

Objective Criteria Review Memo – Mallard Exploration LLC Koloa Pad, Form 2A #402230071

This summary explains how COGCC staff conducted its technical review of the Mallard Exploration LLC Koloa Pad, Form 2A #402230071 within the context of SB 19-181 and for the required Objective Criteria. This proposed Location is for 10 wells, 20 oil tanks, 10 separators, 10 water tanks, and meets the following Objective Criteria:

1. (Criteria 5c) Oil and Gas Locations within: a Sensitive Area for water resources. The location lies in a Sensitive Area for water resources: the distance to the nearest downgradient water feature is 344 feet (low lying, freshwater emergent wetland area) and lies within the Upper Crow Creek Designated Groundwater Basin.
2. (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 (20 oil tanks and 10 water tanks).

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

Site Specific Description of Applicability of Criteria 5c: Based on the technical review and desktop evaluation the location lies in a Sensitive Area for water resources: the distance to the nearest downgradient water feature is 344 feet (low lying, freshwater emergent wetland area) and lies within the Upper Crow Creek Designated Groundwater Basin.

Site Specific Measures to Address Criteria 5c: The Operator has the following BMP's for the location to address lined containment, auto shutoffs, leak detection, and stormwater runoff controls:

- Operator will install an engineered containment system around the tank battery constructed of a perimeter of metal walls around a flexible geotextile base and sprayed with a polyurea liner technology. The liner is then topped with pea gravel. Separators and treaters will be set on top of compacted road base with containment consisting of metal berm walls.
- The Scada system is set-up with alarms that can activate automatic shut-in of the well and system.
- The Lease operators conduct Audible, Visual, and Olfactory (AVO) inspections, which focus on the tanks and vapor control system.
- A sediment trap will be constructed to capture any sediment prior to leaving the location. The sediment trap has been sized in accordance with good engineering practices. A temporary diversion, consisting of a cut swale and compacted earthen berm, will be

constructed along the pad edge and routed to the sediment trap to prevent offsite migration of sediment/contaminant into the nearby surface water features. If necessary, check dams will be constructed within the swale.

- A temporary impermeable synthetic or geosynthetic liner will be utilized under drilling and completions equipment.

Summary: Mallard provided BMPs that address possible impact to the downgradient surface water feature (low lying, freshwater emergent wetland area). The BMPs include lined containment, auto shutoffs, leak detection, and stormwater runoff controls.

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: Based on the technical review and desktop evaluation the location is planned for 20 oil tanks and 10 water tanks.

Site Specific Measures to Address Criteria 8: Operator has included the following Green Completions BMP that lowers emissions:

- Green Completions - Test separators and associated flow lines, sand traps and emission control systems shall be installed on-site to accommodate green completions techniques. When commercial quantities of salable quality gas are achieved at each well, the gas shall be immediately directed to a sales line or shut in and conserved. If a sales line is unavailable or other conditions prevent placing the gas into a sales line, the operator shall not produce the wells without an approved variance per Rule 805.b.(3)C.

Additionally, as part of the required WOGLA application Mallard will coordinate with both the Weld County Office of Emergency Management (OEM) and the Briggsdale Fire Protection District. As there are no Building Units within one mile of the location, impacts to residents from fires or explosions are assessed to be low.

Summary: Mallard provided BMPs that address spill containment, coordination with local government for Emergency Response and Tactical Response Plans, and Green Completion techniques that lowers emissions.

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.