



The Colorado Department of Public Health and Environment (CDPHE) appreciates the opportunity to comment on this proposal. Please note that the following requirements and recommendations are not intended to be an exhaustive list and it is ultimately the responsibility of the applicant to comply with all applicable rules and regulations. Please also note that CDPHE's failure to respond to any referrals should not be construed as a favorable response.

Hazardous and Solid Waste

The applicant must comply with all applicable solid and hazardous waste rules and regulations.

Solid waste regulations are available here:

<https://www.colorado.gov/pacific/cdphe/swregs>.

Hazardous waste regulations are available here:

<https://www.colorado.gov/pacific/cdphe/hwregs>.

Applicable requirements may include, but are not limited to, testing for and properly disposing of technologically enhanced naturally occurring radioactive materials (TENORM) and other solid or hazardous waste.

If you have any questions regarding solid and hazardous waste, please contact CDPHE's Hazardous Materials and Waste Management Division (HMWMD) by emailing comments.hmwm@state.co.us or calling 303-692-3320.

Water Quality and Conservation

The applicant must comply with all applicable water quality rules and regulations. Water quality regulations are available here:

<https://www.colorado.gov/pacific/cdphe/water-quality-control-commission-regulations>.

Applicable requirements may include, but are not limited to obtaining a stormwater discharge permit if construction activities disturb one acre or more of land or if they are part of a larger common plan of development that will disturb one or more acres of land. In determining the area of construction disturbance, CDPHE's Water Quality Control Division (WQCD) looks at the entire plan, including disturbances associated with utilities, pipelines or roads constructed to serve the facility.

Please use the Colorado Environmental Online Services (CEOS) to apply for new construction stormwater discharge permits, modify or terminate existing permits and change permit contacts.



For CEOS support please see the division website:

<https://www.colorado.gov/pacific/cdphe/cor400000-stormwater-discharge>

or contact:

Email: cdphe_ceos_support@state.co.us or cdphe_wqcd_permits@state.co.us

CEOS Phone: 303-691-7919

Permits Phone: 303-692-3517

WQCD has compliance assistance and guidance materials on their website. There is an Oil and Gas field wide permit guidance that is specifically for construction activities associated with oil and gas. This guidance can be found at

<https://drive.google.com/file/d/1Ds7e9UEEJinxY9I4IjATLh6x08PMwNdz/view>.

Additionally, while CDPHE acknowledges that disposal of flowback and produced water through licensed third-party wastewater injection facilities is the preferred method of disposal, in order to minimize the amount of fresh water used in oil and gas development, we encourage the applicant to develop a plan for using all available means to recycle and reuse these waters beneficially.

If you have any questions regarding water quality, please contact CDPHE's WQCD by emailing cdphe.commentswqcd@state.co.us or calling 303-692-3500.

Air Quality

The applicant must comply with all relevant state and federal air quality rules and regulations. Air quality regulations are available here:

<https://www.colorado.gov/pacific/cdphe/aqcc-regs>.

Applicable requirements may include, but are not limited to, reporting emissions to the Air Pollution Control Division (APCD) by completing an Air Pollutant Emissions Notice (APEN). An APEN is a two in one form for reporting air emissions and to obtain an air permit, if a permit will be required. While only businesses that exceed the Air Quality Control Commission (AQCC) reporting thresholds are required to report their emissions, all businesses - regardless of emission amount - must always comply with applicable AQCC regulations.

Information on oil and gas APENS and permits can be found at

<https://cdphe.stg.colorado.gov/apens-and-air-permits>. In addition to an index of oil and gas forms, guidance, APENs and memos, this website contains an Oil and Gas Industry Emissions Calculation and Regulatory Analysis Workbook to assist operators applying for permits in following approved emissions calculation methods. If you have any questions regarding Colorado's APEN or air permitting requirements or are unsure whether your business operations emit air pollutants, please call the Small Business Assistance Program (SBAP) at 303- 692-3175 or 303-692-3148.



The project area is located within or near the Denver Metro/North Front Range (DMNFR) ozone nonattainment area.¹ Many sources contribute to ozone formation including oil and gas exploration and production. In particular, the use of diesel or gas-powered equipment and devices and the flaring of natural gas produces nitrogen oxides (NOx) as well as additional volatile organic compound (VOC) emissions, which contribute to ozone formation. Emissions from outside of the DMNFR ozone nonattainment area can contribute to ozone formation within the nonattainment area and they can degrade air quality in areas that are in attainment. Combustion engines used for compression are a large source of Carbon Dioxide (CO₂) emissions and leaks from storage tanks and pneumatic devices can result in fugitive methane emissions. CO₂, methane, NOx and ozone are greenhouse gases, which contribute to climate change.

In order to minimize emissions from equipment and devices, CDPHE recommends that the applicant coordinate with the relevant electric utility provider to assess the feasibility of utilizing power from the electric grid to the maximum extent practicable for all drilling and completion activities. If electrically-powered alternatives are not available for a particular function, CDPHE recommends that drill rigs and hydraulic fracturing pumps be fueled by natural gas. If natural gas-powered engines are not feasible, then CDPHE recommends that diesel-powered engines perform at Tier 3 or 4 standards defined in 40 CFR Part 89, or better. CDPHE also recommends that the applicant use non-emitting pneumatic controllers (i.e. no-bleed or instrument air driven).

Currently, natural gas pipelines in the DMNFR ozone nonattainment area are at or near capacity and some operators have requested approval to flare natural gas. In addition to wasting a resource, flaring contributes to ozone formation. CDPHE recommends that the applicant limit venting or flaring of natural gas to upset or emergency conditions, or with prior written approval from the COGCC Director for necessary maintenance operations. Emergency flaring should be controlled with an enclosed combustor with a manufacturer certification of at least 98% destruction efficiency. Additionally, CDPHE recommends that the applicant ensure that adequate pipeline takeaway capacity is available for gas, oil, fresh and produced water prior to completion. This will ensure that closed-loop green completion techniques are utilized to the maximum extent practicable and that the venting or flaring of natural gas will be minimized, thus reducing emissions from the wellsite. CDPHE also recommends that the applicant conduct LDAR inspections as frequently as possible during the drilling and completion phase and at least semi-annually during the production phase at the well site.

CDPHE also recommends that the applicant implement some or all of the following ozone mitigation measures on forecasted high ozone days:

- Postpone flowback if emissions cannot be adequately captured with a vapor recovery unit (VRU);
- Reduce truck traffic and worker traffic;
- Minimize vehicle and engine idling;
- Postpone the refueling of vehicles;

¹ A map of the DMNFR ozone nonattainment area can be viewed on the following website:
https://www.colorado.gov/airquality/ss_map_wm.aspx



- Properly maintain vehicles and equipment;
- Suspend or delay the use of fossil fuel powered ancillary equipment;
- Postpone construction activities;
- Reschedule non-essential operational activities such as pigging, well unloading and tank cleanings;
- Eliminate the use of paints and solvents containing VOCs.

If you have more general questions about air quality, please contact CDPHE's APCD by emailing cdphe.commentsapcd@state.co.us or calling 303-692-3100.

Odors

CDPHE recommends that the applicant evaluate different additive formulations that have the potential to better suppress odors, including but not limited to additives that are not diesel-based. Additionally, the applicant should use a chiller to cool drilling fluid as it is piped through the recirculation system before routing to the suction tanks. The applicant should also evaluate and employ one or more of the following measures where safe and feasible to further reduce the potential for odors and fugitive emissions: covering trucks transporting drill cuttings, enclosing shale shakers to contain fumes from exposed mud, wiping down drill pipes as they exit the wellbore to remove drilling fluids, and ensuring that all drilling fluid is removed from pipes before storage.

Well pads within close proximity to people

On October 17, 2019, CDPHE published the study "Human Health Risk Assessment for Oil and Gas Operations in Colorado."² This study was funded by CDPHE and conducted by ICF International, using actual emissions data collected by Colorado State University along the Front Range and Garfield County. It modeled levels of pollutants that people could be exposed to as a result of oil and gas development and found that short-term exposures to chemicals related to oil and gas development, such as benzene, may cause short-term negative health impacts (e.g. headaches; dizziness; respiratory, skin and eye irritation) during worst-case conditions. The study found that the risk of negative short-term health impacts could occur at all distances modeled, up to and including 2,000 feet, particularly during the drilling, hydraulic fracturing and flowback phases of development. While the study did not find any chronic health impacts (i.e. cancer), it did not rule out the possibility of chronic health impacts because it did not comprehensively measure exposures from multiple well pads in a single community, exposures to VOC emissions from non-oil and gas sources, or other cumulative impacts like particulate matter or noise. Due to these limitations, the study concluded that additional measurements and analysis is needed to understand how closely the models represent real-world conditions. If the proposed well pad is in close proximity to residents, the County may want to consider including a requirement that the operator notify residents in close proximity to the proposed well pad that they can report any health

² The full study as well as a summary of the study can be found on the following CDPHE Oil and Gas Health Information and Response Program website (under the headings "2019: Human Health Risk Assessment for Oil and Gas Operations in Colorado" and "What the 2019 study does and doesn't do"): <http://www.colorado.gov/oghealth>



concerns to CDPHE's Oil and Gas Health Information and Response Program through the program's website (<http://www.colorado.gov/oghealth>) or by calling 303-389-1687.

Polyfluoroalkyl substances in firefighting foams

PFAS are a family of human-made substances that do not occur naturally in the environment. They have been used for decades in food packaging, carpets, personal care items, ski waxes, other household items, and firefighting foam due to their ability to resist heat, oil, stains, grease, and water. Human contact with these chemicals is widespread, and nearly all people have some measurable levels of the chemicals in their blood. Human health toxicity information is only available for about ten of the thousands of these chemicals. However, despite the limited information, this toxicity information suggests that exposure to some PFAS can cause a range of negative health outcomes. Health effects from these chemicals may include pregnancy complications, liver damage, high cholesterol, and others. More research is underway to better understand these health consequences. When PFAS is released into the environment, it can get into water, especially groundwater, and contaminate drinking water supplies. Pursuant to House Bill 19-1279, firefighting foam manufacturers will be prohibited from knowingly selling or distributing firefighting foam to which PFAS chemicals have been added. CDPHE has prepared an action plan summarizing how we will protect Coloradans from risks posed by PFAS.³

Due to the potential for contamination from the use of firefighting foams with PFAS chemicals, the applicant should coordinate with local fire departments to evaluate whether PFAS-free foam can provide the required performance for the specific hazard. If PFAS-containing foam is used at a location, then the applicant should be required to follow best management practices to: properly characterize the site to determine the level, nature and extent of contamination; perform appropriate soil and water sampling to determine whether additional characterization is necessary and inform the need for and extent of interim or permanent remedial actions; and properly capture and dispose of PFAS-contaminated soil and fire and flush water.

Health Equity and Environmental Justice

CDPHE is dedicated to promoting and protecting the health and environment for all Coloradans. As part of those efforts, we strive to achieve health equity and environmental justice.

HEALTH EQUITY is when all people, regardless of who they are or what they believe, have the opportunity to attain their full health potential. Achieving health equity requires valuing all people equally with focused and ongoing efforts to address inequalities.

ENVIRONMENTAL JUSTICE is the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income. With respect to the development, implementation and enforcement of environmental laws, regulations and policies.

³ <https://www.colorado.gov/pacific/cdphe/pfcs>



CDPHE notes that certain projects have potential to impact vulnerable minority and low-income communities. It is our strong recommendation that your organization consider the potential for disproportionate environmental and health impacts on specific communities within the project scope and if so, take action to mitigate and minimize those impacts. This includes interfacing directly with the communities in the project area to better understand community perspectives on the project and receive feedback on how it may impact them during development and construction as well as after completion. We have included some general resources for your reference.

Resources:

[CDPHE's Health Equity Resources](#)

[CDPHE's "Sweet" Tools to Advance Equity](#)

[EPA's Environmental Justice and NEPA Resources](#)

Sincerely,



Sean Hackett
Energy Liaison
Colorado Department of Public Health and Environment

