

# **Closure and Reclamation Plan East MacKay, Northwest Territories**



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# Table of Contents

## Contents

1.0 Introduction .....	3
Table 1 Closure Planning Team .....	3
2.0 CLOSURE AND RECLAMATION PROGRAM SUMMARY .....	3
2.1 Previous Site Conditions .....	3
2.2 Current Site Conditions .....	4
Table 2 Site Conditions.....	4
2.3 Abandonment and Surface Equipment Removal.....	5
2.4 Reclamation and Post Site Goals .....	5
3.0 ENGAGEMENT.....	6
4.0 PERMANENT CLOSURE, MONITORING and RECLAMATION .....	6
6.0 TEMPORARY CLOSURE .....	7
7.0 FINANCIAL SECURITY .....	7
8.0 TIMELINE AND PRIORITY .....	7
Table 3 Proposed Sequence of Events .....	8

## Tables

Table 1: Closure Planning Team

Table2: Site Conditions

Table 3: Proposed Sequence of Events

## Appendices

A Site Photos

## 1.0 Introduction

### 1.1 Purpose and Scope

The East Mackay I-78 Wellsite Area (Wellsite Area) and East Mackay I-78 Staging Area (Staging Area), collectively called the Site, are located in the Sahtu Settlement Area (SSA), Northwest Territories (NWT). The Wellsite Area is located approximately 110 km southeast of Norman Wells. The Staging Area is located approximately 22 km north of the Wellsite Area along the banks of the Mackenzie River (Appendix A: Project Map). The Wellsite Area is approximately 2.7 ha and includes a Wellhead, Recovered Wellhead Bare Area and groundwater monitoring wells. The decommissioned Staging Area is a 0.80 ha parcel. Maps and an as built survey can be found in Appendix A of this document.

The drilling and construction activities for the well occurred in the 2012-2013 winter season, the well has remained in a suspended state since. MGM has regularly been conducting environmental monitoring of the location and has been conducting Office of the Regulator Oil and Gas Operations (“OROGO”) inspections of the wellhead. On February 1, 2017 OROGO implemented the Well Suspension and Abandonment Guidelines and Interpretation Notes (“the guidelines”). To comply with the guidelines MGM Energy (“MGM”) is planning on abandoning wellbore, removing the wellhead and completing any reclamation activities that are needed.

### 1.2 Closure and Reclamation Planning Team

The current reclamation and closure team consists of the following Paramount personnel:

**Table 1 Closure Planning Team**

Role	Name	Contact
Director, Asset Management	John Hawkins	Telephone: 403-817-5074 Email: john.hawkins@Paramountres.com
Environmental Coordinator	Ian Keir	Telephone: 403-817-5077 Email: ian.keir@Paramountres.com
Regulatory and Community Affairs Advisor	Terence Hughes	Telephone: 403-206-3859 Email: terence.hughes@Paramountres.com

## 2.0 CLOSURE AND RECLAMATION PROGRAM SUMMARY

This Closure and Reclamation Plan intends to describe the reclamation strategy and provide updated timelines and a description of activities for the Site. The following information provides an overview of the closure and reclamation process and a summary of activities at the Site to date.

### 2.1 Previous Site Conditions

Prior to the site being used by MGM for the drilling activities large portions of the site had been previously disturbed either naturally (fire) or anthropogenically via seismic lines, previous access or previous same use

(Staging Area). Pre-activity photos are included in Appendix “A”. Further details of the pre-activity conditions were outlined in the original Land Use Permit application, it can be found online at [https://registry.mvlwb.ca/Documents/S12A-001/S12A-001%20-%20Appendix%201-B\\_Pre-Disturbance%20Assessment%20Report%20-%20Apr%2030\\_12.pdf](https://registry.mvlwb.ca/Documents/S12A-001/S12A-001%20-%20Appendix%201-B_Pre-Disturbance%20Assessment%20Report%20-%20Apr%2030_12.pdf) .

## 2.2 Current Site Conditions

The project area has been annually monitored since the original drilling, the exception being the summer of 2021 due to a large COVID outbreak in the SSA. The annual reports can be found at <https://slwb.com/registry/S12L1-001> and <https://slwb.com/registry/S12A-001> . Additionally, Government of the Northwest Territories (“GNWT”) inspection reports can be found at the same links, the last inspection was conducted in 2021. Overall, the Site is in excellent condition:

**Table 2 Site Conditions**

Parameters	Qualitative Monitoring Observations and Results
On-Site Materials	<p><b>Wellsite Area:</b>  Contained a wellhead and three groundwater monitoring wells (GW001, GW002, and GW003). All were observed to be in good condition during the site visit.  No other surface structures, materials, or waste were observed within the remainder of the Site during the site visit.</p> <p><b>Staging Area:</b>  Previously documented third-party trailer, wooden outbuilding, scrap wood and metal wastes remained in the southwest corner of the Staging Area.  A fuel oil/kerosene tank with a slight leak was observed on the trailer.  Materials present at the Staging Area are not the property of MGM Energy. The ownership of the materials is unknown.</p>
Terrain	<ul style="list-style-type: none"> <li>No terrain stability concerns were observed at the Wellsite Area or Staging Area during the site visit. Terrain conditions observed to be stable.</li> </ul>
Standing Water	<p><b>Wellsite Area:</b>  No standing water was sampled during the site visit.  Standing water was observed around the wellhead.</p> <p><b>Staging Area:</b></p> <ul style="list-style-type: none"> <li>No standing water was sampled during the site visit.</li> <li>No standing water was observed at the Staging Area during the site visit.</li> </ul>
Soils	<p><b>Wellsite Area:</b>  Soil samples were not collected during the site visit.  No evidence of soil contaminants such as sheen, surface staining, or surface crusts were observed at the Wellsite Area.</p> <p><b>Staging Area:</b></p> <ul style="list-style-type: none"> <li>No soil samples were collected during the site visit.</li> <li>Surface staining (oily residue) on the ground below the kerosene/fuel tank found slightly leaking. The fuel tank is associated with the third-party trailer located in the southwest corner of the site.</li> </ul>
Vegetation	<p><b>Wellsite Area:</b>  Site had naturally revegetated in lease area around wellhead location.  Native vegetation cover and health on the Wellsite Area was meeting land use permit S12A-001 requirements (&gt;70% vegetation cover, in healthy condition).  Recovered Wellhead Bare Area continued to have a well-established vegetation cover and was meeting permit requirements.  Vegetation appeared healthy; no health issues observed.  No invasive plants/weeds observed within the Site during the site visit</p>

Parameters	Qualitative Monitoring Observations and Results
Vegetation(cont'd)	<b>Staging Area:</b> <ul style="list-style-type: none"> <li>West end of Staging Area has naturally revegetated with native trees, shrubs, and forbs. Vegetation cover was meeting permit requirements (&gt;70% cover, healthy conditions).</li> <li>East portion has revegetated with seeded agronomic grasses and legumes and has naturally revegetated with native trees, shrubs, and forbs.</li> <li>Vegetation cover in the east portion of the Staging Area was approximately 55% to 70% cover. Vegetation appeared healthy; no health issues observed.</li> <li>Overall, vegetation cover in the east portion met land use permit conditions for vegetation health but was slightly under for vegetation cover (&lt;70% cover).</li> <li>Previously observed invasive plant locations were not monitored during the 2020 site visit.</li> </ul>
Wildlife Signs	<b>Wellsite Area:</b> <ul style="list-style-type: none"> <li>Moose (<i>Alces alces ssp. americanus</i>) hoof prints were observed within the Wellsite Area during the site visit.</li> <li>No other wildlife signs of use were observed within the Wellsite Area during the site visit.</li> </ul> <b>Staging Area:</b> <ul style="list-style-type: none"> <li>Moose droppings observed in the west and east ends of the Staging Area.</li> <li>No other wildlife signs of use were observed within the Staging Area during the site visit.</li> </ul>

Minor slumping around the wellhead was noted by the Land Use Inspector in 2021, this will be addressed after the abandonment after the wellhead has been removed.

## 2.3 Abandonment and Surface Equipment Removal

The primary objective at this stage will be to complete the downhole and surface abandonment of wells. The current groundwater monitoring wells will also be removed at this time. The GNWT Lands department is aware of the 3rd party equipment at the staging area and understands that equipment is not the responsibility of MGM.

The well will be abandoned in either Q1 of 2023 or Q1 of 2024 in accordance with the Office of the Regulator of Oil and Gas Operations (“OROGO”) Well Suspension and Abandonment Guidelines and Interpretation Notes and all surface infrastructure at the wellsite has been removed.

## 2.4 Reclamation and Post Site Goals

Soil and standing water exceedances were noted at the well center in 2019. The well center (wellhead) area exceedances were delineated in the summer of 2022. Results will be submitted as part of the 2022 Annual Report and will be used to inform the amount of reclamation/remediation for the site. After cut and cap of the wellhead soils will be sampled, any remaining soil exceedances will be removed. MGM expects to remove the impacted soils, if any, from the site as per the project Waste Management Plan. MGM will source clean fill and backfill the excavation, this operation will also address the noted slumping at the wellhead.

The remainder of the project area is not expected to require remediation activities unless additional issues are created by the abandonment operation (spill). Given the amount of equipment on site during the abandonment and the activity is being conducted during winter it is anticipated that any additional work will be completed at that time.

Other than at the well center, vegetation clearing is expected to be minimal to negligible. The project

currently exceeds the Land Use Permit requirement of <70% vegetation cover. Currently no invasive species are present on the wellsite area, the use of clean fill, clean equipment and natural encroachment should minimize any further invasive species. The staging area has good vegetation cover and is expected to reach 70% cover prior to project closure. Given the use of the staging area by other parties is not expected that is project component will be fully closed. The access for the project is revegetated MGM will be utilizing a minimal disturbance ice road.

The goal for soil areas that will undertake remediation is to meet NWT Environmental Guideline for Contaminated Site Remediation, November 2003 or similar to background samples. If any standing water is observed (not expected) it will be expected to meet the Canadian Council of Ministers of the Environment guidelines. Vegetation is and will meet the Land Use Permit conditions for vegetative cover (expected to be <70%).

### 3.0 ENGAGEMENT

The level of engagement with stakeholders and affected parties by MGM, has been and will continue to be, reflective of its activity level in the area. Prior to and during construction and development activities engagement activities were more frequent and intense and included studies, community meetings, open houses, meetings with community leaders and Councils, telephone calls and both written and electronically notifications. The engagement related to closure is documented in the engagement plan and log submitted with the Land Use Permit and Water Licence application which this Closure and Reclamation Plan is a part of. Further, the processes of the Sahtu Land and Water Board will allow for review of this Plan and all other aspects of the proposed project.

### 4.0 PERMANENT CLOSURE, MONITORING and RECLAMATION

Permanent closure is the final closure of a site with no foreseeable intent by the existing proponent to return to either active exploration or development. Permanent closure indicates that the proponent intends to have no activity on the site aside from post-closure monitoring and potential contingency actions. Permanent closure does not, however, preclude the proponent or another party from pursuing opportunities at the existing site or in the area at a time beyond the foreseeable future.

MGM will be seeking permanent closure of all project components except the Staging Area, as it is being used by another Land User. MGM does not anticipate any negative residual effects to remain after reclamation is complete. Post reclamation activities will consist of reconnaissance level vegetation and terrain monitoring to confirm reclamation success. Monitoring is anticipated to occur annually, during summer months for a period of 2 to 3 years. The first year will also include confirmatory soil sampling to verify previous reclamation results.

Vegetation monitoring will include documentation of revegetation and checking the site for invasive species. Terrain monitoring will include identification of erosion and settling issues. If the presence of standing water is observed it will be monitored and sampled as necessary. If during the annual monitoring or from sampling issues are identified that need to be addressed minor reclamation treatments will be conducted via helicopter. These could include invasive species management, scarification, recontouring, erosion control measure seeding and other vegetation management techniques.

## 6.0 TEMPORARY CLOSURE

MGM has no intention of resuming activities on sites slated for closure. Therefore, temporary closure is not applicable to this Closure and Reclamation Plan.

## 7.0 FINANCIAL SECURITY

An updated Security Estimate is enclosed with this submission as a separate document.

## 8.0 TIMELINE AND PRIORITY

The Closure and Reclamation program will be implemented over multiple years and will be subject to changes as new information becomes available. Table 2 below presents the proposed sequence of events.

**Table 3 Proposed Sequence of Events**

Action	Rationale	General Timeframe
Abandonment, Remediation and reclamation earthworks	<ul style="list-style-type: none"> <li>Completed; see above description of remediation and reclamation activities.</li> </ul>	Q1 2023 or Q1 2024
<p>Monitor wellsite for settling and vegetation reestablishment</p> <p>Sample surface soils to evaluate and monitor any residual soil or water exceedances</p>	<ul style="list-style-type: none"> <li>To ensure that revegetation is on track, to monitor for undesirable species presence and to check that excessive settling has not occurred from the 2020 remediation and reclamation activities.</li> <li>To monitor potential residual concentrations in surface soils or standing water</li> </ul>	2023-2026
Site closure	<ul style="list-style-type: none"> <li>Conduct a site visit with the inspector with the intention of receiving final regulatory closure on the site.</li> </ul>	2026 or 2027





## **APPENDIX A**

### Site Photos

# PHOTOGRAPHIC LOG



Site Name: Tulita Shale Drilling Project		Site Location: Near Tulita		Project No. 60224909
Photo No. 5	Date: Oct 12, 2011			
Direction Photo Taken:  Northeast				
Description:  Old burn area with new re-growth Area of Interest - North				
Photo No. 6	Date: Oct 12, 2011			
Direction Photo Taken:  Southwest				
Description:  Area of Interest - North from helicopter.				



# PHOTOGRAPHIC LOG



Site Name: Tulita Shale Drilling Project

Site Location: Near Tulita

Project No.  
60224909

Photo No.  
3

Date:  
Oct 15,  
2011

Direction Photo  
Taken:

North

Description:

Campsite #2, next to  
seismic line with road in  
the distance.



Photo No.  
4

Date:  
Oct 15,  
2011

Direction Photo  
Taken:

East

Description:

Road Northeast of  
campsite #2.





# PHOTOGRAPHIC LOG



Site Name: Tulita Shale Drilling Project

Site Location: Near Tulita

Project No.  
60224909

Photo No.  
3

Date:  
Oct 12,  
2011

Direction Photo  
Taken:

Southwest

Description:

Northwest of Staging  
area.



Photo No.  
4

Date:  
Oct 12,  
2011

Direction Photo  
Taken:

Description:



Dense gravelly, cobbly  
sand encountered at  
Staging area.





# PHOTOGRAPHIC LOG



Site Name: Tulita Shale Drilling Project		Site Location: Near Tulita	Project No. 60224909
Photo No. 5	Date: Oct 12, 2011		
Direction Photo Taken:  Northwest			
Description:  Southwest of Staging Area.			
Photo No. 6	Date: Oct 12, 2011		
Direction Photo Taken:  Northeast			
Description:  Southwest of Staging area toward centre of site.			



# PHOTOGRAPHIC LOG



Site Name: Tulita Shale Drilling Project

Site Location: Near Tulita

Project No.  
60224909

Photo No.  
7

Date:  
Oct 12,  
2011

Direction Photo  
Taken:

West

Description:

Northeast of Staging area  
toward centre of site.



Photo No.  
8

Date:  
Oct 12,  
2011

Direction Photo  
Taken:

West

Description:

Access road West of  
Staging area from Staging  
area.





# PHOTOGRAPHIC LOG



**Site Name:** Tulita Shale Drilling Project

**Site Location:** Near Tulita

**Project No.**  
60224909

**Photo No.**  
8

**Date:**  
Oct 12,  
2011

**Direction Photo Taken:**

North

**Description:**

Staging area toward MacKenzie River; view from next to trailer at site.



**Photo No.**  
10

**Date:**  
Oct 12,  
2011

**Direction Photo Taken:**

Northwest

**Description:**

Staging Area.





NOTE: Overview of the Wellsite Area and surrounding area showing overall terrain and vegetation conditions (August 20, 2020).





NOTE: On-site materials showing wellhead and sign (August 20, 2020).



NOTE: View of ground and vegetation conditions in the Wellsite Area looking southeast. Wellsite Area was undisturbed and has revegetated with naturally established native trees, shrubs, and forbs. Vegetation cover, was meeting permit requirements (>70% cover, healthy conditions) (August 20, 2020).





NOTE: Overview showing the overall ground and vegetation conditions and location of the third-party on-site materials (August 20, 2020).





NOTE: Third-party debris located in the southwest corner of the Staging Area.



NOTE: View of ground and vegetation conditions in the east portion of the Staging Area looking east. East portion has revegetated with seeded agronomic legumes and grasses and naturally established native trees, shrubs, and forbs. Vegetation cover in the east portion was approximately 55% to 70% cover and appeared healthy (August 20, 2020).