

**State of Colorado  
Energy & Carbon Management Commission**

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**Document Number:**

**403278317**

**Date Received:**

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**CUMULATIVE IMPACTS DATA IDENTIFICATION**

Per Rule 303, this form and all required components and attachments will be submitted for any Oil and Gas Development Plan.

**Form Type:**  **OGDP**     **Partial 2B - Rule 803.b.(2).A UIC Conversion**

**OPERATOR INFORMATION**

OGCC Operator Number: <u>47120</u>	Contact Name and Telephone:
Name of Operator: <u>KERR MCGEE OIL &amp; GAS ONSHORE LP</u>	Name: <u>Rachel Friedman</u>
Address: <u>P O BOX 173779</u>	Phone: <u>(720) 929-6564</u>
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**OIL & GAS DEVELOPMENT PLAN INFORMATION**

Oil & Gas Development Plan Name: SALAZAR

Oil & Gas Development Plan Docket #: \_\_\_\_\_ Oil & Gas Development Plan ID #: \_\_\_\_\_

Docket Number	Data not required
<u>230500142</u>	

This OGDP is included in a Comprehensive Area Plan. CAP ID #: \_\_\_\_\_

**OIL & GAS LOCATION DATA**

1 Oil & Gas Location Name: Salazar      Number: 5-20HZ      Status: Proposed

**OIL & GAS LOCATION INFORMATION**

Form 2A Doc#: 403278397

Loc ID#: \_\_\_\_\_

Oil & Gas Location:      QTRQTR: SWNW      Sec: 20      Twp: 3N      Rng: 67W      Meridian: 6

Total number of wells planned: 12

**Operations Duration**

Estimated total number of weeks to construct this Oil & Gas Location: 4

Estimated total number of weeks to drill all planned wells for this Oil & Gas Location: 10

Number of planned drilling occupations to drill all planned wells for this Oil & Gas Location: 1

Estimated total number of weeks to complete all planned wells for this Oil & Gas Location: 8

Number of planned completions occupations to complete all planned wells for this Oil & Gas Location: 1

Will there be simultaneous drilling and completions operations occurring at this Oil & Gas Location? No

Estimated total number of months the Oil & Gas Location will be active, prior to abandonment and reclamation: 300

**Noise Impacts**

Provide a qualitative evaluation of the incremental adverse noise impacts to the surrounding receptors during the pre-production activities at this Oil & Gas Location.

An ambient survey will be conducted in order to determine current noise levels in this area. A noise model representing the proposed operations at the pad was created to assess the predicted operational noise levels with the COGCC allowable dBA and dBC noise limits. Continuous monitoring will be implemented at the appropriate noise points of compliance from the working pad surface per Rule 423.a(5)A&B. The results of the noise modeling indicate that with mitigation the proposed drilling and completions operations will be in compliance with the COGCC A-weighted and C-weighted noise limits.

Provide a qualitative evaluation of the incremental adverse noise impacts to the surrounding receptors during the production stage of this Oil & Gas Location.

KMOG will meet all applicable lighting requirements as set forth by Sec. 424(B) during the production phase operations. Permanent lighting will be installed at the production facility. KMOG will have three types of lights at the production facility including the Lease Automated Custody Transfer (LACT) lights, emergency strobe lights and heat trace lights. The lights above the LACT door are for personnel visiting at night and it will be directed downward to avoid glare on public roads and adjacent building units. These lights are on a switch and will be turned off when personnel leave the location. The strobe lights are also on the LACT building and act as an emergency indicator that will activate if a high level of gas is detected within the LACT building. The heat trace lights are a small red light that acts as a visual indication that the heat trace circuit is powered on. After new lighting is installed at the location, KMOG will certify that the lighting complies with the base allowances and standards set forth in 424 b.c.d.

**Light Impacts**

Provide a qualitative evaluation of the incremental adverse light impacts to the surrounding receptors during the pre-production activities at this Oil & Gas Location.

KMOG will meet all applicable lighting requirements as set forth by Sec. 424 during the construction and pre-production phase operations. During the construction phase, lighting shall be directed downward and inward and shielded to avoid glare on public roads and building units.

Provide a qualitative evaluation of the incremental adverse light impacts to the surrounding receptors during the production stage of this Oil & Gas Location.

KMOG will meet all applicable lighting requirements as set forth by Sec. 424(B) during the production phase operations. Permanent lighting will be installed at the production facility. KMOG will have three types of lights at the production facility including the Lease Automated Custody Transfer (LACT) lights, emergency strobe lights and heat trace lights. The lights above the LACT door are for personnel visiting at night and it will be directed downward to avoid glare on public roads and adjacent building units. These lights are on a switch and will be turned off when personnel leave the location. The strobe lights are also on the LACT building and act as an emergency indicator that will activate if a high level of gas is detected within the LACT building. The heat trace lights are a small red light that acts as a visual indication that the heat trace circuit is powered on. After new lighting is installed at the location, KMOG will certify that the lighting complies with the base allowances and standards set forth in 424 b.c.d.

**Odor Impacts**

Provide a qualitative evaluation of the incremental adverse odor impacts to the surrounding receptors during the pre-production activities at this Oil & Gas Location.

During the pre-production phase all odor sources are attributed to the hydrocarbon-based drilling fluid when left untreated. All oil-based drilling fluids will be built using a Group III base oil with negligible aromatic content and PAH less than 0.001% so that it does not emit odor during all production drilling operations. The Group III base oil will be utilized in a closed loop drilling fluid system and eliminate odor at the shakers, transfer tank, active/reserve tanks, and cuttings in collection tanks and during transport. As a result there will not be any incremental adverse odor impacts to the surrounding receptors during pre-production activities.

Provide a qualitative evaluation of the incremental adverse odor impacts to the surrounding receptors during the production stage of this Oil & Gas Location.

KMOG production facilities are designed as a closed system to reduce exposure to the atmosphere thereby eliminating potential odors. KMOG uses pipelines to transport hydrocarbons from the production facility eliminating odors that could occur during truck loading. Production facilities are inspected regularly by KMOG personnel to make sure the equipment is working property and necessary maintenance is performed, to reduce potential odors. KMOG incorporates Audio, Visual, Olfactory (AVO) observations at production facility inspections. KMOG will use Best Management Practices to reduce unloading events and to reduce potential odor causing emissions when liquids unloading is necessary (i.e., maintenance activities to remove liquids from existing wells that are inhibiting production). KMOG remotely monitors production facilities, this reduces traffic onto production facilities which may create odors from truck traffic.

**WATER RESOURCES**

This Oil & Gas Location is listed as a sensitive area for water resources.

This Oil & Gas Location is within 2,640 feet of a surface Water of the State.

Estimated depth to groundwater:   43  

Estimated total planned on-location storage capacity of the Oil & Gas Location for:

	Number of Tanks	Total Volume (bbls)
Oil	<u>0</u>	<u>0</u>
Condensate	<u>1</u>	<u>285</u>
Produced Water	<u>4</u>	<u>1140</u>

Other volumes of stored fluids, hydrocarbons, chemicals, or E&P Waste Fluids

4

40.46

List, with volumes, the "Other" fluids planned to be stored on the Oil & Gas Location, including, but not limited to: hydrocarbons, chemicals, or E&P Waste fluids.

3 Chemical Totes & 1 Propoane Tank  
 11.9 BBLs- Corrosion/Scale Protection Chemical  
 8.33 BBLs - Corrosion/Bacterial Protection Chemical  
 8.33 BBLs- Methanol  
 11.9 BBLs – Propane

**Potential Impacted Surface Water Resources**

Provide the distance and direction of the contaminant migration pathway from the Oil & Gas Location to the nearest downstream riparian corridors, wetlands, and surface Waters of the State. Also provide an evaluation of the baseline condition of the nearest downstream riparian corridors, wetlands, and surface Waters of the State.

Enter 2,640 for distances greater than 1/2-mile. Distances are measured along the migration pathway, not a straight line from the edge of the Oil & Gas Location.

	Distance	Direction	Evaluation of Baseline Condition
Riparian Corridor	<u>2640</u>	<u>E</u>	<u>N/A</u>
Wetland	<u>2640</u>	<u>E</u>	<u>N/A</u>
Surface Waters of the State	<u>85</u>	<u>N</u>	<u>Riverine</u>

**Potential Impacts to Public Water Resources**

Provide the distance, direction, and evaluation of potential impacts to the nearest Public Water System Intake. Enter 5,280 for distances greater than 1-mile.

	Distance	Direction	Evaluation of Baseline Condition
Public Water System Intake	<u>5280</u>	<u>N</u>	<u>There are no Public Water System Intakes within 5,280'.</u>

**Estimated Water Usage**

Provide the estimated total volumes of the following that are anticipated to be used during the drilling and completions stage of the Oil & Gas Location activity.

Water Source	Volume (bbls)	Volume (bbls)	Volume (bbls)	Percentage Recycled Water	%
Surface Water	<u>4150958</u>	Recycled Water (Produced Water) <u>27673</u>	Unspecified Source <u>0</u>	Percentage Recycled Water	<u>1</u>
Ground Water	<u>1401629</u>	Recycled Water (non-Produced Water) <u>0</u>	Total Water Usage <u>558026</u>		
			<u>0</u>		

If an unspecified water source is planned to be used, provide a description of the source.

N/A

Evaluate the measures being taken to reduce freshwater use, including reusing and recycling produced water.

KMOG uses recycled water when possible and receives its surface water from surface non-potable sources

**ECOSYSTEM & WILDLIFE RESOURCES**

List High Priority Habitats (HPH) that occur within one mile of the Oil & Gas Location and list the distance from working pad surface. If the location is partially or entirely within a HPH list the distance as '0' and provide the estimated acreage disturbance of that HPH by the location construction.

High Priority Habitat (HPH) Name:	Distance	Estimated Acreage Disturbed
Mule Deer Severe Winter Range	<u>739</u>	<u>0</u>
Mule Deer Migration Corridor	<u>2373</u>	<u>0</u>
Aquatic Native Species Conservation Waters	<u>3581</u>	<u>0</u>

List total size of disturbed acreage and disturbed High Priority Habitat (HPH) area (in acres) during the Oil & Gas Location construction and after interim reclamation.

	Total Acreage (acres)	Total HPH Acreage (acres)	Provide any further information regarding the location's HPH disturbance.
Construction	<u>14.71</u>	<u>0</u>	
Post-interim Reclamation	<u>4.2</u>	<u>0</u>	

Provide the acreage of the existing land use types that occur within one mile of the Oil & Gas Location. Note: a circle with a one mile radius is approximately 2010 acres.

	Existing Acreage	Existing Acreage	Existing Acreage	Existing Acreage			
Crop Land: Irrigated	1728.23	Non-Irrigated	0	Conservation Reserve Program(CRP)	0		
Non-Crop Land: Rangeland	216.84	Forestry	22.46	Recreation	0	Other	470.6
Subdivided: Industrial	0	Commercial	24.79	Residential	141.89		

If any land use is industrial, provide a description of the use or operation of the industrial facilities.

N/A

If any land use is "Other", provide a description of the land use.

The USGS National Land Cover dataset was used to calculate this acreage. 88.74 acres of DEVELOPED, OPEN SPACE; 83.18 acres of DEVELOPED, LOW INTENSITY; 19.35 acres of DEVELOPED, MEDIUM INTENSITY; 7.56 acres of DEVELOPED, HIGH INTENSITY; 2.22 acres of BARREN LAND; 6.9 acres of WOODY WETLANDS; 232.18 acres EMERGENT HERBACEOUS WETLANDS; 30.47 acres of OPEN WATER.

If any portion of the land use for the proposed oil and gas location includes Rangeland, Forestry, or Recreation, provide a list of the plant community or communities and estimated acreage disturbed for each:

	Estimated Disturbed Acreage	Estimated Disturbed Acreage	Estimated Disturbed Acreage	Estimated Disturbed Acreage			
Disturbed Grassland	14.71	Shrub Land		Mountain Riparian		Wetland Aquatic	
Native Grassland		Plains Riparian		Forest Land		Alpine	

Provide a qualitative evaluation of incremental adverse impacts to ecosystems, including any plant communities, as a result of Oil and Gas Operations associated with the proposed Oil & Gas Location.

An assessment of existing conditions can be found in the wildlife mitigation plan attached to the Form 2A. Based on reclamation standards, any incremental impacts will be mitigated and land will be returned to its original use

**Soil Resources**

List all soil map units that occur within the Oil & Gas Location and list the estimated total area (in acres) disturbance of each soil map unit.

NRCS Map Unit Name:	Estimated Disturbed Acreage
79-Weld loam, 1 to 3 percent slopes	4.9
82-Wiley-Colby complex, 1 to 3 percent slopes	9
83-Wiley-Colby complex, 3 to 5 percent slopes	0.8

**PUBLIC WELFARE**

This Oil & Gas Location lies within a Disproportionately Impacted Community as defined in the 100-series rules.

**Building Units within 1-mile**

0'-2,000'      2,001'-5,280'

Total number of Residential Building Units:	4	97
Total Number of non-school AND non child care center High Occupancy Building Units:	0	0
Total number of School Facilities:	0	0
Total number of Child Care Centers:	0	0

**Recreation and Scenic Value**

List all State Parks, State Trust Lands, or State Wildlife Area within 1-mile of the Oil & Gas Location.

None

List all Designated Outdoor Activity Areas within 1-mile of the Oil & Gas Location.

None

List all mapped trails that support any of the following recreational activities within 1-mile of the Oil & Gas Location: Hiking, Biking, Horseback Riding, Motorcycle Riding, ATV Riding, OHV, Nordic Skiing, Snowmobiling, or Snowshoeing.

None

**AIR RESOURCES**

**Pre-Production Emissions**

Complete the following chart based on the estimated total equipment emissions (in tons) for the Oil & Gas Location during the pre-production (construction, drilling, completions) stage for Criteria Pollutants by equipment type.

	NOx	CO	VOCs	Methane	Ethane	CO2	N2O
Process Heaters or Boilers	1.1	0.17	0.05	0.007	0.0024	164.2	0.0013
Storage Tanks	0.01	0.06	0.06	0.29	0.098	32.2	0
Venting or Blowdowns	0.01	0.05	0.39	0.51	0.18	23.03	0
Combustion Control Devices	0.0045	0.02	0.03	0.08	0.03	6.3	0
Non-Road Internal Combustion Engines	88.727	98.854	11.355	0.308	0.109	9829.405	0.054
Drill Mud	0.06	0.27	0.52	1.26	0.15	8.996	0
Flowback or Completions	0	0	0	0	0	0	0
Loadout	0	0	0.04	0.21	0.07	0.16	0

**Production Emissions**

Complete the following chart based on the estimated full facility equipment emissions (in tons) for the Oil & Gas Location once the Oil & Gas Location has entered the production stage, for Criteria Pollutants. The table should be filled out based on ONE year of operation.

	NOx	CO	VOCs	Methane	Ethane	CO2	N2O
Stationary Engines or Turbines	0.93	8.03	0.43	0.01	0.0034	237.67	0.0019
Process Heaters or Boilers	0.67	0.563	0.037	0.015	0.021	803.589	0.015
Storage Tanks	0.07	0.03	0.52	0.99	0.45	158.87	0.0002
Dehydration Units	0	0	0	0	0	0	0
Pneumatic Pumps	0	0	0	0	0	0	0
Pneumatic Controllers	0	0	0	0	0	0	0
Separators	0	0	0	0	0	0	0
Fugitives			0.38	0.31	0.11	0.03	
Venting or Blowdowns	0	0	4.74	6.12	2.17	0.51	0
Combustion Control Devices	0.0045	0.02	0.03	0.08	0.03	6.3	0
Loadout	0	0	0.6	1.12	0.51	1.2	0
Non-Road Internal Combustion Engines	0.12	0.08	0.0001	0.0006	0	14.6	0.0001
Well Bradenhead	0	0	0.0026	0.0034	0.0012	0.0003	0
Well Maintenance	0	0	1.93	2.49	0.88	0.21	0

**Diesel Vehicle Road Miles**

Complete the following chart for diesel vehicle road miles during each stage of oil and gas location operations.

During Construction: 6970                      During Completions: 353786  
 During Drilling: 118958                      During Interim Reclamation: 61388  
 During Production: 4540

**PUBLIC HEALTH RESOURCES**

**Pre-Production Emissions**

Complete the following chart based on the estimated total equipment emissions (in lbs) for the Oil & Gas Location during the pre-production (construction, drilling, completions) stage for Hazardous Air Pollutants (HAP).

	BEN	TOL	ETH	XYL	NHE	TMP	H2S	FDE	MET	HAP
Process Heaters or Boilers	9.41	23.07	2.36	5.5	64.2	5.85	0	0	0	110.39
Storage Tanks	2.45	1.75	0.07	0.42	1.28	0	0	0	0	5.98
Venting or Blowdowns	8.6	21.08	2.15	5.03	58.67	5.35	0	0	0	100.88

Combustion Control Devices	0	0	0	0	0.001	0	0	0	0	0.001
Non-Road Internal Combustion Engines	435.66 76	1067.8 228	109.0 164	254.6 367	2971.2 925	270.94 94	0	0	0	5109.4 454
Drill Mud	0.006	0.014	0.001	0.003	0.039	0.04	0	0	0	0.067
Flowback or Completions	0	0	0	0	0	0	0	0	0	0
Loadout	1.79	1.28	0.05	0.31	0.94	0	0	0	0	4.37

**Production Emissions**

Complete the following chart based on the estimated total equipment emissions (in lbs) for the Oil & Gas Location once the Oil & Gas Location has entered the production stage, for Hazardous Air Pollutants (HAP). The table should be filled out based on ONE year of operation.

	BEN	TOL	ETH	XYL	NHE	TMP	H2S	FDE	MET	HAP
Stationary Engines or Turbines	13.62	33.39	3.41	7.96	92.9	8.47	0	0	0	159.75
Process Heaters or Boilers	0.028	0.046	0	0	0	0	0	1.005	0	1.079
Storage Tanks	34.63	25.61	0.94	6.01	50.5	0.01	0	0	0	117.71
Dehydration Units	0	0	0	0	0	0	0	0	0	0
Pneumatic Pumps	0	0	0	0	0	0	0	0	0	0
Pneumatic Controllers	0	0	0	0	0	0	0	0	0	0
Separators	0	0	0	0	0	0	0	0	0	0
Fugitives	5.04	9.82	1.55	10.64	32.79	3.15	0	0	0	62.98
Venting or Blowdowns	103.78	254.38	25.97	60.66	707.8	64.54	0	0	0	1217.1 3
Combustion Control Devices	0.15	0.18	0.03	0.12	1.16	0.15	0	0	0	1.79
Non-Road Internal Combustion Engines	0	0	0	0	0	0	0	0	0	0
Loadout	40.766	29.329	1.112	6.879	71.812	0.124	0	0	0	150.02 1
Well Bradenhead	0.06	0.14	0.01	0.03	0.39	0.04	0	0	0	0.67
Well Maintenance	42.23	103.51	10.57	24.68	288.02	26.2	0	0	0	495.28

Provide a qualitative evaluation of any potential acute or chronic, short- or long-term incremental impacts to public health as a result of the estimated total pre-production hazardous air pollutant emissions.

Air monitoring will be conducted during pre-production activities including production rig and completion operations (hydraulic fracturing, drillout and flowback). KMOG's general Air Monitoring Program has been approved by the CDPHE and is attached to this form. A site-specific Air Monitoring Plan for this location will be submitted to the COGCC and CDPHE for approval of air monitor locations prior to operations. The attached general Air Monitoring Program has been used on multiple locations. KMOG has been performing air monitoring around pre-production operations since 2020 using the approved program. Over 4,000 air samples have been collected and analyzed for benzene and other hazardous air pollutants following EPA methods. Results of all validated samples have been below Health Guidance Values complied by CDPHE. See Section 11 of the attached Air Monitoring Program on how the monitoring results are compared to the HGVs. The analytical results collected to date are representative of pre-production operations for this pad. In addition to the analytical data, continuous VOC analyzer will be located around the pre-production as described in Sections 9 and 10 of the Air Monitoring Program. These monitors are used to indicate a change in operations. Based on historical monitoring, KMOG has established three (3) investigation levels for the continuous analyzers that correlate to benzene levels well below the HGV. For each investigation level there is an associated investigation response. See Sections 14 and 15 of the Air Monitoring Program for more details investigation levels and responses.

Provide a qualitative evaluation of any potential acute or chronic, short- or long-term incremental impacts to public health as a result of the estimated annual production hazardous air pollutant emissions.

Air monitoring will be conducted during early production facility operations, which is 6 months after the last well is turned over to production. Air monitoring will follow the approved Air Monitoring Program. These production facilities are designed to minimize or eliminate air emissions. See Section 5 of the Air Monitoring Program for more information on the design of the production facility. KMOG has been performing air monitoring around production facility operations since 2020 using the approved program. Over 1,100 air samples have been collected and analyzed for benzene and other hazardous air pollutants following EPA methods. Results of all validated samples have been below Health Guidance Values complied by CDPHE. See Section 11 of the attached Air Monitoring Program on how the monitoring results are compared to the HGVs. The analytical results collected to date are representative of production facility operations for this pad. As discussed for the pre-production operations, continuous VOC analyzer will be located around the production facility.

**Dust Impacts**

The following are the estimated number of truck trips traveling on or off the Oil & Gas Location.

Total	During Construction	During Drilling	During Completions	During Interim Reclamation	During Production
Monthly	120	54	258	112	43
Annual	4357	6609	19655	3410	516

Estimated total pounds (lbs) of proppant to be used during completions activities. 1973194  
00

Provide the type of proppant(s) that are planned to be used during completions activities.

Silica Proppant

Provide an evaluation of the proposed proppant management system that will be used to minimize dust during completions activities, including the estimated amount of silica dust that will leave the Oil & Gas Location.

Utilize Sand Containerized Proppant Delivery System that eliminates the use of pneumatic transfer on location. This methodology utilizes a gravity choke feed system that reduces dust significantly from historical practices. The dust levels from this system are minimal and below OSHA's permissible exposure limit which eliminates the need for additional PPE.

**EXISTING OIL & GAS**

Total number of oil & gas locations within 1-mile of the Oil & Gas Location:

	Total Number of Locations	Total Number of Wells
Active, built	37	Active, built 44
Permitted by COGCC, unbuilt	0	Permitted by COGCC, unbuilt 0
Permitted by Relevant Local Government & not COGCC, unbuilt	0	Proposed 0
Proposed	0	Plugged and Abandoned 73

Total acreage disturbance during construction of the active and proposed oil & gas locations within 1-mile of the proposed Oil & Gas Location: 5.55

Source for acreage total:

- Field Observation/Measurement
- COGCC Location Files
- Aerial PhotosOther
- Other

If "Other" is selected, please describe the source use to determine the acreage total for construction disturbance of the active and proposed oil & gas locations within 1-mile of the proposed Oil & Gas Location.

Total permitted capacity of on-location storage (in number of pits and tanks) of the active and proposed oil & gas locations within 1-mile of the Oil & Gas Location :  
NOTE: providing the existing number of pits and tanks on surrounding existing locations is optional.

Source for storage totals:

	Permitted Onsite Storage Capacity	Existing Onsite Storage Capacity
<input type="checkbox"/> Field Observation/Measurement	Oil <u>28</u>	<u>          </u>
<input checked="" type="checkbox"/> COGCC Location Files	Condensate <u>0</u>	<u>          </u>
<input type="checkbox"/> Aerial PhotosOther	Produced Water <u>5</u>	<u>          </u>
<input type="checkbox"/> Other	Pits <u>4</u>	<u>          </u>

If "Other" is selected, please describe the source use to determine the tank totals for the active and proposed oil & gas locations within 1-mile of the proposed Oil & Gas Location.

N/A

**OIL & GAS DEVELOPMENT PLAN-SCALE DATA**

List High Priority Habitats (HPH) that are estimated be disturbed by the construction of new roads, including access roads, pipelines, and utilities for this OGD, along with the estimated disturbed acreage of each HPH.

High Priority Habitat (HPH) Name	Estimated Acreage Disturbed
Mule Deer Severe Winter Range	0.85

List the total estimated of disturbed acreage and the total disturbed High Priority Habitat (HPH) area (in acres) during construction and the acreage that will remain disturbed after interim reclamation of the following for the entire OGD:

	Construction		Post-interim Reclamation		
	Total Acreage (acres)	Total HPH Acreage (acres)	Total Acreage (acres)	Total HPH Acreage (acres)	
New roads, including access roads	3.9	0.85	New roads, including access roads	3.495	0.85
Pipelines	2.85	0	Pipelines	0.014	0
Utilities	0.725	0	Utilities	0.15	0

Provide any further information regarding the HPH disturbance from the construction of new roads, including access roads, pipelines, and utilities for this OGD.

KMOG will utilize a temporary access road during the construction phase in order to avoid HPH. Once the facility is turned to production a permanent road will be constructed that will include 0.85 acres of HPH disturbance

Number of miles of the existing lease road that are planned to be used to access these location(s): 0.02

**BENEFICIAL IMPACT INFORMATION**

**Equipment and Facility Removal**

Total number of existing wells that are planned to be plugged and abandoned as part of this OGD: 37

Total number of tanks planned to be removed from existing locations through the approval of this OGD:

Total number of existing locations that are planned to be closed and undergo final reclamation as part of this OGD: 8

Oil Tanks: 12

Total number of acres that are planned to be reclaimed through the closing of existing locations: 11.1

Condensate Tanks: 0

Produced Water Tanks: 8

Total number of existing pits that are planned to be closed and undergo final reclamation as part of this OGD: 0

Estimated number of vehicle trips that are planned to be prevented from the above mentioned facility closures and equipment upgrades (on an annual basis): 288

Provide a qualitative evaluation of any incremental beneficial impacts to the surrounding community directly and indirectly from this OGD.

As a result of plugging 37 wells the surrounding community can expect reduced truck traffic traveling to multiple locations. This will reduce the amount of time that trucks are present in the area. The surrounding community will see reduced noise and dust associated with that traffic. Removing older well heads and tanks will reduce the risk of emissions associated with those locations. Nine facilities will be removed and reclaimed creating a less fragmented area.

Provide a qualitative evaluation of any incremental beneficial impacts to the surrounding wildlife and ecosystems directly and indirectly from this OGD.

As a result of this development KMOG will be plugging 37 wells and reclaiming approximately 13.1 acres across 8 locations and disturbing 14.7 acres prior to reclamation and 4.2 after interim reclamation. This development will ultimately restore 8.9 more acres than are disturbed and will be concentrated in one area, thereby reducing habitat fragmentation. Limited beneficial impacts to the surrounding wildlife and ecosystems are expected and could include the addition of potential hunting perches for raptors.

**MITIGATION INFORMATION**

Item	Impacted Resource	Mitigation Description
1	Water Resources	<p>Although water will be used for operations there are no anticipated impacts to the quality of either surface or subsurface water. A mixture of non-potable surface water, groundwater and recycled water will be used for completion operations. KMOG intends to use a total of 5,580,260 BBLs of water during drilling and completions activities on this Location. 75% (4,150,958 BBLs) will be sourced from non-potable surface water and 24.5% (1,401,629 BBLs) will be sourced from groundwater. 27,673 BBLs (0.5%) will be from recycled sources.</p> <p>KMOG takes measures to protect groundwater and surface water by carefully choosing the Location, utilizing drainage control measures, and proper grading techniques. KMOG segregates topsoil to protect soil resources. Enhanced soil compaction minimizes absorption and downward migration of fluids in the event of an incidental spill. Liners are installed under the production facility equipment during the production phase. KMOG will adhere to Rule 309.3.(5).D by containing flowback and stimulation fluids in tanks, constructing lined berms or other lined containment devices pursuant to Rule 603.o around any new crude oil, condensate, and produced water storage tanks, maintaining adequate spill response equipment at the Oil and Gas Location during drilling and completion operations; and not construct or utilize any pits.</p> <p>Both prior to, and after drilling and completion operations, KMOG contracts with a third-party professional to perform water sampling from water wells near the Location. The baseline sampling helps establish existing conditions, and the post-development samples verify KMOG's operations are safe.</p> <p>To prevent fluid leaks, temporary produced water storage tanks are designed, constructed, and maintained in accordance with the following portions of the National Fire Protection Association (NFPA) Code 30 (2008 version):</p> <ul style="list-style-type: none"> <li>• Tanks are built to engineering standards using noncombustible materials, with relief device sizing based on API 2000 standards.</li> <li>• Tanks are inspected and maintained while in use.</li> <li>• The only pipes within the containment are related to the temporary tanks (i.e. no external piping is co-located within the containment), and firefighting equipment is, likewise, not stored within the containment area.</li> </ul> <p>The temporary produced water storage tanks are staged on a geosynthetic liner and surrounded by an earthen berm. The berms enclose an area sufficient to provide secondary containment for 150% of the volume of the largest single tank and are sufficiently impervious to contain spilled or released material. The berms and the liner are inspected at the same time as stormwater inspections. While the site is under construction, site inspections will occur every 14 days. During completions operations, all fluid containing equipment is inspected daily. When the Location is on production, site inspections will occur every month.</p> <p>Automation technology will be utilized at this facility. This technology includes the use of fluid level monitoring for the tanks and produced water sumps, high-level shut offs, and electronic sensors to monitor the interstitial space of double-walled produced water sumps. All automation is monitored by KMOG's Integrated Operations Center (IOC), which is manned 24 hours per day, seven days per week.</p>

2	Ecosystem and Wildlife Resources	<p>Portions of the permanent access road are positioned within Mule Deer Severe Winter Range. To avoid impacts during the construction phase, KMOG will construct a temporary access road located outside of the High Priority Habitat (HPH), which will be reclaimed after the Location moves into the production phase.</p> <p>Colorado Parks and Wildlife (CPW) completed a desktop review of sensitive resources on March 14th, 2023. The permanent access road will be constructed between May 1st and November 30th to avoid impacts during timing stipulations. The Locations were surveyed by a third-party biological contractor prior to permit submittal. The area 2,640 feet from the edge of the disturbance area was surveyed for Migratory Bird Treaty Act (MBTA) species. The biological surveys check for all species and environmental conditions outlined in the Colorado Oil and Gas Conservation Commission (COGCC) rules using accepted scientific survey practices. Where surface access is granted by the surface owner these surveys are conducted on the ground. If access is not possible, surveys are conducted from public ROW to the best of the contractor's ability.</p> <p>KMOG will reclaim 11.1 acres associated with plugging and abandoning (P&amp;A) 37 nearby wells, nearly seven more than will be disturbed with the new pad. The Salazar OGDG associated roads and utilities will be reclaimed to 6.8 acres. KMOG will reclaim approximately 4.2 more acres than it will disturb associated with this OGDG.</p> <p>KMOG will survey for nesting non-eagle raptors if project activities start between February 1 and August 15. For ground disturbances beginning between March 15 and August 31, 2023, the full three-survey CPW- protocol will be completed no more than seven days prior to the start of work. If burrowing owls are observed using burrows within 0.25 miles of the Location, KMOG will consult with CPW to determine appropriate mitigation measures.</p> <p><b>General Mitigation</b></p> <p>Avian protection will be installed on openings larger than two inches. Approximately two weeks prior to construction start, the approved Locations will be surveyed by third party biological contractor for nests. A site-specific spill prevention, control, and countermeasure plan compliant with EPA rule 40 CFR 112 has been created and submitted with the Form 2A for these Locations. Automated emergency response systems and emergency shutdown systems will be installed. Remote monitoring systems will be utilized at these Locations. Periodic inspections for nests and of avian protection will occur throughout the life of the project. Training is provided to employees and contractors on wildlife conservation practices, including no harassment, feeding of wildlife, or illegal hunting.</p> <p>KMOG maintains a Standard Operating Procedure (SOP) for water suction hoses and transportation Tanks that meets 1202.a.(2).A requirements with 3rd party contractors when moving equipment from Locations. The contractor will use a CPW-approved disinfectant solution capable of killing whirling disease spores and other aquatic nuisance species defined by CPW.</p> <p>KMOG does not use drilling pits, production pits or any other pits at Oil and Gas Locations in the Denver-Julesburg Basin.</p> <p><b>Reclamation</b></p> <p>KMOG will P&amp;A 38 wells and eight associated facilities and reclaim 11.1 acres of previously created pads after wells in this OGDG are in the production phase. The Salazar OGDG Location will disturb 22.2acres for pre-production activities and be reclaimed to approximately 6.9 acres. The net reclamation of this OGDG exceeds the disturbance created, with 4.2 more acres being reclaimed than are permanently disturbed. This will also eliminate fragmentation of habitat. The area will be surveyed on multiple occasions to ensure that animals or their nests are not present. If animals are discovered the proper actions will be followed to ensure the safety of the animals.</p>
3	Air Resources	<p>During pre-production activities KMOG anticipates the release of 8,817 tons of emissions. KMOG expects 4,418 pounds of Hazardous Air Pollutants (HAP) during pre-production.</p> <p>Long-term Impacts: KMOG anticipates the total emissions from the first 12 months of production to be 1,258 tons of emissions. KMOG expects 2,206 pounds of HAP during one year of production.</p> <p>To ensure the wellbeing of those working and living near operations, KMOG contracts with a third-party environmental air quality expert to perform continuous air monitoring during drilling and completion operations and the first six months of the production phases.</p> <p>KMOG anticipates minimal impact to air resources from its operations. KMOG's continued efforts in facility design and operations create a very low emission footprint for pre-production and production operations. Based on the 2021 Colorado Regulation 7 Emission Inventory, KMOG has the lowest intensity of any oil and gas operator in the</p>

State of Colorado. As a result of KMOG's proactive approach to emissions, KMOG has already met the 2030 intensity targets set in the CDPHE's recently adopted Regulation 22. KMOG's calculated 2021 intensity is 2.60 mtCO<sub>2</sub>e/kBOE and the year 2030 Regulation 22 targets are set at 6.80mtCO<sub>2</sub>e/kBOE. Although, KMOG is well ahead of the efforts to reduce emissions, KMOG continues to strive to find and apply innovative opportunities for emissions reduction across pre-production and production operations. KMOG has collected over 5,600 Benzene air samples within 300 feet of analogous locations, including baseline sampling. All samples are well below CDPHE Health Guidance Values (HGV) and are generally 85% lower than the HGV.

KMOG will continuously monitor for Volatile Organic Compounds (VOC) and benzene during production drilling, completions and the first six months of production facility operations following our CDPHE approved monitoring plans for this Location.

During Drilling: KMOG uses natural gas engines with a battery system to power its rigs rather than diesel generators. This change in fuel type produces 30% less CO<sub>2</sub>, particulate matter is reduced by 90%, sulfur oxides are reduced by 50%, and Nitrogen Dioxide is reduced.

During Completions: During completions KMOG uses a closed loop system. As a standard practice, KMOG has also implemented the pipelined Water on Demand (WOD) system which will eliminate approximately 100,000 truck trips at the Salazar Location during completions activities.

During Flowback: Fluids will flow through separation equipment where the gas will be collected through a gas gathering line instead of vented or burned.

During Production: KMOG uses production facilities that have been designed to eliminate most emission sources. Oil will not be stored on the Location where it could cause emissions but will be gathered and sent via pipeline to a facility. This gathering system also reduces the number of vehicles visiting the Location. Additionally, KMOG uses air actuated pneumatic devices rather than natural gas actuated devices. There will be no flaring of associated sales gas. There will be no compressor engines on the Location.

Produced water can contain entrained gas, KMOG equips water storage tanks with combustion devices with a 98% destruction efficiency. If the pilot for the combustor goes out the Location will be remotely shut in.

There will be one maintenance tank on the Salazar Location, that will only be used during maintenance operations. This tank is identified as a "condensate tank" on the Form 2B. The maintenance tank will not be used as part of normal operations and is only used to manually flow to the tanks for activities such as equipment blowdowns for maintenance or well unloading. In the event the tank would be utilized, it is standard KMOG practice to empty maintenance tanks within 24 hours to minimize emissions. Maintenance tanks are equipped with monitoring devices that report data such as temperature, pressure and fluid level and can be monitored from KMOG's IOC in Platteville. Maintenance tanks are attached to tank vapor recovery piping that goes to the Enclosed Combustion Device (ECD). If any vapors are recovered, then they are sent to the ECD and not released into the atmosphere. Maintenance activities that send fluids to the maintenance tanks are recorded and emissions are quantified, reported, and permitted according to requirements in CDPHE Regulation 3 and Regulation 7. The maintenance tank is required to safely perform maintenance activities when deemed necessary. These are infrequent and not part of the normal operation of the facility.

KMOG will have permanent water storage tanks on the Salazar Location. The tanks will be controlled with VOC combustors. Tank emissions monitoring systems will be in place, which means that tank pressures will be continuously recorded, and the Location will be shut in if tank pressures start to approach the pressure at which relief devices would vent emissions to the atmosphere. Therefore, the possibility of venting from tanks is eliminated. The tank components and control device will be on preventative maintenance schedules to ensure device integrity and minimize the potential for leaks/failure. The tanks (and entire facility) will have Leak Detection and Repair (LDAR) surveys completed. KMOG has a dedicated emissions team that conducts the LDAR program. This team performs weekly audio visual and olfactory (AVO) inspections to make sure equipment is working per design and in a manner safe for the environment. The entire facility will be inspected to ensure that there are not any leaks that can be detected using hearing, sight, or smell. If a leak is found it is reported to the state, repaired and reinspected with a FLIR camera to confirm the repair has been completed. Facilities will also be inspected for gas leaks at least monthly using an infrared camera. KMOG maintains the IOC where facilities are monitored and can be shut in remotely if a leak is suspected.

The reduction of 38 wells and eight facilities will remove the following potential sources of emissions: eight water tanks and 12 oil tanks. The omission of approximately 288 truck trips annually to visit those Locations will also reduce emissions.

4	Public Health Resources	<p>KMOG does not anticipate any negative impacts to public health. As a part of the CPRN (Colorado Preparedness Response Network) KMOG will work alongside other operators to facilitate training drills. These drills and the presence of oil and gas operations in the area has the potential to enhance the capabilities and the watchfulness of the emergency responders.</p> <p>The IOC staffed 24 hours per day, seven days per week, will remotely monitor the wells and facility. This enables KMOG to deploy appropriate resources quickly, efficiently, and to collaborate with local emergency response agencies as necessary. This system also helps reduce traffic.</p>
5	Public Welfare	<p>During the pre-production activities KMOG anticipates an increase in truck traffic, minimal to no increase in noise and light to receptors. There are no anticipated odor impacts. As a result of plugging and reclaiming multiple wells nearby the visual quality of the area will be improved. Trucks will only be required to visit one Location rather than the eight that will be reclaimed because of this work.</p> <p><b>Noise</b>  KMOG contracted a third party to model noise and create a noise mitigation plan. Site-specific noise models were used to predict the future noise impact of the proposed operations and determine what noise mitigation measures, if any, would be required to demonstrate compliance with the COGCC maximum permissible noise levels. Noise modeling results were calculated and include the effects of local topography, buildings, barriers, and ground cover. The models use the anticipated drilling rig, quiet completions fleet and production equipment. The results of the noise modeling can be found in the Noise Mitigation and Monitoring Plans. At the Salazar Location, the receptor locations were modelled at 350 feet from the WPS and not less than 25 feet from the structure, towards the facility for both dBA and DBC predictions.</p> <p>Although operations are conducted 24 hours per day seven day a week, at night KMOG will minimize non-essential work. KMOG will install sound reduction walls during pre-production operations on all sides of the Salazar well pad to protect receptors. KMOG has encouraged modifications of rigs available to significantly reduce noise by not only using the quietest shale shaker model available, but also installing vibrating pads below shaker mounts. Extreme grade exhaust silencers are used on engines and drawworks traction motor. The generator house is fully enclosed with sound dampening louver boxes. KMOG utilizes quiet completion fleets to reduce noise. Testing has shown that this equipment is substantially quieter than traditional models.</p> <p><b>Drilling:</b>  Unmitigated noise levels are above the Maximum Permissible Noise Levels (MPNLs) for both COGCC and Weld County code, therefore sound walls will be used on all four sides of the Location to mitigate sound.</p> <p><b>Completions:</b>  Unmitigated completions operations noise levels are above the A weighted MPNL of 60 dBA and thus, require mitigation. Sound walls will be used on all four sides of the Location to mitigate sound.</p> <p><b>Light</b>  Site specific three-dimensional lighting models were developed for each of the phases of this development to determine their associated lighting impacts. The lighting fixtures used in the models were selected based on currently operated representative sites and research conducted into available vendor lighting systems. All calculated values fall well below the prescribed regulatory limits with all calculated light values falling below 1 lx. This light level is similar to a clear night with a full moon.</p> <p>KMOG uses Light-emitting diode (LED) fixtures to the extent possible that are angled downward and inward toward the Location and away from homes and businesses to reduce skyglow. LED lights not only use less energy and last longer, they emit light in a specific direction unlike incandescent and Compact Fluorescent lamps (CFL) bulbs which emit light in all directions. Lights are directed to task areas only and switched off when not needed. Light masts are automatically switched off/on based on lighting sensors. Low power (63W) LED lights are used for the drill rig. Lighting within the Production area has been reduced to provide OSHA's minimum acceptable value for safe operations.</p> <p><b>Truck Traffic</b>  KMOG anticipates at total of 34,031 (544 monthly) truck trips during the construction, drilling and completions and interim reclamation phases. When the Location reaches the production phase the truck traffic will be reduced to 516 annual (43 monthly) trips throughout the anticipated 25-year life of the wells and facility.</p> <p>To minimize truck traffic, KMOG utilizes a facility design that eliminates oil storage from the Location, reduces emissions, reduces the footprint of the pad and the number of truck</p>

trips to the Location. The condensate produced from this Location will flow off-site through a pipeline, eliminating the need for trucks to transport oil. Piping oil from the Salazar Location will eliminate approximately 36,527 truck trips. This system eliminates approximately 80% of KMOG's post-production traffic. KMOG transports the water used in hydraulic fracturing through the Water-On-Demand pipeline system. Since its inception in 2012, this technology has enabled KMOG to eliminate more than 25 million miles of truck traffic. At this Location this will eliminate 100,000 truck trips. During production, trucks will only visit one Location instead of eight Locations within the area, thereby reducing associated emissions, odors, dust, and noise.

**Dust:**

Sand boxes are used during hydraulic stimulation to reduce the risk of silica dust. Road dust will be controlled by implementing a strict 10 mph speed limit on the lease roads and 5 mph speed limit on Location. If necessary KMOG will spray down the lease road with water. KMOG will minimize the tracking of mud onto roads. Street sweepers will be utilized if mud tracking becomes an issue. Access roads and Vehicle Tracking Control will receive maintenance as needed throughout operations. KMOG will respond quickly and work with the jurisdiction responsible to address any concerns related to county road damages.

**Odor:**

Although no odor impacts are anticipated, KMOG will suppress odors using closed loop systems and proactively using an odor neutralizer. KMOG will address any citizen concerns regarding odor within 24 hours.

**Scenic Value:**

The scenery in the area will be changed both during pre-production and production phases. The plugging of 38 older wells will eliminate eight facilities in the area, older equipment will be removed from those Locations, including eight water tanks and 12 oil tanks.

**OPERATOR COMMENTS AND SUBMITTAL**

As a result of plugging and abandoning older wells 7.86 tons per year (TPY) of NOx, 28.25 TPY of VOCs, 7.66 TPY of CO, and 0.42 TPY of Benzene will be eliminated.

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Date: 05/03/2023

Based on the information provided herein, this Cumulative Impacts Data Identification Form 2B complies with COGCC Rules and is hereby accepted into the Cumulative Impacts Data Evaluation Repository (CIDER database). Contact OGLA Staff for consultation.

COGCC Approved: 

**Director of COGCC**

Date: 10/17/2023

## Attachment Check List

<b>Att Doc Num</b>	<b>Name</b>
403278317	Form 02B SUBMITTED
403382146	OTHER

Total Attach: 2 Files

## General Comments

<b>User Group</b>	<b>Comment</b>	<b>Comment Date</b>
OGLA	OGDP ID# 484871 and this Form are approved by Commission Order Number 407-3514.	10/17/2023
OGLA	On October 17, 2023 at Operator's request staff updated the Submit Tab of the Form 2B to reflect information provided in the Hearing on October 11, 2023.	10/17/2023
OGLA	On September 18, 2023 at Operator's request staff updated the Pre-Production emissions estimates for non-road internal combustion engines.	09/18/2023
OGLA	The Director has determined this OGDG application is complete. Form pushed to IN PROCESS.	08/02/2023
OGLA	Returned to Draft for Completeness.	07/13/2023

Total: 5 comment(s)