



## CUMULATIVE IMPACTS PLAN

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Twin Bridges Resources LLC has prepared this Cumulative Impacts Plan for the Red Rocks 1-13 exploratory helium gas well in Las Animas County, Colorado. The table below corresponds to Colorado Oil & Gas Conservation Commission requirements in Rule 304.c.(19) and 303.a.(5).

**Table 1. Cumulative Impacts**

Resource	Potential Impact	Measures to Avoid, Minimize, or Mitigate
Air Resources	<p>Air emissions from non-road internal combustion engines used during pre-production are estimated to be (tons per year):</p> <p>NOx – 0.28 CO – 0.26 VOCs – 0.02 Methane – 0.002 CO2 – 43.2 N2O – 0.0003</p> <p>Air emissions from diesel vehicle road miles during pre-production and production are estimated to be:</p> <p>Construction – 157 Drilling – 783 Completion – 783 Interim Reclamation – 157 Production – 3917</p> <p>Air emissions of naturally occurring, noncombustible CO2 will occur from the well during pre-production drilling and well testing operations.</p>	<ul style="list-style-type: none"> <li>Air emissions from pre-production internal combustion engines and CO2 will be minimized by the 7 to 10 days needed for well drilling and completion and properly maintained vehicles.</li> <li>Air emissions from diesel vehicle road miles will be avoided during production by use of a light-duty pickup truck to perform routine inspections and maintenance.</li> <li>Air emissions will be avoided during production by connecting to a gas gathering system following drilling and well testing and prior to commencement of production. There will be no equipment, storage tanks, processing or air emissions from the Oil and Gas Location during production.</li> </ul>
Public Health	<p>Air emissions from non-road internal combustion engines used during pre-production are estimated to be (tons per year):</p> <p>Benzene – 0.15 Toluene – 0.06 Xylene – 0.02 Formaldehyde – 0.02 Total HAPs – 0.25</p>	<ul style="list-style-type: none"> <li>Public health impacts from pre-production internal combustion engines will be avoided because the nearest residential building unit is approximately 2.6 miles south of Red Rocks 1-13.</li> <li>Public health impacts will be avoided during production because the nearest residential building unit is approximately 2.6 miles south of Red Rocks 1-13 and because there will be no equipment, storage tanks, processing, or air emissions at the Oil and Gas Location.</li> </ul>

Water Resources	<p>The nearest downgradient water feature is located 1,360 feet from the edge of the Working Pad Surface. It is a remnant of a former man-made stock pond.</p>	<ul style="list-style-type: none"> <li>During pre-production, the potential for spills to impact surface water will be avoided because the nearby mapped feature is a former stock pond and because liquid storage on site will be limited to a freshwater tank to support well drilling and a fuel tank with integrated steel secondary containment. Freshwater is anticipated to be delivered 100 bbl at a time for up to 200 bbl.</li> <li>During pre-production and production, the potential for stormwater runoff will be avoided or minimized using wattles and silt fence control measures. A potential spill of freshwater would be bermed using the skid steer on site to prevent runoff.</li> <li>During production, the potential for spills to impact surface water will be avoided because there will be no processing or liquid storage on the Oil and Gas Location and because there will be no liquids transferred by flowline.</li> </ul>
Terrestrial and Aquatic Wildlife Resources and Ecosystems	<p>The Oil and Gas Location is not located in any designated high priority habitat or habitat mapped for species of concern.</p> <p>The Oil and Gas Location is located in an area mapped as black bear habitat, according to COGCC GIS Online.</p>	<ul style="list-style-type: none"> <li>A Wildlife Mitigation Plan has been prepared for the Oil and Gas Location listing wildlife protection measures to avoid or minimize impacts to general wildlife during pre-production and production.</li> <li>For black bear, impacts will be avoided during pre-production and production by installing and using bear-proof dumpsters and trash receptacles for any unsecured food-related trash at facilities that generate trash.</li> </ul>
Soil Resources	<p>Up to an estimated 3.3 acres of topsoil potentially will be disturbed for the Oil and Gas Location, access road, and flowline.</p>	<ul style="list-style-type: none"> <li>During pre-production, impacts will be minimized by salvaging and segregating topsoil. Topsoil will be protected using best management practices</li> </ul>

		<p>for stockpiling until the topsoil is redistributed during interim reclamation.</p> <ul style="list-style-type: none"> <li>During production, impacts will be minimized by reducing the Working Pad Surface to 0.2 acres. The remaining area will be reclaimed and seeded.</li> </ul>
Public Welfare/Noise	Noise will be generated by heavy equipment from preparing the well pad, drilling, completion, and associated truck traffic.	<ul style="list-style-type: none"> <li>During pre-production, impacts will be minimized because the nearest residential building unit is approximately 2.6 miles south of Red Rocks 1-13 and the location is not in high priority habitat.</li> <li>During production, impacts will be minimized because activity will be limited to routine inspections and maintenance performed using access by a light-duty pickup truck. No processing will occur on the location.</li> </ul>
Public Welfare/Light	There will be no anticipated impacts from lighting.	<ul style="list-style-type: none"> <li>During pre-production, well pad preparation, drilling, completion, well testing, and interim reclamation will be conducted during daylight hours and will not require lighting.</li> <li>During production, the Oil and Gas Location will not be lit.</li> </ul>
Public Welfare/Odor	There will be no anticipated impacts from odor.	<ul style="list-style-type: none"> <li>The well will be drilled without mud.</li> </ul>
Public Welfare/Dust	<p>Existing county and private dirt roads will be used to access the Oil and Gas Location. Estimated truck trips are listed below.</p> <p>Construction (total) – 2 Drilling (total) – 16 Completion (total) – 16 Interim Reclamation (total) – 2 Production (monthly) – 30 Production (total) - 360</p>	<ul style="list-style-type: none"> <li>To minimize dust impacts during pre-production and production, posted speed limits will be observed on the county road. Vehicle speeds will be maintained at 15 mph on the private access road.</li> <li>During production, dust will be minimized by watering, as necessary, to wet the Working Pad Surface to form a crust for areas not targeted for interim reclamation. Other areas will be reclaimed and seeded.</li> </ul>

Recreation and Scenic Values	The edge of the Working Pad Surface will be located on private ranchland approximately 970 feet from County Road 177.9.	<ul style="list-style-type: none"><li>• During pre-production, impacts will be minimized because the Oil and Gas Location is in a remote area of Las Animas County on private ranchland. Equipment is expected to be on location for the short duration of 1 day of site preparation and an estimated 7 to 10 days for well drilling and completion. The surrounding area is otherwise private property not accessible to the public.</li><li>• During production, impacts will be avoided because the Oil and Gas Location will contain only a wellhead. There will be no processing equipment. Activity on the location will be limited to an individual providing inspections and maintenance, which will be similar in visual impact to ranch activity accessed with a light-duty pickup truck.</li></ul>
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