abandonment and reclamation shall comply with the COGCC rules and shall include the following information:

1. Removal of all equipment from the well site,
2. Restoration of the site surface to the conditions of the site reclamation plan,
3. Notice to the County LGD of the commencement and completion of such activity, and
4. Coordinates for the location of the decommissioned well(s), and any associated gathering or flow lines, shall be provided with the notice of the completion of well abandonment. This information will also be provided in a format suitable for input into the County's GIS system.

5. The plugged and abandoned well shall be permanently marked by a brass plaque set in concrete similar to a permanent bench-mark to monument its existence and location. Such plaque shall contain all information required on a dry hole marker by the Colorado Oil and Gas Conservation Commission. The exact location will be recorded at the county clerk and recorder.

B. Plugging and Abandonment Notice: is required to ensure adequate public notice and traffic management, and review of final reclamation plans. At least 72 hours prior to commencing plugging and abandonment operations, Operators will provide to the County:

1. A timeline for work to be accomplished;
2. Notice that has been submitted to the surface owner and all residents within 1,000 feet;
3. The Form 4 Sundry Notice supplied to the COGCC to notify state of the plugging and abandonment; and
4. A Final Reclamation Plan in accordance with § 11.3.18 and approved by the surface owner.

11.3.19. Well Liquids Unloading

A. Best management practices, including artificial lift, automated plunger lifts and at least 98% emission reductions when utilizing combustion to control venting shall be employed at all facilities unless technically infeasible.

B. Approved manual unloading shall require on-site supervision of the uploading process.

11.3.20. Flammable Materials

A. The location of flammable materials on site shall conform to all COGCC safety standards and local fire codes.

B. A minimum 15-foot buffer, free of weeds and dried grasses, shall be required around flammable materials or combustion equipment.

11.3.21. Interim Reclamation and Removal of Equipment

A. An Interim Reclamation Plan. Operator shall submit and implement an interim reclamation plan as defined by COGCC rules. The Interim Reclamation Plan will include:

1. A site plan that defines the “working pad surface” limited to those areas necessary for production;
2. A written description of existing vegetation in the area; and
3. A plan for revegetation and any landscaping outside of working pad surface, or for reclaiming to the final land use as designated by the surface owner, and how it will be watered and maintained.

B. There shall be no permanent storage of equipment (i.e., vehicles, trailers, commercial products, chemicals, drums, totes, containers, materials, and all other supplies not necessary for uses on an oil and gas location) on the site of an oil and gas facility.

C. When not in use, or if no longer needed for on-site operations, all equipment not being used on the site shall be removed from the site within thirty (30) days of completion of the work, weather condition permitting.

11.3.22. Maintenance of Machinery

A. Statewide Best Management Practices shall be used to prevent contamination of soils and stormwater runoff, including equipment and vehicle maintenance and fluid containment.

B. There shall be no maintenance of mobile field equipment involving hazardous materials within 300-feet of a water body.

C. Any fueling on-site shall occur over an impervious surface with a secondary containment berm and sump in case of a spill and shall not occur during storm events.

11.3.23. Flow Lines, Transfer Lines, and Gathering Lines

Any newly constructed or substantially modified oil and gas pipelines (not including temporary water lines) shall meet the following requirements:

A. The use of pipelines to transport liquid production wastes and product is required to the greatest extent practicable.

B. All off-site pipelines transporting process materials, production wastes, product, and any other items used or generated by the facility shall be located to avoid existing or proposed residential, commercial, and industrial buildings, places of assembly, surface waterbodies and designated open spaces. Buried pipelines shall be a minimum of four (4)-feet deep and shall be of detectable material which could include the addition of tracer wire to ensure detection during buried utility locating.

C. All oil and gas pipelines (including flowlines, gathering lines and transmission lines) shall be sited at a minimum of 50 feet away from residential and other occupied buildings, as well as the highwater mark of any surface water body. This distance shall be measured from the nearest edge of the pipeline. Increased setbacks shall be evaluated and required on a case-by-case basis, with the determining locational factor being the size, pressure, and type of pipeline being proposed.

D. Pipelines that pass within 150 feet of residential or other occupied building or the high-water mark of any surface water body shall incorporate leak detection or other mitigation, as appropriate.

E. To the maximum extent feasible, pipelines shall be aligned with established roads in order to minimize surface impacts and reduce habitat fragmentation and disturbance.

F. To the maximum extent feasible, Operators shall share existing pipeline rights-of-way and consolidate new corridors for pipeline rights-of-way to minimize surface impacts.

G. Coordinates of all flow lines, gathering lines, and transfer lines shall be provided to the Community Development Department in a format suitable for input into the County's GIS system depicting the locations and type of above and below ground facilities.

H. Operators shall use boring technology when crossing streams, rivers, irrigation ditches or wetlands with a pipeline to minimize negative impacts to the channel, bank, and riparian areas, except that open cuts may be used across irrigation ditches if the affected ditch company approves the technique.

11.3.24. Temporary Water Lines

A. Temporary waterlines, or other means rather than truck, will be used to transport water to the site for hydraulic fracturing and other purposes to the extent practical.
B. Temporary waterlines shall be buried at all existing driveway and road crossings, or utilize existing culverts, if available.
C. The County must be notified of the location of temporary water lines but they do not require a separate permit.

11.3.25. Financial Assurance

A. Financial Assurance. The Operator shall provide the County with financial assurance as provided in this section and regulations established by the Director pursuant to this section.

1. Administrative Regulations. The Director shall establish administrative regulations for financial assurances consistent with this section. Such requirements shall include, at a minimum, standard language for each type of financial assurance; qualifications for issuing institutions; and procedures for the review, processing, acceptance, replacement, cancellation and termination, use, release, reduction, or aggregation of financial assurances and standby trusts to implement financial assurances. Such requirements shall be reviewed and updated by the Director as needed to meet the intent of this section.

2. Minimum Requirements.

a. Amount. The financial assurance shall be no less than ninety-three thousand dollars ($93,000.00) or the amount required by the COGCC, whichever is higher. multiplied by the number of approved wells on the associated planned well site. The Financial Assurance (including any existing Financial Assurance) shall be adjusted for inflation on January 1, 2022, and on January 1 of each year thereafter. "Inflation" shall mean the annual percentage change in the United States department of labor, bureau of labor statistics, consumer price index for Denver-Aurora-Lakewood, all items, all urban consumers, or its successor index.

b. Term. The financial assurance required by this section shall be provided to the County before the commencement of any work, including Well Pad construction, and shall remain until all wells at the well site have been plugged and abandoned and all OGFs has been adequately reclaimed to COGCC standards, unless the financial assurance is replaced, released or reduced pursuant to administrative regulations established by the Director. No financial assurance shall be released or reduced unless:

i. alternate financial assurance is provided; or

ii. the Director determines that the amount of financial assurance released or reduced is not necessary to ensure the purpose for which it was provided.

c. Type. The financial assurance must be in the form of a surety bond or irrevocable standby letter of credit, or approved combination thereof.

d. Purpose. The Financial Assurance must guarantee, at a minimum, that the Operator will:

i. secure the wells, well sites, associated well site lands and infrastructure; plug

and abandon all wells at the well site in compliance with State law, and reclaim the well site in compliance with State law;

ii. perform all requirements of the Oil and Gas Permit for the OGF;

iii. provide an alternate financial assurance and obtain the County's written approval of such alternate financial assurance upon the issuing institution's cancellation or failure to extend a financial assurance, as provided in this section; and

iv. guarantee that, if the Director notifies the issuing institution that the Operator has failed to do any of the foregoing or the occurrence of any event providing for an authorized use as defined in this section, the issuing institution will pay the amount of the bond or letter of credit into a standby trust fund.

3. State and Federal Bonding Requirements. The financial assurance required by this section may be reduced or waived to the extent the federal or state bonding requirements satisfies the requirements of this section.

B. Insurance. Operator shall comply with these insurance standards to: protect human health and safety; prevent damage to property; prevent unacceptable losses to public finances; and prevent unreasonable interference with the public welfare. These standards are established to improve and to prevent degradation to the quality of life and the general welfare in the County. The Director may waive or alter requirements below if Operator can demonstrate that required coverage is not commercially available or not relevant to the operations proposed in its oil and gas application.

1. The Operator shall maintain or cause to be maintained, with insurers authorized by the state of Colorado and carrying a financial strength rating from A.M. Best of no less than A-VII (or a similar rating from an equivalent recognized ratings agency), at a minimum, the following types of insurance with limits no less than the amounts indicated:

a. Commercial General Liability insurance on an occurrence based form including coverage for bodily injury or property damage for operations and products and completed operations with limits of not less than $1,000,000 each and every occurrence.

b. Automobile Liability insurance with limits of not less than $1,000,000 each accident covering owned, hired, and non-owned vehicles.

c. Workers' Compensation insurance- Statutory Workers' Compensation Coverage for the employee's normal State of employment/hire. Including Employer's Liability insurance - with limits of not less than $1,000,000 Each Accident, Disease - Each Employee, Disease - Policy Limit.

d. Control of Well/Operators Extra Expense insurance - with limits of not less than $10,000,000 covering the cost of controlling a well that is out of control or experiences a blowout, re-drilling or restoration expenses, seepage and pollution damage resulting from an out of control well or blowout as first party recovery for the operator and related expenses, including, but not limited to, loss of equipment and evacuation of residents.

e. Umbrella/Excess Liability - in excess of General Liability, Employer's Liability, and Automobile Liability with limits no less than $25,000,000 per occurrence;

f. Environmental Liability/Pollution Legal Liability insurance for gradual pollution

events, providing coverage for bodily injury, property damage or environmental damage with limits of not less than $5,000,000 per pollution incident. Coverage to include claims arising during transportation and at non-owned waste disposal sites.

2. Operator shall add the County and its elected and appointed officials and employees as Additional Insureds under general liability (including operations and completed operations), auto liability, and umbrella liability.
3. All policies shall be endorsed such that they cannot be canceled or non-renewed without at least 30 days' advanced written notice to Operator and the County, evidenced by return receipt via United States mail, except when such policy is being canceled for nonpayment of premium, in which case ten (10) days advance written notice is required. Language relating to cancellation requirements stating that the insurer's notice obligation is limited to "endeavor to" is not acceptable.
4. Operator shall, prior to permit issuance, deliver Certificates of Insurance reasonably acceptable to the County confirming all required minimum insurance is in full force and effect.
5. Deductibles or retentions shall be the responsibility of Operator. Deductibles or retentions must be listed on the Certificate of Insurance required herein and are subject to the reasonable approval of the County.
6. Operator shall require any of its subcontractors to carry the types of coverage and in the minimum amounts in accordance with the requirements set out in Section B.1 a, b, and c. Operator shall be responsible for any damage or loss suffered by the County as a result of non-compliance by Operator or any subcontractor with this section.
7. If Operator's coverage lapses, is cancelled or otherwise not in force, the County reserves the right to obtain insurance required herein and charge all costs and associated expenses to Operator, which shall become due and payable immediately.

11.4. Appeals

§6.7.2 *Appeals*, of this Code shall provide direction for all appeals to standards, processes, and provisions of this Article 11.0, *Oil and Gas Facilities.*

11.5. Enforcement and Inspections

11.5.1 Compliance.

New and existing O&GFs shall demonstrate compliance with this and all other relevant Sections of this Code. Failure of an Operator to maintain compliance with the County approval of an O&GF may result in the suspension or revocation of the approval pursuant to the procedures in this Code. An Operator will be notified of its failure to comply and given 48 hours to respond or correct the violation. If the Operator does not correct the failure to comply within the 48 hours, the matter may be scheduled for a revocation hearing within 14 days before the Board of County Commissioners. The Hearing to determine whether the Permit should be revoked or suspended shall be after at least 7 days notice to the Operator and 7 days publication in a newspaper of general circulation. At the Hearing, the Board shall

consider the testimony of the Operator and the public regarding whether to suspend or revoke the approval based on the criteria in §11.5.6.G. Any decision to suspend an approval shall also include the corrective measures necessary to purge the suspension.

11.5.2 Right to Enter.

The County reserves the right to inspect any O&GF for compliance. County inspections may occur without Operator present. However, unless urgent circumstances exist, the County will use best efforts to give four (4) hours prior notice to the Operator's contact person at the telephone number on file. Inspections in response to odor, noise, or possible violation of rules may occur as soon as feasible upon receipt of the complaint. Routine inspections will be coordinated with the Operator to allow Operator presence onsite to the extent possible and to ensure the site visit is conducted in accordance with all applicable Operator safety requirements. The County reserves the right to increase required inspections if Operator is found to be non-compliant.

11.5.3 Non-limitation of Actions.

The County retains the right to seek whatever remedy or redress is legally allowable. The County reserves the right to seek an injunction action, mandamus action, or any other legally available mechanism to prevent, mitigate, cease, or deter any activity that is detrimental to the public health, safety, and welfare of Larimer County residents, the environment, and wildlife.

11.5.4 Documentation.

Upon request, Operators will make available to the County all documents, reports, and records required by governmental agencies or otherwise required to be maintained for the purposes protecting the public health, safety and welfare.

11.5.5 Cease and Desist.

A. The Director has the authority to issue a Cease and Desist order, requiring the Operator to stop all affected Oil and Gas operations where either there is (1) an emergency condition necessitating the cessation of activities to prevent harm to public health, safety, welfare, wildlife, or the environment, or (2) three or more documented violations which threaten public health, safety, welfare, wildlife or the environment within a six month time frame.

B. The Cease and Desist order shall be served on the Operator, who may request an appeal to the Board of County Commissioners within seven days, which hearing shall take place within fourteen days of the request.

11.5.6 Fines and Penalties.

A. Any Operator who violates any provision of the Land Use Code may be subject to a penalty issued by the Director.

B. If the Director has reasonable cause to believe that a violation is taking place, and has not been corrected, the Director shall issue a Notice of Violation enumerating the alleged violations. Each separate violation of an individual regulation shall be considered separate infraction, and each day that a violation exists will be considered a separate violation.

C. The Notice of Violation shall identify the facts giving grounds for the violation, the particular provision that is being violated, the potential penalty for such violation, and a demand indicating what action must be taken to remedy the violation.

D. Unless otherwise indicated by the Director, the Operator shall respond in writing to the Notice of Violation within 48 hours providing any proposed remedy and/or defense to the Notice of Violation.

E. Following a review of the response, the Director may either issue a fine, rescind the Notice of Violation, or provide the Operator with additional time to correct the violation. If the Director issues a fine, the amount of the fine will based on the guidance in §11.5.6.

F. If the Operator disagrees with the fine, the Operator may, within fourteen days issuance of the fine, appeal to the Board of County Commissioners pursuant to §6.7.2.

G. Amount of Fine.

The Director has the authority to issue a fine up to $15,000 for each violation and for each separate day. In considering the appropriate fine to issue, the Director shall consider the following mitigating and aggravating factors:

1. Whether the violation resulted in threatened or actual impact to public health, safety, welfare, the environment or wildlife and the degree to which it did so;
2. Whether the violation threatened or actually impacted livestock, wildlife, fish, soil, crops, water, and all other environmental resources and the degree to which it did so;
3. Degree of threatened or actual damage to agricultural lands, public lands, private property, freshwater sources, public drinking water, natural resources, environmental features, or wildlife;
4. The size of any leak, release, or spill;
5. Whether the violation resulted in a significant waste of oil and gas resources;
6. The toxicity of leak or spill;
7. Whether the violation led to death or serious injury;
8. The duration of the violation;
9. Whether the same or similar violations have occurred at the location previously;
10. Whether the Operator has a history of violations of any applicable rules, of similar or different types, at the location or others;
11. The timeliness and adequacy of the Operator's corrective actions;
12. The degree the violation was outside of the violator's reasonable control and responsibility;
13. Whether the violator acted with gross negligence, or knowing and willful misconduct;
14. Whether the violator self-reported and the nature and promptness of the response by the violator;
15. Self-audits or compliance monitoring done by the violator; and
16. Whether violator was cooperative with all agencies involved in working to mitigate the impacts of the violation.

11.5.7 Governmental Immunity and Non-Liability of County.

These regulations shall not be construed to hold the County or any of its employees or officials, acting within the scope of their employment in any manner, responsible or liable for any damages to persons or property resulting from any inspection, enforcement or review as

required by these standards and regulations or resulting from any failure to enforce or inspect, or resulting from the issuance or denial of any building permit, or the institution or failure to institute any court action as authorized or required by these standards and regulations. In enacting these standards and regulations, the Board of County Commissioners intends to preserve all rights of the County, its agencies and departments, its elected and appointed officials and employees to immunity from liability as set forth in the Colorado Governmental Immunity Act, C.R.S. §§24-10-101, et seq.

11.5.8 Judicial Review.

Decisions of the Board of County Commissioners shall be subject to review as applicable pursuant to C.R.C.P. 106(a)(4).

11.6 Fees

Where reimbursement to the County or any other party is required by this section, such reimbursement shall be payable immediately upon invoice. The County may require a deposit to cover such costs.

The following fees are applicable to oil and gas facilities:

A. A Capital Transportation Impact fee.

B. Inspection fees. The applicant for a new OGFs shall agree to provide reimbursement to the County for the full cost necessary to inspect all OGFs owned by the Operator within unincorporated Larimer County. Upon completion of an inspection, the Operator shall receive an invoice for the cost of such inspection. The invoice will include the number of hours expended, cost per hour, and other appropriate incidental costs including, but not limited to, mileage.

11.7 Definitions

Unless otherwise listed herein, the definitions found within the C.R.S. and Colorado Oil and Gas Conservation Commission (COGCC) regulations shall apply.