

Objective Criteria Review Memo PDC Energy Inc. Lawrence 7N66W33 1-8 Form 2A, Document #402170112

This summary explains how COGCC staff conducted its technical review of the PDC Energy Inc. (PDC), Lawrence 7N66W33 1-8, Form 2A, Document #402170112, within the context of SB 19-181 and for the required Objective Criteria. This is a new Location with 8 wells, 11 separators, 10 oil tanks, 6 temporary water tanks, and other production facilities. The proposed construction of this Location meets the following Objective Criteria:

OBJECTIVE CRITERIA MET

- (Criteria #1) Location lies within 1,500 feet of eight Buildings Units (BUs);
- (Criteria #5.c) Location lies within a Sensitive Area for water resources; and
- (Criteria #8) Location with storage of hydrocarbon or produced liquid in more than 18 tanks or in excess of 5,200 barrels.

COGCC staff met with the Director to discuss whether the Objective Criteria were sufficiently addressed and whether the Form 2A could be approved with the proposed Best Management Practices (BMPs) and applied Conditions of Approval (COAs). The following sections provide details regarding the evaluation of each criterion.

Criteria #1: Oil and Gas Locations within 1,500 feet of a Building Unit.

Site Specific Description of Applicability of Criteria 1: The Location is within 1,500 feet of eight Building Units. The closest building unit is approximately 718 feet southwest of the Location. The seven other Building Units are 830 feet northwest, 852 feet northeast (owned by the Surface Owner), 904 feet north, 919 feet southwest, 1,220 feet northwest, 1,320 feet northwest, and 1,365 feet south.

Site Specific Measures to Address Criteria 1: PDC provided the following BMPs to mitigate impacts from nuisance conditions to the occupants of the Building Units.

1) PDC provided information on permanent and temporary oil and gas facilities and equipment operated in a manner that odors do not constitute a nuisance or hazard to public welfare. PDC proposes using Group II low VOC oil based mud (OBM) for the production string drilling. PDC will comply with the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division (APCD) Regulation No. 2 Odor Emission, 5 C.C.R. 1001-4, Regulation No. 3 (5 C.C.R. 1001-5), and Regulation No. 7 Section XVII.B.1 (a-c) and Section XII. PDC states that they will use closed, upright tanks to store the OBM, will remove drill cuttings continuously using trucks to haul cuttings during daylight hours, and will not stockpile cuttings onsite to keep the cuttings volume to a minimum in an effort to reduce odor.

2) PDC provided Notice pursuant to Rule 305.c, regarding meetings on the proposed Location. PDC sent "Reach Out" letters to all Building Unit owners within 1,500 feet of the Location in February 2019. PDC also held follow-up phone conversations with all eight Building Unit owners to discuss the Reach Out letter. Among the concerns discussed with the Building Unit owners was noise and lighting mitigation, planned equipment on the location, the Access Road, and timing of operations. Several Building Unit owners expressed appreciation that PDC would be removing an existing production facility that is currently closer to their homes. PDC has provided a BMP indicating they will send out a CDPHE Health Study Notice with the Health Study fact sheet to all Building Unit owners and occupants within 2,000 feet of the Location before construction commences.

3) PDC plans to construct a multi-well pad and improved lease access road off of CR 29 for all heavy truck traffic and rig moves along with drilling operations and maintenance equipment. PDC has an approved Weld Oil and Gas Location Assessment (WOGLA) permit and will obtain any necessary Access, Right-of-Way, or Traffic Control Permits. PDC plans to transport oil from this location via pipeline and LACT, to reduce traffic, emissions, and minimize onsite storage.

4) PDC conducted a baseline noise survey for site specific noise modeling to determine if any mitigation measures are warranted, reviewed the data for potential receptors within 1,500 feet of the Location, and noted five buildings of concern within the Buffer Zone to the southwest, northwest, and northeast. Light and sound mitigation, such as sound walls, straw bales, or customized semi-trailers, will be installed to the north, south, east, and west of the Location.

5) PDC will operate in a manner so that dust does not constitute a nuisance or hazard to public welfare. Practices will include use of speed restrictions on lease roads, regular road maintenance, restriction of construction on high-wind days, and silica dust controls when handling sand used in hydraulic fracturing operations. PDC will coordinate dust mitigation with the county on gravel roads, and place road base where allowed by the surface owner around tanks and wellheads to minimize dust.

6) PDC will have contractor lights turned downward away from BU within the 1,000 foot Buffer Zone. Sound walls or straw bales will screen lights as well. Use of an oil pipeline and LACT, reduction of the number of tanks, and the installation of VRU and VOC combustors will reduce emissions.

Criteria 1 Summary:

PDC has proposed BMPs for controlling odor, traffic, light, emissions, noise, and dust through transporting oil via pipeline to reduce truck traffic, installing road base on the Location and the access road, reducing the number of tanks onsite, and installing VRU and VOC combustors to reduce emissions. Light sources will be directed down and away from BUs within 1,000 feet and PDC will restrict speed and maintain lease roads to reduce noise, dust, and alleviate traffic complaints.

Criteria #5.c: Oil and Gas Locations within a Sensitive Area for water resources.

Site Specific Description of Applicability of Criteria 5.c: The Location is within a Sensitive Area for water resources. The closest down gradient water resources are nearby irrigation ditches. The estimated depth to groundwater is 12 feet below ground surface (bgs).

Site Specific Measures to Address Criteria 5.c: PDC has prepared a stormwater management plan (SWMP) that contains required elements associated with PDC's construction activities, and complies with the Colorado Discharge Permit System (CDPS) General Permit (COR-030000) which restricts sediment and other contaminants allowed in discharge to protect water resources.

1) PDC provided BMPs to protect underlying soil and shallow groundwater by using three foot high berms and a 40 mil liner around all the storage tanks on location. Six foot cellar rings will be placed around each of the wellheads. For shallow groundwater protection, a 40 mil liner will be placed under the drill rig. The rig crew will use catch pans when draining hoses or mud lines. A one foot earthen berm will be constructed around the rig to contain unexpected spills. During completion operations, a 45 mil chemically resistant, non-slip, high density polyethylene liner will be placed beneath trucks, the storage area, and up to the wellheads with ten feet of excess on three sides of the working area.

2) PDC will construct berms or diversion dikes, use site grading, or other comparable measures, sufficient to protect surface water (ditch 48 feet west of the Location) and shallow ground water in proximity of the Location from releases of produced fluids and chemical products that could occur during drilling, completion, and production operations.

3) PDC plans to use partially buried, double-walled, fiberglass produced water vaults that will be installed above an impermeable synthetic or geosynthetic liner system and tied back into the surface liner to prevent groundwater impacts. PDC has attached a Leak Detection Plan per 604c.(2).F to the Form 2A.

4) PDC provided a description of secondary containment berms constructed per Rule 604c.(2).G that will have steel rings with geosynthetic liners, designed and installed to prevent leaks from erosion or routine operation. Berms and secondary containment will be designed to enclose an area sufficient to contain a minimum of 150% of the largest single tank. Tank batteries are inspected on an annual basis for Spill Prevention, Control and Countermeasure (SPCC) Plan compliance. Secondary containment devices shall be sufficiently impervious to contain any spilled or released material. Secondary containment at the production facility is typically visually observed by PDC personnel on a daily basis. Any deficiencies are relayed to appropriate PDC staff and a work order is generated to schedule necessary repairs.

5) A COA has been applied to the Form 2A requiring the operator to line the secondary containment areas for the tanks and separators with an impervious material.

Criteria 5.c Summary:

PDC has prepared a SWMP with BMPs to be implemented prior to conducting soil disturbing activities that will protect surface water and shallow ground water in proximity to the Location. PDC will use a combination of geosynthetic liners, earthen berms, drip pans, and portable containment structures to protect shallow ground water at the Location during drilling, completion, and flowback operations.

PDC will use a combination of control measures; including a leak detection system, use of geosynthetic liners and steel rings for temporary and permanent production tanks and equipment. PDC plans to use partially buried, double-walled, fiberglass produced water vaults installed above an impermeable synthetic or geosynthetic liner system and tied back into the surface liner to prevent shallow groundwater impacts. Inspections will be conducted in accordance with PDC's SPCC plan.

Criteria #8: Oil and Gas Locations with storage of hydrocarbon or produced liquid in more than 18 tanks or in excess of 5,200 barrels

Site Specific Description of Applicability of Criteria 8: PDC is proposing to use 10 oil tanks (538 barrels each) and 6 temporary water tanks (210 barrels each) on the Location. The total volume of the storage tanks will be in excess of 5,200 barrels.

Site Specific Measures to Address Criteria 8: PDC provided BMPs to protect underlying soil and shallow groundwater by using three foot high berms and a 40 mil liner around all the storage tanks on location. PDC will construct berms or diversion dikes, use site grading, or other comparable measures, sufficient to protect surface water (irrigation ditch 48 feet west of the Location) and shallow ground water in proximity of the Location from releases of produced fluids and chemical products that could occur during drilling, completion, and production operations.

PDC provided a description of secondary containment berms constructed per Rule 604c.(2).G that will have steel rings with geosynthetic liners, designed and installed to prevent leaks from erosion or routine operation. Berms and secondary containment will be designed to enclose an area sufficient to contain a minimum of 150% of the largest single tank. Tank batteries are inspected on an annual basis for Spill Prevention, Control and Countermeasure (SPCC) Plan compliance. Secondary containment devices shall be sufficiently impervious to contain any spilled or released material. Secondary containment at the production facility is typically visually observed by PDC personnel on a daily basis. Any deficiencies are relayed to appropriate PDC staff and a work order is generated to schedule necessary repairs. PDC provided a BMP indicating remote shut-in and remote tank level monitoring will be employed.

Criteria 8 Summary:

PDC has prepared a SWMP with BMPs to be implemented prior to conducting soil disturbing activities that will protect surface water and shallow ground water in proximity to the Location. PDC will use a combination of control measures; including a leak detection system, use of geosynthetic liners and steel rings for temporary and permanent production tanks and equipment. PDC plans to use partially buried, double-walled, fiberglass produced water vaults will

be installed above an impermeable synthetic or geosynthetic liner system tied back into the surface liner to prevent shallow groundwater impacts. Inspections will be conducted in accordance with PDC's SPCC plan.

Director Determination: Based on the Objective Criteria review. The Director has determined that this permit application meets the standard for protection of public health, safety, welfare, the environment and wildlife resources set by SB 19-181.