

Objective Criteria Review Memo *Bonanza Creek Energy Operating Company, Pronghorn 13-30, Form 2A 402008729*

This summary explains how COGCC staff conducted its technical review of the Bonanza Creek Energy Operating Company (Bonanza), Pronghorn 13-30, Form 2A, doc no 402008729 within the context of SB 19-181 and for the required Objective Criteria. This proposed Location is a well Location with minimal onsite hydrocarbon storage and is proposed for 13 wells, 32 separators, one maintenance tank, one vapor recovery unit, one VOC combustor, six pigging stations and meets the following Objective Criteria:

1. (Criteria #5.c) The proposed Location lies within a Sensitive Area for water resources (within an area of potential shallow groundwater and within proximity to surface water features).

COGCC staff met with the Director to discuss the Objective Criteria for the Form 2A with the proposed Best Management Practices (BMPs) and applied Conditions of Approval (COAs). The following section provides details regarding the evaluation of this criterion.

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 in a sensitive area due to the potential for shallow groundwater and within proximity to the Sanborne Draw, Riverside Reservoir and mapped wetland areas. Estimated depth to groundwater is at 12 feet based on the static water levels reported in water wells within the vicinity of the proposed Location. Due to the sensitivity of the receptors within the vicinity of the proposed Location, the operator provided an alternative location analysis explaining the leasing and logistical constraints of the alternatives (Attachment Document #1010903). Staff reviewed the alternative location analysis and have concluded that this Proposed Location is the preferred Location. Based on the review of each alternative, two of the alternatives would have placed the proposed Location a greater distance from the wetland (Location C and Location D). However, due to the need to utilize a pumping station along with the extent of the reach of the borehole laterals required to reach the minerals planned for this development, developing the minerals from Location C or Location D would increase the size of the disturbance by 40 percent, would require additional access road and pipeline corridor causing significant habitat fragmentation, would increase the duration of drilling and completion activities and would increase the frequency of workover and maintenance of the wells.

Site Specific Measures to Address Criteria 5.c: Bonanza has placed BMPs on the Form 2A for protection of the shallow groundwater and surface water at the Location. BMPs include the use of a portable containment liner under the drilling rig during drilling activities, use of portable containment beneath the liquid storage and mixing equipment during completions and flowback activity and skid mounted separators with built-in containment within the skids. Bonanza will also install one cross-gradient and one down-gradient monitoring well. The monitoring wells will be sampled prior to spudding the first well and sampled semi-annually throughout the life of the proposed Location. In addition, Bonanza will conduct daily inspections and install remote shut-in capabilities to remotely

monitor well production onsite and activate specific valves, which can shut-in production wells and stop a release at the remote production facility. Furthermore, this proposed Location will utilize a pitless closed-loop system to prevent migration of contaminants into the underlying soil and groundwater resulting from the use of a drilling pit along with a closed-loop pigging system, which eliminates pigging receiver containment, potential releases, and emissions related to open loop pigging methods. To protect the adjacent surface water, the operator has committed to stormwater BMPs including the installation of stormwater controls around the perimeter of the proposed Location prior to construction of the pad and installation of erosion control blankets on the disturbed (non-stabilized) areas, due to the proximity of adjacent surface water features. In addition, the operator has an approved stormwater plan, as approved under the Weld County 1041 Weld Oil and Gas Location Assessment and has committed to the submission of a drainage plan to the local government prior to the construction of the proposed Location.

Summary: Bonanza provided BMPs that address ground water resources and environmental protections. The BMPs include engineering controls (construction, containment and remote shut-in capabilities) and administrative controls (inspections).

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.