

MRG, LP
CE Pad
SENE Section 11, T5N R68W
City of Loveland
Larimer County, Colorado

FLUID LEAK DETECTION PLAN

MRG, LP (MRG), is drafting this plan in accordance with Rules 304.c.(13), 608, 609, 1102, 1103, and 1104, as well as City of Loveland 18.77.065.D.3 and D.9.

1. Introduction and Site Description

MRG is proposing to construct the CE Pad. This is a new proposed location that will have up to 15 horizontal wells. These wells are anticipated to produce oil, natural gas, and produced water. The location is located on fee surface and will produce fee minerals.

This location will also have a new proposed access road.

The total location disturbance will be 13.4 acres. The working pad surface is 7.49 acres. The production working pad surface (post-interim reclamation) will be 2.0 acres; total production oil and gas location long-term disturbance will be 7.2 acres. The proposed constructed site elevation is 4,974'.

Drilling for each proposed well is anticipated to take approximately 6 days; the wells are anticipated to be drilled in one drilling occupation for a total of approximately 97 days. Completions for each well is anticipated to be approximately 4 days, for a total completions occupation of approximately 90 days. MRG plans to drill and complete the proposed horizontal wells before turning them over to production and evaluating the production rate. The well is anticipated to produce for 20 years.

2. Monitoring and Inspection Procedures and Schedules

Category	Site-Specific Equipment	Procedures	Schedule
Drilling	Tanks and Steel Pits	All fluid containers will be installed by third-parties familiar with the OEM recommended installation procedures.	Daily – visual inspections of all fluid containers for integrity
Drilling	Connecting temporary flowlines	Prior to beginning drilling operations, flowlines will be pressure tested to identify any potential leaks. Once integrity has been confirmed, flowlines will be utilized for drilling operations.	Daily – visual inspections of flowlines
Field-Constructed Above Ground Containers	Minion tanks are proposed for the location during completion operations only. The Minion tanks will store freshwater only on location.	The Minion tanks will be constructed by third-party vendor knowledgeable with the engineered recommendations for construction and installation.	Minion tanks will be visually inspected daily.
Secondary Containment Structures	The proposed CE Pad location will have 2 produced water tanks. For all new facilities that are installed on location, steel secondary containment will be placed around produced fluid tanks. The tanks will be set on an	Prior to installation, secondary containment will be calculated to insure sufficient volume. Field personnel will be familiarized with the	Weekly - visual inspections of berm and liner integrity Monthly – a written inspection will occur in accordance with MRG's Spill Prevention Plan.

Category	Site-Specific Equipment	Procedures	Schedule
	impervious liner within the containment.	equipment on location and where leaks may occur.	
Shop-Built Containers	Up to 2 produced water tanks and one freshwater cistern are proposed to be installed on the location. These tanks will be fabricated offsite and hauled into location for installation.	All new produced fluid tanks will be installed within the steel secondary containment on an impervious liner.	Weekly – visual inspections of tanks, valves, and piping. Monthly – a written inspection will occur, documenting visual inspections of tanks, valves, and berm integrity.
Generators / Fuel Tanks and associated secondary containment	Generators, fuel tanks, and associated secondary containment equipment may be on location for drilling and completion purposes.	Fuel tanks will be placed within secondary containment on impervious liners.	Weekly – visual inspections of equipment will occur.
Pressure Vessels (separators, heater treaters, pigging stations)	Up to 12 Separators are proposed for this location. No pigging stations are proposed.	MRG will follow OEM guidelines for onsite installation and maintenance	Weekly – visual inspections of the heater treater, associated valves, and on-location piping.
Produced Water Pits or Ponds	No pits or ponds are being proposed for this location.	N/A	N/A
Portable Containers and all Manifolded Piping	No portable containers are proposed for this location. Tanks will be manifolded together.	Prior to being placed into production, manifold connections will be tested with freshwater to identify potential leaks. Once integrity is confirmed, the tanks will be turned over to production operations.	Weekly – visual inspections of the manifolded piping

Category	Site-Specific Equipment	Procedures	Schedule
Onsite and Offsite Pipelines (flowlines, production piping, gathering lines)	<p>On-location flowlines will be installed to connect the wellheads to the separators.</p> <p>No off-location pipelines are proposed for this project.</p> <p>Third-party gathering system pipelines will be constructed by the third-party midstream company to transport produced hydrocarbon fluids and natural gas offsite for sales.</p>	Field personnel will be familiarized with Audio-Visual-Olfactory inspections and Rule 1104.	Audio-Visual-Olfactory inspections will be conducted monthly.
Additional equipment used during separation, storage, containment, or transferring of produced fluids	An oil surge vessel is proposed for this location.	MRG will follow OEM guidelines for onsite installation and maintenance	Weekly – visual inspections of the heater treater, associated valves, and on-location piping.

3. Testing and Maintenance Procedures and Schedules

Category	Site-Specific Equipment	Testing Procedures & Schedule	Maintenance Procedures & Schedule
Pressure Vessels (separators, heater treaters, pigging stations);	Up to 12 separators are proposed for the location. No pigging stations are proposed for the location.	Separators and the heater-treater will undergo initial testing as per manufacturer's specifications. Periodic integrity testing after initial start-up will occur as per standard industry practices and manufacturer's recommendations.	Audio-Visual-Olfactory inspections will be conducted monthly Issues identified during monthly inspections or during regular operations will be addressed as soon as possible.
Onsite Pipeline Testing and Maintenance	There will be onsite flowlines to connect the wellheads to the production equipment.	Below-Ground Dump Lines: a static-head test will be conducted annually. Above-Ground On-Location Flowlines: above-ground flowlines will under pressure testing as needed, such as if an integrity issue is indicated during the monthly AVO inspection. Below-Ground On-Location Flowlines: At a minimum of every three years, the below-ground on-location flowline will be tested to the maximum anticipated operating pressure.	Audio-Visual-Olfactory inspections will be conducted monthly Issues identified during monthly inspections or during regular operations will be addressed as soon as possible.

Category	Site-Specific Equipment	Testing Procedures & Schedule	Maintenance Procedures & Schedule
Offsite Pipeline Testing and Maintenance	No off-location flowlines are proposed for this location.	N/A	N/A
Storage Tanks and Containers	Above-ground storage tanks are proposed for this location.	<p>All tanks will undergo initial testing as per manufacturer's specifications prior to being connected to production.</p> <p>Periodic integrity testing after initial start-up will occur as per standard industry practices and manufacturer's recommendations.</p> <p>MRG will comply with COGCC Rule 609.b. (1) For Tanks that are built to meet API Standard 650, as incorporated by reference in Rule 608.a.(1).B, or are greater than 30 feet in diameter, API Standard 653, Tank Inspection, Repair, Alteration, and Reconstruction, (Fifth Edition, Including Addendum 1 (2018), Addendum 2 (2020), and Errata 1 (2020)). Only the fifth edition (2018, including 2020 Addendum 2 and Errata 1) of API Standard 653 apply; later amendments do not apply.</p>	<p>Weekly visual inspections will occur.</p> <p>Monthly written inspections will occur.</p> <p>Issues identified during any inspection or during regular operations will be addressed as soon as possible.</p>

Category	Site-Specific Equipment	Testing Procedures & Schedule	Maintenance Procedures & Schedule
		<p>(2) For all other Tanks, MRG will inspect and maintain following either:</p> <p>A. API Standard 12R1, Recommended Practice for Setting, Maintenance, Inspection, Operation, and Repair of Tanks in Production Service (6th edition March 2020). Only the 6th edition (March 2020) of API Standard 12R1 applies; later amendments do not apply; or</p> <p>B. Steel Tank Institute (“STI”) SP001, Standard for the Inspection of Aboveground Storage Tanks (January 2018). Only the January 2018 version of STI SP001 applies; later amendments do not apply.</p> <p>(3) For process vessels, API Standard 510, Pressure Vessel Inspector (10th edition May 2014). Only the 10th Edition (May 2014) of API Standard 510 applies to this Rule; later amendments do not apply.</p>	

4. Produced Fluids (oil, condensate, produced water) Procedures

Site Activity	Discharge Prevention Measures
Loading and Unloading Racks	Racks, if required, will be used within lined, secondary containment
Loading and Unloading Procedures	Loading and unloading will occur within lined, secondary containment.
Intra-Facility Transfer Procedures	During intra-facility transfers, field staff will regularly check all connections as fluids are being moved to insure no leaks. If a leak is detected or suspected, operations will cease until the leak has been repaired.
Drained Control Procedures	During drained control procedures, field staff will regularly check all connections as fluids are drained to insure no leaks. If a leak is detected or suspected, operations will cease until the leak has been repaired.
Well Drilling and Workover Operations	Location will have an earthen berm around location to prevent fluids from leaving location.
Storage Tank and Container Testing and Maintenance	Permanent storage tanks will be located within lined, secondary containment.

5. Record Keeping Requirements

All written inspections will be kept with the location file.

All written inspections will contain a signature of an MRG employee or company representative that performed the inspection.

All equipment will be tested and maintained as per industry standard practices and manufacturer's recommendations.

This plan will be updated with manufacturer specific information as equipment is installed on location.

Visual inspections will involve:

- Looking for tank/piping damage or leakage, stained or discolored soils, or excessive accumulation of water in diked and bermed areas;
- Observing the exterior of aboveground storage tanks, pipes, and other equipment for signs of deterioration, leaks, corrosion, and thinning.
- Observing tank foundations and supports for signs of instability or excessive settlement.
- Observing the tank fill and discharge pipes for signs of poor connection that could cause a discharge, and tank vent for obstructions and proper operation.

6. Site-Specific Fluid Leak Detection BMPs

- AVO (Audio, Visual, Olfactory) inspections of pipe and connections will be performed during Lease Operator's routine visits to location (at a minimum once every 72 hours but most sites are inspected every 24 hours) on all production equipment to detect leaks which will be immediately corrected, repaired, and reported to COGCC as required.
- MRG will use Approved Instrument Monitoring Method (AIMM) Inspections as per CDPHE's Regulation 7.
- Spill Prevention training will be provided to all field employees on an annual basis.
- Written inspections of all equipment on location will occur monthly.
- Any leaks or spills detected during monitoring will be reported within 24 hours in accordance with Rule 912.b if:
 - The spill impacts or threatens any Waters of the State, Public Water System, residence or occupied structure, livestock, wildlife, or publicly maintained road;

- A Spill or Release in which 1 Barrel or more of E&P Waste or produced Fluids is spilled or released outside of berms or other secondary containment;
- A Spill or Release of 5 Barrels or more of E&P Waste or produced Fluids regardless of whether the Spill or Release is completely contained within berms or other secondary containment.
- The discovery of 10 cubic yards or more of impacted material resulting from a current or historic Spill or Release. Discovery and reporting will not be contingent upon confirmation samples demonstrating exceedance of Table 915-1 standards.
- A suspected or actual Spill or Release of any volume where the volume cannot be immediately determined, including a Spill or Release of any volume that daylights from the subsurface.
- A Spill or Release resulting in vaporized hydrocarbon mists that leave the Oil and Gas Location or Off-Location Flowline right of way from an Oil and Gas Location and impacts or threatens to impact off-location property.
- The presence of free product or hydrocarbon sheen on Groundwater or surface water is observed.
- Annual flowline testing will also occur according to COGCC rules 1101 and 1102. Inspection and record retention of flowline testing will be in accordance per COGCC regulation. All records will be made available to the COGCC upon request.
- All loadlines shall be bullplugged or capped.
- All on-location flowlines will be inspected and tested as per Rule 1104.
- All equipment deficiencies will be corrected immediately or as soon as practical (all identified problems and corrections/repairs will be documented and records will be maintained in the operator's office).
- Spill response includes notifications, reporting, response actions, remediation and corrective actions. The spill criteria in MRG's plan requires that waste be properly classified as E&P or non-E&P wastes. For E&P waste, all spills greater than 1 barrel (outside containment) or greater than 5 barrels (inside containment) will be reported to the COGCC using a Form 19. Should spill clean-up need longer than 90 days, a Form 27 will be submitted as well. Spills related to non-E&P waste will be managed in accordance with CDPHE and EPA regulations depending on the volume spilled.
- MRG will track and clean up all spills, including those that are not reportable.
- MRG will temporarily shut in the production well on the pad in the event of any upset condition.
- If a leak is discovered or suspected, the well will be shut in and the line will be hydrotested. If a leak is determined, the well remains shut in while the leak is located and repaired. Not until the line has passed hydrotesting, will the well be brought back online.