

Laramie 0993-29-01 Well Pad

Dust Mitigation Plan

ECMC Rule 304.c.(5)

ECMC Rule 427. Dust



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1. INTRODUCTION

The Laramie 0993-29-01 Dust Mitigation Plan was developed in compliance with the Colorado Energy and Carbon Management Commission's (referred to hereinafter as ECMC or the Commission) Rule 304.c.(5) *Dust Mitigation Plan* and Rule 427 *Dust* under 400 Series of the Commission's rules. The Laramie 0993-29-01 Dust Mitigation Plan addresses the requirements of ECMC Rule 304.c.(5) as part of the Form 2A Location Assessment Permit Application.

2. LARAMIE 0993-29-01 WELL PAD

Laramie Energy, LLC (Laramie) (Operator # 10433) is pursuing a Form 2A for an Oil and Gas Location Assessment permit in Mesa County, Colorado. The Laramie 0993-29-01 (Laramie 29-01) is a proposed, new location. Laramie is proposing to drill sixteen 16 new directional wells at the Laramie 29-01 in Section 29 of Township 9 South, Range 93 West, 6th P.M. The Laramie 29-01 is adjacent to existing infrastructure, reducing surface disturbance proposed in the 2023 Laramie 0993-29-01 Oil and Gas Development Plan (OGDP).

The site's location is within Laramie's North Vega operations area and will be tied into to existing infrastructure to minimize dust and traffic impacts. Laramie operates support facilities in the area that will accommodate operations at the Laramie 29-01. The surface lands are privately owned. The Working Pad Surface (WPS) buried pipeline Right-of-Way, temporary surface line, and access road will be constructed on Laramie owned surface. A small portion of the Area of Disturbance will be located on the adjacent parcel. Laramie has an established Surface Use Agreement (SUA) with the Surface Owner for the short-term disturbance on the adjacent parcel owner.

Laramie will utilize a closed-loop drilling system at the Laramie 29-01. Only water-based bentonite drilling fluids, not oil-based fluids, will be utilized for the 16 wells. The site will operate in accordance with applicable local, state, and Federal regulations. Proppant (frac sand) will not be utilized at the Laramie 29-01.

The well pad is located 9.8 access/travel miles east of Collbran, Colorado. The Laramie 29-01 is located approximately 4,858 feet south (mapped distance) from the nearest public road, Highway 330.

OGDP Title: 2023 Laramie 0993-29-01 OGDP

Location Name: Laramie 0993-29-01

Legal Description: NENE Section 29, Township 9 South, Range 93 West, 6th P.M.

Location Coordinates: Latitude: 39.254781°; Longitude: -107.784158°

Elevation (Graded): 7463 feet

County: Mesa

General Location: 8.5 mapped miles east of Collbran, Colorado.

Zone District: Agricultural, Forestry, Transitional District (AFT)

Surface Owner: Laramie Energy, LLC – Operator Owned (Working Pad Surface)

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Operations will be conducted in the following phases at the Laramie 29-01: construction, drill rig mobilization, drilling, production installation, completions and flowback (including equipment mobilization, staging, and demobilization), production, interim reclamation, inspections, and final grading/reclamation of the site. Phases may occur simultaneously at the site. Inspection activities will occur during the lifespan of the site. Laramie anticipates that the well pad will remain in production for approximately 30 years, based on the average lifespan of a well site within the North Vega operations area. **Table 1** details the anticipated timeframe for each operational phase.

Table 1. Timeframe for Operational Phases

Phase/Activity /Stage	Timeframe (Days)
Construction	50
Drilling Mobilization	5
Drilling	72
Drilling Demobilization	5
Production Installation	21
Completions Mobilization	10
Completions and Flowback	40
Completions Demobilization	10
Interim Reclamation	14
Production	Up to 30 years
Inspection Activities	Will Occur During All Phases

3. LARAMIE 0993-29-01 WELL PAD DUST MITIGATION PLAN

The Laramie 0993-29-01 Dust Mitigation Plan (DMP) details the treatment of unpaved roads and disturbed surfaces to reduce dust produced by vehicle traffic, and construction activities, or wind. The application of the DMP will reduce airborne particulate matter during operations and vehicular transportation to ensure compliance with ECMC and local jurisdictional requirements.

Laramie implements fugitive dust controls throughout the North Vega operations area. Employees are trained to identify conditions and operate to minimize fugitive dust emissions. The subject pad will comply with standards as stated in ECMC Rule 427 Dust section of the 400 series.

In order to minimize and mitigate fugitive dust, Laramie has incorporated several practices. Appropriate speed limits have been designated for vehicles on unpaved roadways. Restriction of land disturbance construction activity during high-wind days are also enforced. Field employees will notify operations if dust is observed. Water trucks are utilized to wet roadways, as needed, when natural moisture is insufficient to prevent airborne dust. Water trucks apply magnesium chloride or fresh water to roadways depending on location. Laramie’s access roads within the transportation route are treated with fresh water to reduce dust emissions.

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4. SOIL TYPE – ECMC RULE 427.a.(1)

A soils report from the Natural Resource Conservation Service (NRCS) indicates the Laramie 29-01 Area of Disturbance, Working Pad Surface, and access road are composed of two NRCS Map Units: Fughes-Hesperus complex, 3 to 12 percent slopes (Map Unit 39) and Hesperus-Empedrado, moist-Pagoda complex 5 to 35 percent slopes (Map Unit 47).

Table 2. NRCS Map Unit and Disturbance

Disturbance	Map Unit	NRCS Soil Description	Disturbance Per NRCS Soil Map Unit (Acres)
Well Pad	39	Fughes-Hesperus complex, 3 to 12 percent slopes	4.0
	47	Hesperus-Empedrado, moist-Pagoda complex 5 to 35 percent slopes	4.3
Access Road & Pipeline	39	Fughes-Hesperus complex, 3 to 12 percent slopes	1.1
Map Unit		Total Disturbance Per Map Unit (Acres)	
39		5.1	
47		4.3	
Total Acreage Disturbance		9.4	

Fughes-Hesperus complex (Map Unit 39)

The Fughes-Hesperus complex is composed of Fughes and similar soils (60%) and Hesperus and similar soils (25%), and minor components (15%). The Fughes-Hesperus complex occurs in elevation of 7,400 to 7,800 feet and is classified as not prime farmland. Classified as hydrologic soil group C with a very high runoff class. The depth to water table is more than 80 inches.

The Fughes is a well drained clay loam with a high available water supply. The setting landform is terraces and Fughes parent material is alluvium derived from shale and/or colluvium derived from shale.

The Hesperus soil is a well drained loam/clay loam. The available water supply is rated high. The setting landform is alluvial fans and parent material is alluvium derived from shale and/or colluvium derived from shale.

Table 3. Fughes-Hesperus Complex (Map Unit 39) Profile

Location	Composition	Typical Profile	
Area of Disturbance, Working Pad Surface, Pipeline and Access Road	Fughes	A- 0 to 7 inches: clay loam Bt1- 7 to 18 inches: clay loam	Bt2- 18 to 50 inches: clay loam C - 50 to 60 inches: silty clay loam
	Hesperus	H1 - 0 to 7 inches: loam	H2 -7 to 60 inches: clay loam

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Hesperus-Empedrado, moist -Pagoda complex (Map Unit 47)

The Hesperus-Empedrado, moist -Pagoda complex 5 to 35 percent slopes, is identified as Map Unit 47. The Hesperus-Empedrado, moist-Pagoda complex is within the following proposed disturbed areas of the Laramie 29-01: Area of Disturbance, Working Pad Surface, Pipeline, and Access Road.

The Hesperus-Empedrado, moist - Pagoda complex is composed of Hesperus and similar soils (35%) and Empedrado and similar soils (30%), the Pagoda and similar soils (20%), and minor components (15%). The Hesperus-Empedrado, moist-Pagoda complex occurs in elevation of 6,200 to 8,500 feet and is classified as not prime farmland. The depth to water table is more than 80 inches. The available water supply is rated high with a high runoff class.

The Hesperus soil is a well drained clay loam. Hesperus is classified as hydrologic soil group C. The setting landform is mountainsides. The parent material is residuum weathered from sandstone and shale.

The Empedrado, moist soil is a well drained loam/ gravelly sandy clay loam. Empedrado, moist is classified as hydrologic soil group B The setting landform is benches. The parent material is colluvium derived from sandstone and shale and/or residuum weathered from sandstone and shale.

The Pagoda soil is a well drained clay loam/clay and is classified as hydrologic soil group C. The setting landform is mountains & benches and the parent material is colluvium derived from shale.

Table 4. Hesperus-Empedrado, moist -Pagoda complex (Map Unit 47) Profile

Location	Composition	Typical Profile			
Area of Disturbance & Working Pad Surface	Hesperus	H1 - 0 to 7 inches: loam		H2 - 7 to 60 inches: clay loam	
	Empedrado	H1 - 0 to 10 inches: loam	H2 - 10 to 21 inches: clay loam	H3 - 21 to 28 inches: gravelly sandy clay loam	H4 - 28 to 60 inches: loam
	Pagoda	H1 - 0 to 6 inches: clay loam	H2 - 6 to 17 inches: clay loam	H3 - 17 to 27 inches: clay	H4 - 27 to 60 inches: clay

5. PROPOSED VEHICLE SPEED LIMIT – ECMC RULE 427.a.(2)

Vehicles will utilize private and public roads to access the Laramie 29-01. Approximately 1.9 miles of unpaved, existing gravel private lease and access roads will be used to reach the Laramie 29-01. Private access roads are comprised of existing private lease roads and private access on Laramie’s property. Laramie owns and maintains access roads on Laramie own surface. Private access unpaved roads maintained by Laramie within the North Vega operations area will not exceed speeds of 25 miles per hour (m.p.h.) During dry

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conditions or when dust is visible, vehicles will reduce speeds based on conditions. Field employees will notify operations if dust is observed.

6. SOIL DISTURBANCE – ECMC RULE 427.a.(3)

The construction of the Laramie 29-01 will result in approximately 9.4 acres of short-term disturbance, which includes the Area of Disturbance, Working Pad Surface, site-specific access road, and new pipeline segment. Private access roads near the proposed well pad are existing. The Area of Disturbance will be 8.3 acres and the Working Pad Surface will be 3.7 acres.

Construction of the Laramie 29-01 site-specific access road will result in 1.1 acres of new disturbance to construct a new segment of road. Approximately 922 feet of new access road would be constructed to access the subject well pad. Approximately 877 feet of pipeline will be installed within the disturbance of the new access road and will not result in additional disturbance.

The gas pipeline and water gathering line will not result in additional surface disturbance since the pipeline will be installed within the proposed new access road disturbance. The new access road will be constructed on previously disturbed surface.

Interim reclamation will begin after all wells are drilled and completed as planned with production facilities installed at the pad. During interim reclamation, the cut and fill slopes will be reshaped and contoured, reclaiming approximately 6.1 acres. The long-term disturbance associated with this pad will be 3.3 acres for the production phase (2.2 acres for Production Pad Surface plus 1.1 acres for the site-specific access road).

Table 5. Disturbance Acreage

Well Pad	Disturbance in Acres
Area of Disturbance	8.3
Working Pad Surface (included within Area of Disturbance)	3.7
Site-Specific Access Road	1.1
Pipeline Disturbance*	0*
Total Short-Term Disturbance	9.4
Area to be Interim Reclaimed	6.1
Production Pad Surface (after Interim Reclamation)	2.2
Long-Term Disturbance (Production Pad Surface + Site-Specific Access Road)	3.3

*Installation of pipeline will not result in additional surface disturbance since the pipeline will be installed within the proposed access road disturbance.

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7. ACCESS ROAD – ECMC RULE 427.a.(4)

The Laramie 29-01 well pad Working Pad Surface, new pipeline segment, and proposed access road will be located on surface lands owned by Laramie. A small portion of Area of Disturbance will exist on the adjacent parcel.

The site will be accessed by existing private lease roads, located on private surface owned by Jerry Gunderson, and by access roads located on Laramie owned surface. The proposed site-specific access road will connect the proposed well pad to the existing access roads.

The site-specific access road will connect to the existing access roads and will result in 1.0 acres of disturbance. The site-specific access road will be constructed on previously disturbed surface. Laramie will apply gravel to the Laramie 29-01 site-specific access road and well pad. Initial gravel application shall be a minimum of 6 inches. Laramie will provide timely, year-round road maintenance and cleanup of private, Operator owned access roads. A regular schedule for maintenance will include, but not be limited to, blading, ditch and culvert cleaning, road surface replacement, and dust abatement.

Unpaved roads and staging areas operated by Laramie shall be watered as necessary to maintain no visible vehicle travel dust emissions when being used by construction vehicle traffic. Laramie will maintain the site-specific access road and private lease road for the Laramie 29-01.

8. TRUCK TRIPS – ECMC RULE 427.a.(5)

The following **Table 6** summarizes the expected average Vehicles Per Day (VPD) trips and maximum trips per activity for the operational life of the well pad. One (1) vehicle accessing the pad will result in two (2) trips: one trip for entering the site and one trip for leaving the site.

Table 6: Trip Generation – Total Trips Accessing Laramie 29-01 Well Pad

STAGE	TIME INTERVAL (DAYS)	TOTAL MAXIMUM TRIPS GENERATED PER ACTIVITY	AVERAGE VPD TRIPS PER ACTIVITY
Construction	50	280	5.6
Drill Rig Mobilization	5	145	29
Drilling	72	900	12.5
Drilling Demobilization	5	145	29
Production Installation	21	168	8
Completions Mobilization	10	444	44.4
Completions; Flowback	40	1,600	40
Completions Demobilization	10	444	44.4
Production			2
Interim Reclamation	14	64	4.6
Inspections			0.07

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The first 227 days of operations will incur the most vehicular trips, encompassing mobilization, drilling, completions, and flowback activities. After interim reclamation activities, vehicle trips will average 60 trips per month (an average of 1 vehicle accessing the well pad daily).

9. SUPPRESSING FUGITIVE DUST – ECMC RULE 427.a.(6)

During construction and earthwork activities, employees and contractors will report if wind speeds increase, and dust is observed. Laramie will implement dust abate measures, as stated in the DMP, to reduce and prevent dust caused by wind.

To prevent dust from wind when the site is not actively being accessed, Laramie will employ watering. Inactive excavated or graded soils and soil piles shall be sufficiently watered or sprayed with a soil stabilizer to create a surface crust or shall be covered.

Employees and contractors will be notified if weather events that may promote dust are predicted or observed.

Table 7: Fresh Water Sources

Name	Owner	Parcel #	Coordinates: Latitude/ Longitude	Water Source
Groundhog Gulch Pond	Laramie Energy, LLC 1001 17 th Street Suite 1900 Denver, CO 80202	2661-282-00-319	39.251261° / -107.781546°	Pond (Surface Water)
Currier Reservoir	Vander Laan Merial C PO Box 27059 Denver, CO 80227-0059	2657-071-00-003	39.290369° / -107.718387°	Reservoir (Surface Water)
	Takeout - Buzzard Creek Laramie Owned Surface Laramie Energy, LLC 1001 17 th Street Suite 1900 Denver, CO 80202	2661-143-00-288	39.274981° / -107.743452°	
	Takeout - Buzzard Creek Private Owned Surface (Jery Gunderson) and transported via Laramie owned dedicated fresh water gathering lines	2661-201-00-040	39.267529° / -107.788453°	

10. MINIMIZING FUGITIVE DUST – ECMC RULE 427.b.

Laramie will adhere to ECMC Rule 427.b. Laramie will implement fugitive dust controls throughout the North Vega operations area as stated in the Laramie 29-01 Pad Dust Mitigation Plan to minimize dust caused by operations. The Groundhog Gulch Pond is located on property owned by Laramie. Laramie owns the water rights of Groundhog Gulch

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Pond. Water from the pond is an available source when there are no calls on the river. Historically, the Buzzard Creek goes on call during late spring and remains on call until September. During years of reduce precipitation, the water may go on call at Cameo (Colorado River). When Buzzard Creek is not on-call, Laramie is able to fill Groundhog Gulch Pond. Groundhog Gulch Pond is also able to receive irrigation water run-off from Erie Canal during the irrigation season. Fresh water may also be purchased from Currier Reservoir. The Currier Reservoir established water rights is sourced from the reservoir supplied by Sheep Creek. Fresh water transported via truck will be used for drilling activities and/or dust abatement.

11. APPLYING DUST SUPPRESSANT – ECMC RULE 427.c.

Laramie will utilize fresh water and/or magnesium chloride as a dust suppressant depending on conditions and location. Any chemical-based dust suppressant shall be applied per manufacturer’s recommendations and in sufficient quantities to maintain compliance.

11.1. PROHIBITED FLUIDS FOR DUST SUPPRESSION – ECMC RULE 427.c.1.

Laramie will not apply the following fluids for dust suppression as state in ECMC Rule 427.c.(1):

- Produced water
- E&P Waste or hazardous waste
- Crude oil or any oil not specifically designed for road maintenance
- Solvents
- Any process Fluids

11.2. DUST MITIGATION NEAR WATER BODIES - ECMC RULE 427.c.(2)

Laramie will adhere to ECMC 427.c.(2) and will only utilize fresh water (*potable or non-potable*) to conduct dust suppression activities within 300 feet of the ordinary high-water mark of any water body. Fresh water sources are detailed in **Table 7**.

11.3. SAFETY DATA SHEETS – ECMC RULE 427.c.(3)

Laramie will maintain SDS for any chemical-based dust suppressant utilized in within the Laramie 29-01 working pad surface and access road. Records will be made available upon request. Any chemical-based dust suppressant shall be applied per manufacturer’s recommendations and in sufficient quantities to maintain compliance.

12. SURROUNDING AREA - ECMC RULE 427.d.

The DMP was designed to mitigate and minimize dust impacts to any receptors, including, wildlife and vegetation in the surrounding area. There are no Building Units, including Residential Building Units and High Occupancy Building Units, within 2,000 feet of the Laramie 29-01.

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HPH (aquatic sportfish waters) would not be impacted associated with dust but rather the impacts from the type of dust suppressant used (such as mag chloride vs. fresh water). Laramie has committed to using only fresh water for dust suppression within 300 feet of the ordinary high-water mark of Groundhog Gulch Creek during pre-production and production transportation activities associated with the Laramie 29-01 in order to mitigate potential impacts to aquatic sportfish habitat present along Buzzard Creek.

13. CUMULATIVE DUST IMPACTS – ECMC RULE 427.e.

Laramie shall implement dust abatement measures as needed to prevent cumulative dust impacts from vehicular traffic, equipment operations, or wind events. BMPs such as creating efficient travel routes, reducing vehicular travel when possible, and observing wind and soil conditions will mitigate and minimize fugitive dust.

14. BEST MANAGEMENT PRACTICES – ECMC RULE 427.a.(7)

Laramie has adopted the following best management practices to mitigate dust during construction and transportation activities:

- Vehicles will not travel at speeds over 25 m.p.h. on unpaved roads.
- During dry conditions or when dust is visible, vehicular speeds will be reduced.
- Restriction of land disturbance construction activity during high-wind day.
- Field employees will notify operations if dust is observed.
- Water trucks will be utilized to wet roadways, as needed, when natural moisture is insufficient to prevent airborne dust.
- Water trucks will apply magnesium chloride or fresh water to roadways depending on location.
- Construction activities that occur on unpaved surfaces shall be discontinued during periods when activities are causing visible dust plumes that cannot be avoided by approved dust suppression methods.
- Contractor shall conduct a visual inspection of the vehicle wheels and the wheels of the equipment loaded upon each vehicle to assess the presence of dirt.
- Laramie will use fresh water sources for dust suppression within 300 feet of the ordinary high-water mark of any water body within the North Vega operations area.