Environmental Monitoring Report

for Redevelopment and Enhanced Oil Recovery (EOR) Programme

April – September 2022

MPRL E&P Pte Ltd.

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Acronym	Definition
ALARM	Advancing Life and Regenerating Motherland
API	American Petroleum Institute
Bcf	Billion Cubic Feet
BHA	Bottom-Hole Assembly
CSR	Corporate Social Responsibility
DNA	Deoxyribonucleic Acid
DWQS	Drinking Water Quality Standard
ECC	Environmental Compliance Certificate
ECD	Environmental Conservation Department
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EOR	Enhanced Oil Recovery
ERP	Emergency Response Plan
ETA	Estimated Time Arrival
GOCS	Gas and Oil Collecting Station
HSE	Health, Safety and Environment
IGC	International General Certificate
ISO	International Standard Organization
KPIs	Key Performance Indicators
LPG	Liquefied Petroleum Gas
MEDEVAC	Medical Evacuation
MFO	Mann Field Office
MMbbls	One Million Barrels of Oil
MOGE	Myanma Oil and Gas Enterprise
NDT	Non-Destructive Testing
NEBOSH	National Examination Board in Occupational Safety and Health
NEQEG	National Environmental Quality (Emission) Guidelines
OHSAS	Occupational Health and Safety Assessment Series
PCC	Performance Compensation Contract
PPE	Planning and Production Engineering
PSD	Process Shut-Down
RO	Reverse Osmosis
SMC	Sludge Management Compound
WMC	Waste Management Compound

1. Executive Summary

MPRL E&P is a leader in the upstream energy sector in both the onshore and offshore regions of Myanmar. Since its establishment in 1996, MPRL E&P has amassed over a decade of experience and a solid proven track record within the oil and gas sector.

At MPRL E&P, we conduct business to the highest ethics, legitimacy, and transparency standards, guided by a clear sense of social and environmental responsibility. We believe the growth of our organization is dependent on the empowerment of our employees. We strive to develop a thriving environment ensuring employees become involved in a process of continuous improvement.

This fifth environmental monitoring report covers the activities and progress of the performance of environmental implementation and monitoring during the six months from April 2022 to September 2022. It includes all the data from the monitoring activities, the progress of the environmental measures under the Environmental Management Plan (EMP), the sludge composition testing, implementation progress based on comments from ECD, implications for decommissioning plan and challenges in actual operations. EMP together with its Eight sub-plans are implemented as per schedule.

Key Highlights within the monitoring periods (April 2022 to September 2022)

Environmental Activities

- MPRL E&P submitted the notification letter of the Fifth Environmental Monitoring Survey Plan, our reference MPRL E&P/Mann/LET-167/22 dated 27 July 2022, to ECD (Magway) about postponing of third party Environmental Monitoring Survey plan due to the suddenly re-increasing and outbreak rate of COVID-19 (BA-4/5), security concerns and some of the travel restrictions within the region.
- In spite of that situation was unavailable to perform a third-party Environmental Monitoring Survey (Air Quality, Noise, Surface Water Quality, Groundwater Quality and Soil Quality), a self-environmental monitoring plan was implemented.
- Under our self-monitoring activities, the Drinking Water Quality, Discharged Water from the Base Camp, Domestic Water from the Down-hole and Mobile Workshop, Hydro-test Water from Warehouse, and the ground water test were conducted as per the planned schedule. Detail Monitoring Activities are described in Article 8.3 and 8.5.
- Based on the monitoring results, some exceeding parameters occurred, especially in total phosphorus and total coliforms. These parameters are reasonably possible by the surrounding environmental factors and are not related to the operational activities.

- The field operations continue to maintain the achievement of zero discharge of produced water since 24 August 2017.
- Most all parameters are available for analysis and measure as per commitment in the EIA report except Uranium which was not available in the labs within our country, Myanmar. We will measure that parameter if the lab situations are permitted to be capable to analyze with their facilities in the Country.
- As for awareness training to employees, HSE department conducted Health, Safety and Environment related topics alternately every month as per training plan.
- During six-month period, one oil spill case was happened near M-185 & M-41 production flow line due to third party intrusion (pilfering case). About 0.5 barrel of oil was spilled but all were recovered and reconditioned the spill area as per practices.
- MPRL E&P remains highly committed to monitoring the obligation and commitment from the ECC and EIA if the situations are permits.

Operational Grievance Mechanism and Corporate Social Responsibility (CSR)

Over the first six months, starting in April and ending in September, of the Fiscal Year 2022 – 2023, MPRL E&P's CSR Program implemented several of strategic community investment initiatives: Community Infrastructure Development, Community Livelihood Development, Educational Partnership Program, Community Healthcare Program, Community-led Waste Management Program, Stakeholder Engagement, Corporate Philanthropy, and Operational Grievance Mechanism.

The CSR Program completed (6) Community Infrastructure Development Initiatives, which included provision of furniture and workout equipment for community center pilot project in Aye Mya Village, provision of water pump, water well drilling cost and roof construction project at Kywe Cha Village, provision of water pump and PVC pipe for water supply project at Ywar Thar Village, provision of concrete culvert construction project in Makyee Chaung Village, provision of 520-feet tube well digging project in Pauk Kone Village and provision of road concrete slab and drainage construction in Mann Kyoe Village. The annual water quality test and maintenance on previous infrastructure projects were also conducted in this report time.

The CSR Program invested in agriculture, livestock and vocational skills development with the collaboration of the public and private agencies. With the purpose of optimizing in community agricultural development, several of trainings - Seed Treatment and Packaging Training, Fish Amino Acid Hands-on Trainings, Disease and Pest Control in Tomato, Chili and Chickpea Farming Trainings were successfully organized during this period. The provision of seeds, plastic mulches and technical support, facilitating in animal vaccination program and monitoring visit to farms for success stories of fish amino acid were carried out in a timely manner. The CSR Program coordinated (14) participants of former Basic First Aid Training in joining Emergency Response Team of MRCS (Minbu) and provided necessary supports

including facilitation in social welfare activities and provision of MRCS uniforms. The women in Mann Field Communities were also empowered by the CSR Program providing Value-Added Tomato Product Making Training in the collaboration SSID (Magway).

Under the Educational Partnership Program, MPRL E&P's CSR Program equipped Mann Field community youths with technical and vocational skills. The scholarship supports were awarded to (7) community youths for studying at SAI (Pwint Phyu) and (3) community youths for studying at GTHS (Magway).

During this reporting time, the CSR Program extended two more clinic sessions of Mobile Clinic Program in the response to the community's request in healthcare service needs. The CSR Program operated five clinic sessions per week in six centrally located villages around Mann Field: Kywe Cha, Kyar Kan, Lay Eain Tan, Let Pan Ta Pin, Nan U and Aye Mya Villages. The CSR Program also organized (15) sessions of "Health Education Talks on Diabetes and Hypertension" to improve health knowledge, attitudes, skills and behavior in Mann Field Communities.

The CSR Program provided essential supports to Community-led Waste Management Program and Trash Hero Minbu's cleanup activities. As part of Community-led Waste Management Initiatives, a total of (11) sessions of knowledge sharing on Water, Sanitation and Hygiene (WASH) and 5R's were conducted at (6) schools in Mann Field.

In this Fiscal Year, MPRL E&P's CSR Program engaged with stakeholders at field level, community level, local and regional levels. The CSR Program organized (165) stakeholder engagement meetings with (962) participants – including Volunteer Recognition and Appreciation Event and 2nd Biannual CSR Progress Update and Review Meeting of Fiscal Year 2021 – 2022 with MOGE in Nay Pyi Taw and the local communities in Mann Field. As part of corporate philanthropic focus, MPRL E&P offered contributing funds to community works and disaster relief program.

A total of (6) OGM cases were received in this reporting time and all the reported cases were inspected and repaired by Mann Field Operator (MOGE) and MPRL E&P's Field Operations Team, and closed by the CSR Team, keeping all KPIs met.

Environmental Monitoring Report

for Redevelopment and Enhanced Oil Recovery (EOR) Programme

April – September 2022

2. Project Description and Production Information

The Mann Field, discovered in 1970 by MOGE, currently includes 674 wells of which 308 were producing as of September 2022 while the remaining wells were shut-in. The total produced oil and associated gas from the Production Enhancement Project is 15.5 MMbbls, including 9.7 MMbbls above the normal decline curve, and 17.8 Bcf gas as of September 2022.

2.1 Mann Field Operation Status

Under the PCC, MPRL E&P is undertaking a re-development operations activity of the Mann Field to improve the environmental performance of the operations.

The operation activity includes:

Infill well drillings – due to the current decline of the field, MOGE and MPRL E&P have been drilling infill wells in main Mann Field areas close to currently producing wells and outside of surrounding communities, however no infill well activity during the last six months.

Deepening Wells – to deepen tens to hundreds of feet from existing wellbore by drilling, no activity of deepening well during six months.

Chemical Treatment –to ensure that oil is maximized from the reservoir by using small amount of chemical such as paraffin dispersant, paraffin inhibitor, and non-chemical GreenZyme. GreenZyme is a biological liquid enzyme that is not only harmless to any individual's health but also an environmentally friendly product.

Remedial and workover operations – maintain oil production by servicing such as swabbing, scraping and bailing of producing wells.

Improvement of Pumping Unit – pumping units will be / have been repaired to reduce the likelihood of spills in the surrounding areas.

Refurbishments of the Gas and Oil Collecting Stations (GOCS), Flow Pipes and Drain Pits – to ensure the health and safety to surrounding communities and reduce the risk of spills.

Rehabilitation of Shut-in Wells – sealing off shut-in wells to avoid contamination of surrounding and restoring surrounding areas to resemble their original state.

Re-perforations will be undertaken for better control of the well.

Development of Produced Water Management System – produced water will be injected into the shut-in wells.

2.2 Current Operations Summary

In Mann Field, the aim of remedial and work-over operations is to restore and maintain oil production. These operations perform an average of 42 wells per month by a variety of activities with minimal environmental impact.

2.2.1 Remedial and Work Over Operations

The following table shows the monitoring and tracking of the remedial and work-over operations activities within six months.

Table 1: Remedial and Work Over Operation Activities

No.	Service	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Total
		Frequency of Activities						
1	Bailing	1	1				1	3
2	Bailing & Change Tubing	1	2	3	7	2	1	16
3	Bailing Inside Liner		1			1		2
4	Check BHA and Bailing			1	1	1	1	4
5	Change Tubing	1		1		2		4
6	Change Tubing Size		1			1		2
7	Change Well Head					2		2
8	Clean out Bottom	2	2	2	2	4		12
9	Dewaxing	1						1
10	Fishing & Pump Service	1	3			1	1	6
11	Injectivity Test		1					1
12	Lower Down PSD	1						1
13	Pump Service	18	15	20	23	25	30	131
14	Raise Up PSD and Pump Service			1				1
15	Recover Injection String					1	1	2
16	Recover BHA		6	3		1		10
17	Recover S/rod		2	1		1		4
18	Re-pumping				1			1
19	Scraping & Bailing			2				2
20	Scraping, Bailing & Change Tubing	6		3		3		12
21	Swabbing & Bailing						2	2
22	Swabbing, Bailing & Change Tubing	7	4	1	2		8	22

No.	Service	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Total
		Frequency of Activities						
23	Replace Defected Casing					1		1
24	Zone Isolation	7	4	1	2	1		15
	Total Serviced Wells (Monthly)	**46**	**42**	**39**	**38**	**47**	**45**	**257**

2.2.2 Mobile Power Generator Register Lists in Mann Field

The following Plant/Equipment are being used in Mann Field.

Table 2: Mobile Power Generator Lists

No	Unit Name	Engine Type	Hose Power	Units
1	P-100	CAT-3408	365HP	1
2	P-82	CAT-3306	270HP	1
3	P-75	Cummins N855-P-236	235HP	1
4	P-70	Cummins N855-P-250	250HP	1
5	P-69	Cummins N855-P-250	250HP	1
6	P-65	Detroit 6V71	260HP	1
7	Tractors	KaSaLa	50HP	3
8	35Tons Tadano Crane	Nissan-RF8	340HP	1
9	416 Backhoe	CAT-4.236	85HP	1
10	950 Forklift	CAT-3304	160HP	1
11	966 Wheel Loader	CAT-3306	200HP	1
12	Grader	CAT-3306	200HP	1
13	D8K Dozer	CAT-D342	275HP	1
14	GD Mud Pump	CAT-3306	350HP	1
15	OPI Mud Pump	Detroit-6V71	365HP	1
16	JWS Mud Pump	Detroit-8V92	469HP	1
17	15PS King Power Swivel	CAT-3034(C6.6)	173HP	1

No	Unit Name	Engine Type	Hose Power	Units
18	Power Pack	Deutz-F6L912	63HP	2
19	Welding Machine	Deutz-F3L912	25HP	2
20	Sullair Compressor	CAT-3054	85HP	1
21	55Tons Kato Crane	MITSUBISHI-8DC9 engine	320HP	1
22	Wire Line Unit	YAMAHA	10HP	1
23	Blue Truck	Cummins NTC-350	350HP	1
24	White Truck	Cummins NTC-350	350HP	1
25	Vehicle			26
26	Weed Cutting Machine	Honda	1.3 Hp	5
27	Weed Cutting Machine	VHV	7.5 HP	1
28	Diesel Engine Water Pump	KEMAGE	4 HP	2

3. Environmental Management Organization

MPRL E&P is committed to providing resources essential to the implementation and control of the EMP. Resources include the appropriate human resources and specialized skills. The structure of the organization responsible for environmental management and implementation of the EMP is depicted in Table 3.

Table 3: Environmental Management Organization Roles and Responsibility

Position	Responsibility
MPRL E&P	
Country Manager & Executive Vice President	Oversee and coordinate all activities on the Project; ultimately responsible for environmental issues. Ensure delivery by the asset of its environmental, and operational targets. Ensure effective communication with all stakeholders.
Field Operations Manager	Technical aspects of the Project include contractor supervision during operations. Responsible for the execution of the Emergency Response Plan including the Oil Spill Contingency Plan. The Field Operations Manager has control over strategic project aspects and interaction with subcontractor staff where project activities take place.
Construction Manager	Technical aspects of the Project including subcontractor supervision during Project implementation.
HSE Officer (HSE Coordinator)	Ensuring in cooperation with Environmental Officer, that the Project and subcontractors operate following applicable regulatory environmental requirements and plans. Monitor implementation of environmental protection measures, (on-behalf of Environmental Officer), and assist with technical input into oil spill requirements. The HSE Officer is monitoring the implementation of Health, Safety, and Environmental protection measures, including tracking, inspection, reporting, and assisting with technical input into emergency response procedures and implementation as per the EMP.
Environmental Officer	Responsible for the implementation of EMP and ensuring that environmental regulatory requirements are met with the National Environmental Quality Emission Guidelines (NEQEG).

Position	Responsibility
	Monitor implementation of environmental protection measures. Ensures environmental monitoring and inspections/ audits are undertaken as per the requirements of the EMP. Responsible for implementing the EMP and supervising contractors during the monitoring activities in the operations and preparing the environmental monitoring report.
CSR Field Coordinator (Community Liaison Officer)	Liaise with local communities, farmers and government regulators on the Project's behalf. Implement environmental awareness and education programmes with communities.
HSE Manager	Ensure that environmental regulatory requirements are met and that EMP requirements are properly implemented.

4. Highlights on HSE Key Performance Indicators

Upon the agreement between the HSE department and the field management team, HSE KPIs had been set for the field team as part of achieving continual improvement and integrating HSE as part of the business.

Achievement Vs. Failure based on Set KPIs

In this regard, the HSE department reviewed the actual performance of the field against the set and targeted KPIs in the mid of the fiscal year to find out the successes and the failures (or) the achievements and the areas that need improvement during the remainder of the fiscal year.

Based on the review, the successes or achievements are as below:

For Fiscal Year 2022 – 2023 (April ~ September)

The Mann Field Production Enhancement Project achieved "2 Years without Lost Time Accident (LTA)" on 17 August 2022.

In terms of reactive performance, no lost-time accidents occurred during the year. The total number of recordable cases was the same as the established KPI, which means it was an achievement and did not exceed the target number.

As proactive performances, the field team received (4,919) CARE Cards just within the first six months of the fiscal year, which is remarkable as it exceeded the targeted quantity, 3,600 Ea per year. To improve HSE knowledge and ensure the competency of staff, the HSE mandatory training such as First Aid, Fire Safety training, and Electrical Safety training was implemented and completed 100% as per the planned schedule. The Permit to Work audits using a checklist were performed 100% by following the plan. For the safety of staff and equipment, several inspections for Portable Gas Detector, Annual Lifting and Hoisting Gear Inspection and NDT Test, etc. were conducted and achieved 100% of the target. As part of developing positive HSE culture within the organization, the CARE Card Award program had been ongoing to motivate the crews from MOGE and casual laborers. Moreover, to mitigate the COVID-19 spread among operation staff, COVID-19 vaccination programs are conducted. As part of the implementation of the environmental action plan, the field team successfully maintained the disposal of produced water 100% back to the shut-in well.

We also had failures (or) areas that need further refinement. The majority of the failure / suspended actions were due to the restrictions of COVID-19 and political crises situations across the country. The KPIs we did not successfully achieve were summarized below.

1. Some HSE inspections such as weekly cross inspection and weekly hazard hunt inspection with the field inspection team.
2. Some muster drills at base camp & work sites.

3. Some quality monitoring such as soil, ambient air/noise level.
4. Some programs such as the "Know It" HSE safety quiz program and safety talk by HoDs to other departments.
5. Some implementations of corrective action items from incident investigation and audit reports such as securing open casing wells and Installation of flare posts at vent gas wells.

MPRL E&P Mann Field HSE Plan (2022~2023)

	Planning	KPI Target for 2022-23	Unit	Action by	Deliverables / Evidence	Implementation Schedule	Apr	May	Jun	Jul	Aug	Sep	Actual	Completion (%)
1	**Reactive HSE Performance Indicators**													
1.1	Loss Time Accident (LTA)	0	Time	All Personnel	Report	Weekly	0	0	0	0	0	0		
1.2	Total Recordable Case (Excluding under control of MOGE , Environmental Incident)	4	Time	All Personnel	Report	Weekly	2	0	0	1	1	0	4	
1.3	Total Recordable Case (Environmental Incident Only)	5	Time	All Personnel	Report	Weekly	0	0	0	0	1	0	1	
2	**Active Performance Indicators**													
2.1	CARE cards report quota (MFO) 150 Ea per month	3600	EA	Field Operation / HSEO	CARE Cards Register	Monthly	804	911	846	740	799	819	4919	137%
2.2	Regular / Random alcohol Test	4	Time	Medic	Checklist	Quarterly	2		P		1	P	3	75%
2.3	"Safety Talk by HoDs to other department " (Target audience will be nominated separately onwards)	12	Time	All HODs	Photos and Attendance Record	Monthly	P	P	P	P	P	P		
3	**PERIODIC HSE AUDIT & REPORT**													
3.1	Carry out Permit To Work audit with checklist	12	Time	SHSEO / AFOM/ SE	Checklist	Monthly	1	1	1	1	2	2	8	67%
3.2	To conduct weekly cross inspection	48	Time	SHSEO / MFO	Record	Weekly	4	4	2	P	P	P	10	21%
3.3	To couduct weekly field inspection with Field Inspection Team (MFO) and (Hazard hunt report)	36	Time	SHSEO / Inspection Team	Report by mail	Weekly	4	3	2	P	P	P	9	25%
3.4	HSE Bi Annual Auidt	1	Time	HSEM/AHSEM	Report	Bi Annual								0%
4	**Emergency Equipment Inspection**													
4.1	Fire Extinguisher Inspection	12	Time	SHSEO	Checklist	Monthly	1	1	1	1	1	1	6	50%
4.2	Certification for Portable Gas Detector	1	Time	SHSEO	Checklist	Every four month				1			1	100%
4.3	50 Litre Wheel Spill Kit Inspection	4	Time	SHSEO	Checklist	Quartely			1			1	2	50%
4.4	Eye wash station inspection	12	Time	SHSEO	Checklist	Monthly	1	1	1	1	1	1	6	50%
4.5	Harness Inspection	4	Time	SHSEO	Checklist	Quartely	1			1			2	50%
4.6	Lifting Gears & Color code	2	Time	WS & DH	Checklist	Bi-annual				1			1	50%
5	**HSE Training**													
5.1	HSE Mandatory Training	12	Time	SHSEO	Record	Monthly	1	1	1	1	1	2	7	58%
5.2	Environmental Awareness Training	4	Time	EO / HSEM	Record	Quarterly			1			P	1	25%
5.3	"Know It" HSE Safety Quiz program	5	Person	Field team / HSEO	Record	person per month			P		P			0%
6	**Technical SOP/JSA Refreshment Program - (Total no. of Sop/JSA to be stated by each section in KPI colu**													
6.1	Pulling Units Team	48	Ea	TBC	Record	To completed	4	4	4	4	4	4	24	50%
6.2	Production Measurement Team	24	Ea	TBC	Record		2	2	2	2	2	2	12	50%
6.3	Workshop Team	24	Ea	TBC	Record		2	2	2	2	2	2	12	50%

Figure 1: Mann Field HSE KPI (2022-2023)

4.1 Implementation Status on ECD Comments

As per our commitments, Bi-Annual Environmental Monitoring Report was submitted to Environmental Conservation Department – ECD regularly and a total of four (4) reports have been successfully reported. Regular environmental monitoring was planned to conduct but due to suddenly re-increasing and outbreak rate of COVID-19 pandemic, security concerns and some of the travel restrictions within the region, Environmental Monitoring with third party survey team had to be postponed. However, the self-monitoring activities were conducted as far as practicable and tried to fulfill the commitments and planned monitoring schedule within the timeframe.

MPRL E&P is closely collaborating with ECD Regional Office and fulfilled and following their highlighted comments. Moreover, we continue to engage with the related departments and authorities for the actions required.

MRPL E&P commits to continue to submit the Environmental Monitoring Report that includes the self-monitoring activities and implantation of environmentally relevant activities during difficult periods.

MPRL E&P is committed to implementation of mitigation measures, mentioned in the approved EIA Report and ECC, and which are mentioned in the Article 5, Environmental Management Plan and Article 6, Environmental Monitoring Plan accordingly.

Figure 2: MOGE Guests Site Visit to Mann Field on 18 August 2022

Figure 3: Shut-in Wells

Figure 4: Concrete Pad and Additional Cellars at M-290, M-80 & M-554

Figure 5: Pumping Unit Fencing at Mann Field

Figure 6: Trees Plantation Campaign on World Environment Day 2022

Figure 7: Awareness Posters on HSE Notice Board

5. Environmental Management Plan

The Environmental Management Plan (EMP) is to ensure full compliance with the Project's Policies and with mitigation, monitoring, and other commitments made in the EIA Report. While the EMP was treated as a high-level framework document, it was linked to several detailed management plans as described below which were developed to lay out the specifications for compliance with specific environmental elements.

These management plans mention in detail the management and mitigation measures required to be implemented, the time frame and responsibilities for their implementation, and reporting requirements in the EIA report. These management plans are presented below with details mentioned in the EIA report. MPRL E&P is implementing and monitoring as per the schedule planned.

- Waste Management Plan
- Emergency Response Plan (including Fire Risk Management Plan)
- Spill Response Plan
- Health and Hygiene Management Plan
- MEDEVAC Procedures
- Transportation Management Procedures
- Contractor's Environmental Management Plan(s)
- Environmental Monitoring Plan

5.1 Environmental Management System Framework

MPRL E&P's Environmental Management System Framework is guided by ISO 14001 framework and integrates internal policies, existing national rules and regulations and other applicable best practices from international guidance. Continuous environmental analysis and monitoring to achieve minimize the adverse impacts or consequences on the natural environment and people affected by the business activities.

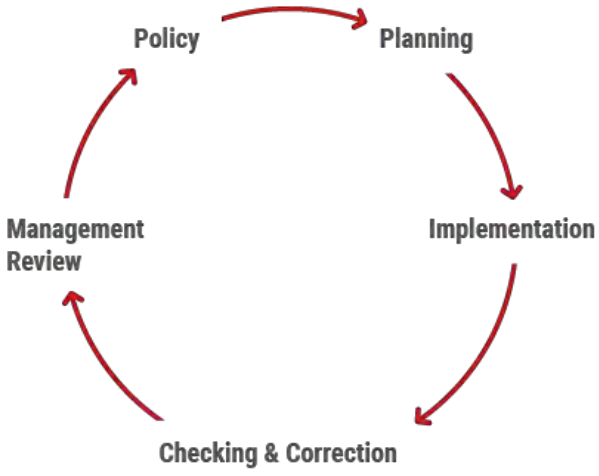


Figure 8: MPRL E&P Environmental Management System Framework

5.2 Waste Management Plan

Waste Management Plan is ensuring of managing waste in the Mann field and applies to any material that is surplus to requirements of the construction and operations work over phases.

The objectives of the waste management plan are to:

- Ensure waste is managed in a controlled and environmentally sound manner,
- Comply with all statutory and contractual requirements concerning the management of the waste,
- Ensure resources are recovered where possible and safe to do so, for re-use and recycling, and
- Ensure appropriate recording and tracking for all waste generated.

The waste management plan has been implemented during the operation phases. Waste streams are divided into four categories:

1) Hazardous Recyclable,
2) Hazardous Non-Recyclable,
3) Non-Hazardous Recyclable, and
4) Non-Hazardous Non-Recyclable.

The key steps in the waste management process are:

- Waste is segregated into hazardous, general and recyclable waste within suitable bins that are clearly labelled,
- Bins/drums are sent to the approved disposal location. Each bin/drum is labelled with the waste typewritten,
- Each waste bin/drum sent is included on the backload manifest, and
- Waste transportation is recorded in the waste database.

Brief Waste Management Process is described as follows:

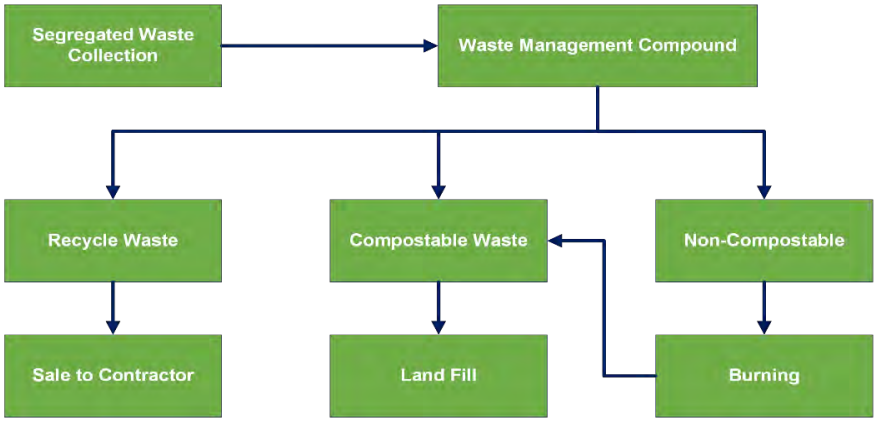


Figure 9: Waste Management Flowchart

5.2.1 Monitoring on Waste Management Status

During the monitoring period from April 2022 to September 2022, the waste management compound facilities are the same as in previous monitoring periods.

Existing Solid Waste Management System

The solid waste management system in MPRL E&P mainly includes waste collection, segregation, and recycling continues to play a minimum role at present 3Rs (Reduce, Reuse, Recycle) were developed.

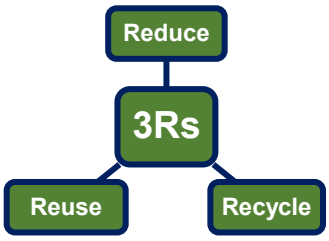


Figure 10: 3Rs Model

In Mann Field, waste segregation was implemented involving sorting and separating waste based on its characteristics. Waste materials were segregated at the source by providing coloured and marked (with universal symbols and writing in English and Burmese) bins for storing waste as follows:

- **Green** – General Wastes,
- **Yellow** – Recycle Wastes,
- **Red** – Hazardous Wastes,
- **Black** – Non-Hazardous Wastes,
- **Blue** – Paper

Bins were placed in all GOCS, offices, warehouses, workshops, construction sites, base camps, and clinics. No waste collection bin would be allowed to overflow before it is emptied, and waste storage receivables would be replaced promptly, in the event of damage. A sufficient number of bins were placed for each type of waste at waste collection points, depending on the variety and quantity of the waste expected from the location.

Waste of any description will not be stored permanently or for prolonged periods at the Waste Management Compound. The following procedure has been applied to the temporary storage arrangements for all waste:

- The wastes are properly stored in the designated area and separated from other materials/substances storage,
- The facilities are identified with each identified area such as Recycle Area, Hazardous Area, etc.

5.2.2 Solid Waste Management in MPRL E&P

The management of waste is a key component in business. All the waste produced is recorded. MPRL E&P is monitoring and implementing compliance with the National Environmental Quality (Emission) Guidelines and Industry Best Practices.

Composting

According to our six-months self-monitoring records, from April 2022 to September 2022, the composting process is produced about 1340 kg. This process is very fast in the summer but in the rainy season, the composting bacteria do not properly work best under neutral conditions.

Figure 11: Composting at WMC

Recycling

Recycling materials such as glass, paper and cardboard, plastic bottles, and metals, are collected and sold out to the third party. Recycling materials are collected and separated from general waste.

General Waste collection from all areas in the Mann Field Operations and temporary storage at Waste Management Compound. The waste collection was made periodically every weeks by using Jumbo big bags to reduce plastic bags usage and it can be reused again and again. Moreover, the plastic bags used in the waste bins are also reused except organic waste bin.

Figure 12: Waste Segregation at WMC

General Waste Storage in WMC

The wastes have been re-selected, packed and stored at the Waste Recycle Storage Area. Recycle Waste is disposed of by an approved third party.

Recycle waste has been registered using the 'Waste Register' form including specific details as to the type and quantity of waste.

Figure 13: Waste Management Compound (WMC)

Recycle waste that is going to be sent to a selected third party for adequate disposal has to be monitored using the "Waste Disposal Contractor Approval' form which was approved by the Field Operations Manager and or Site HSE Officer/ Environmental Officer.

Figure 14: Hazardous Waste Storage Area at WMC

Hazardous Waste, 42,205.5 kg is collected from all work-related areas and is proper storage at Waste Management Compound. Hazardous waste collection volume was high within this 6 month and most are dry sludge from GOCSs. Dry sludge/ produced sand is temporarily stored at Waste Management Compound and wet sludge are stored at Sludge Management Compound. We made sludge composition test for wet sludge and dry sludge/produced sand at Golden DOWA Ecosystem and discussing for further disposal process of hazardous waste.

5.2.3 Monitoring Data and Statistics

Waste Statistics within the monitoring period, April 2022 to September 2022 as follows:

Table 4: Monthly Waste Monitoring Record

Month	Hazardous Waste (kg.)	Non-hazardous Waste (kg.)	Composting (kg.)
April-22	30,002.5	1,094	160
May-22	11,000	542.5	200
June-22	1,200	803.5	280
July-22	3	902	190
August-22	0	1,196.5	250
September-22	0	612	260
Total	**42,205.5**	**5,150.5**	**1,340**

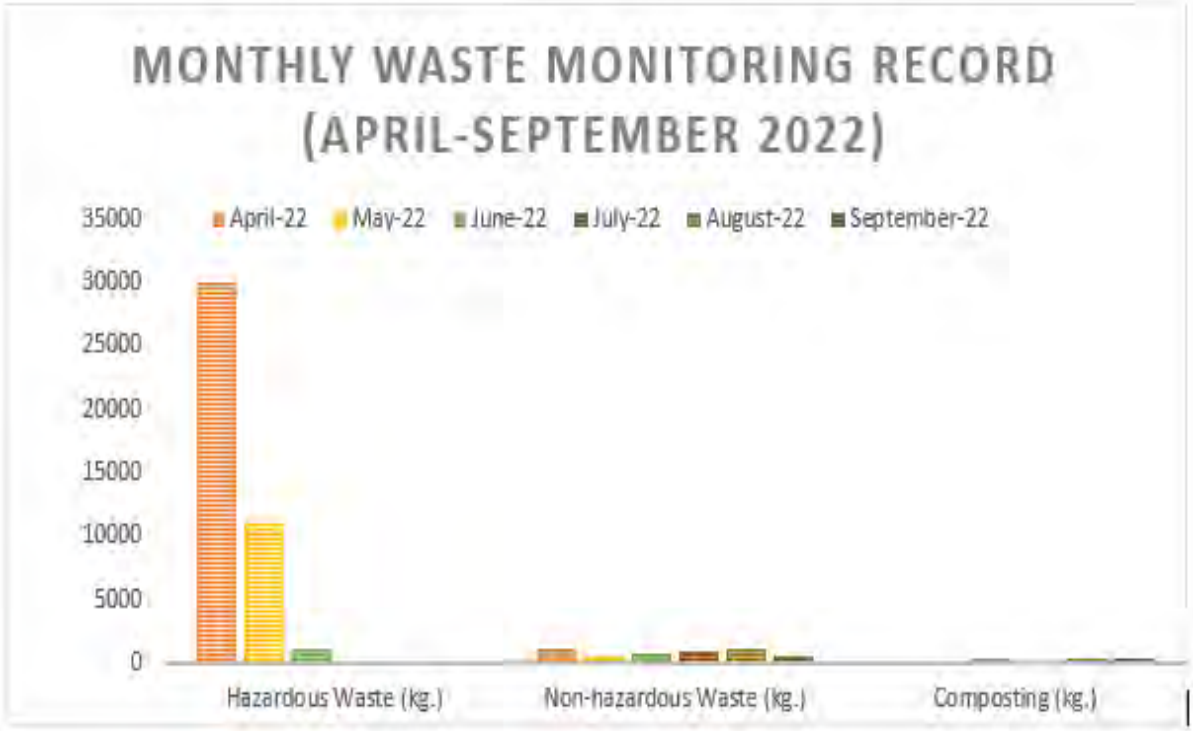


Figure 15: Monthly Waste Monitoring Records from Apr 2022 - Sep 2022

Table 5: Yearly Waste Monitoring Record

Year	Hazardous Waste (kg.)	Non-hazardous Waste (kg.)	Composting (kg.)
2020	1,470	16,267	1,204
2021	96	5,369	1,901
2022	43,493	6,837	2,135

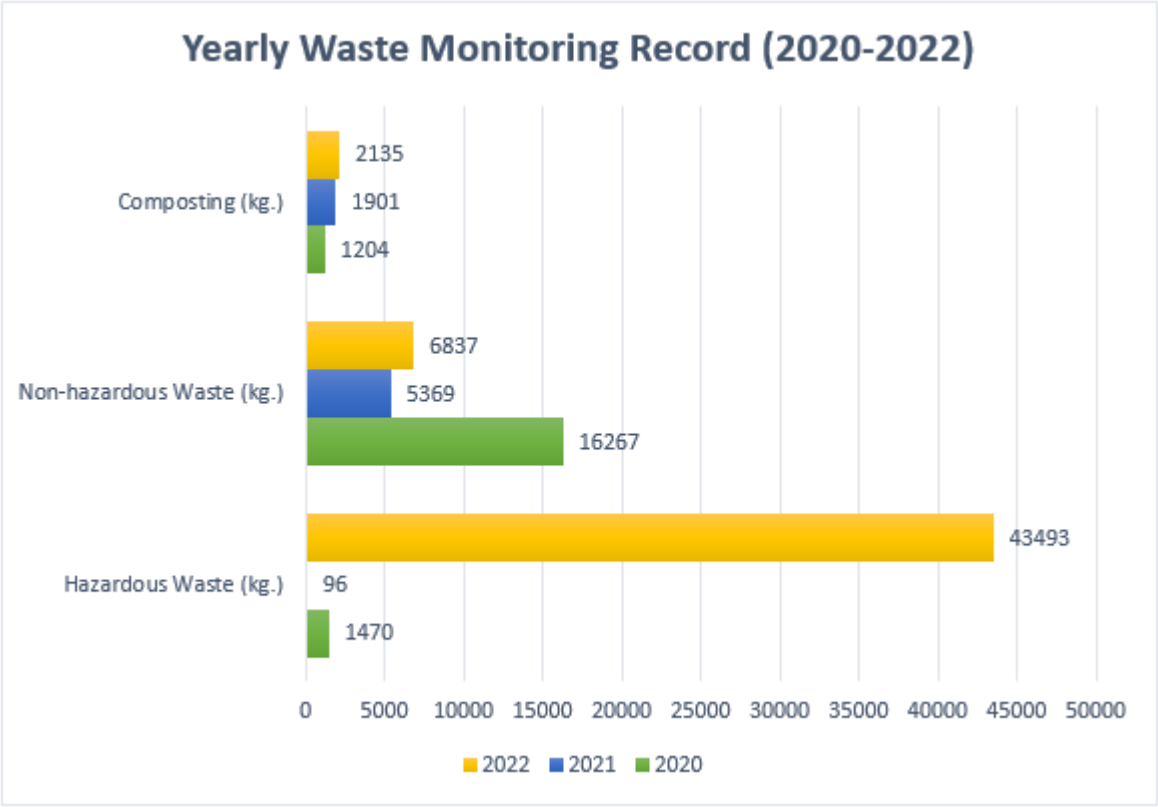


Figure 16: Yearly Waste Monitoring Record

5.3 Emergency Response Plan

MPRL E&P will develop plans and procedures to identify the potential for and respond to environmental accidents and health and safety emergencies and for preventing and mitigating any potentially adverse environmental and social impacts that may arise. The plans include but are not limited to:

- Notification procedures,
- An emergency response organization with personnel properly trained on their roles and responsibilities,
- Having adequate and appropriate emergency response equipment readily available to respond to minor incidents, and
- Having the capability to quickly request additional assistance.

MPRL E&P is implementing and managing the response to emergencies from the Project activities in Mann Field. The emergency response plan (ERP), which also covers fire risk management, includes:

- Hierarchy of protection,
- Preparedness and planning for emergencies,

- Employee responsibilities,
- Emergency response procedures,
- Medical emergencies including medevac procedures,
- Natural Disasters (e.g. floods, cyclones, earthquakes) related emergencies,
- Fire and electrical related emergencies, and
- Any other emergency response plan is required by the Republic of the Union of Myanmar Authorities.

5.3.1 Emergency Response Plan Implementation and Progress

MPRL E&P prepared to dedicate emergency response plans for possible scenarios which can face field operation. All emergency response plans effectively communicate with staff at all levels of the operation and allocate responsibilities based on their respective roles in the operation. MPRL E&P reviews and revises the emergency response plans within each predefined timeframe. In the event of an incident, the related emergency response plan is reviewed and revised as necessary.

Figure 17: Fire Drill at MFO

To get all employees familiar with fire outbreak situations, to be able to handle the planned fire emergency response procedure and to strengthen relationships with local authority bodies, a fire drill was conducted at the GOCS-5 compound on 25 April 2022.

5.4 Spill Response Plan

MPRL E&P developed plans and procedures to identify the potential for and response to the spill and for preventing and mitigating any potentially adverse environmental and social impacts that may arise. The plans include but are not limited to:

- Spill control hierarchy,

- Control measures to prevent spills such as proper engineering design, handling, storage and transportation guidelines on hazardous materials,
- Spill response training,
- Spill response organization and procedures as well as spill response PPE and drill requirements.

5.4.1 Spill Response Plan Implementation and Progress

MPRL E&P created a spill response plan and also arrange the control measure. As per the plan, risk control measures like using a consolidated, impermeable base for all facilities with the permanent drainage system, segregating drainage systems for process water and domestic water set up oil sumps and interceptors are in place. MPRL E&P also practice a zero-discharge wastewater recycling system in field operation. To reduce the potential for a spill, secondary containments are added to well sites and the sludge compound is ready to respond to a spill.

Spill response drills are planned to understand spill response procedures and emergency response. It also targeted to clear and breakdown respective team responsibilities and practices and to be more aware in spill cases and efficiently respond in the actual case.

Spill drill (on ground talk) was made on 3 August 2022 in the compound of GOCS-2 and explained discussed about spill response team's roles and responsibilities. The drill exercise includes spill kits and tools usage and to inform to authorize person instantly.

Figure 18: Spill Drill (On Ground Talk) on 03 August 2022

5.5 Health & Hygiene Management Plan

MPRL E&P developed and continually assesses the risk related to personal health and hygiene as well as preventative measures which need to be implemented.

MPRL E&P identified hazards as well as developed preventive and mitigation measures related to the health and hygiene of personnel working at Mann Field. The plan includes but is not limited to:

- Responsibility for implementation of the Health and Hygiene Management Plan,
- Identification, prevention, and responses to illnesses such as health-related illnesses and diseases such as those transmitted by insects and parasites,
- Pre-assignment immunization and health screening requirements,
- Preventive measures to avoid snake bites as well as sickness arising from general hygiene issues and travel to and from the Mann Field

5.5.1 Health & Hygiene Management Plan Implementation and Progress

MPRL E&P developed and continually assesses the risk related to personal health and hygiene as well as preventative measures which need to be implemented. MPRL E&P provide advice and resources through an onsite Doctor. The plan includes diseases that are highly favourable in operation, operational area and control measures to mitigate the risk.

Figure 19: Weekly Camp Inspections at MFO


Figure 20: Gym and Foot-ball Playground at MFO

To mitigate risk, enhance safety, and anticipate challenges, camp inspections are conducted weekly. The reports are documented, communicated, and taken action accordingly.

Although the pandemic spread intolerably, MPRL E&P performed safety equipment inspections even during the operation suspended period. Safety equipment is maintained in healthy condition to protect properties and workers' safety round the clock.

5.6 MEDEVAC Procedures

MPRL E&P developed the procedures that must be followed in the event of a medical evacuation (MEDEVAC) of an injured or ill person from the Mann Field. Given the remoteness of the Mann Field and the time taken to medevac a patient to a hospital with appropriate standards, all rotating personnel has to undergo a thorough medical examination before being engaged to work at the Mann Field, and this should be repeated at 2 years intervals.

MPRL E&P will continue to describe the conditions and remoteness of the Mann Field to the medical examiner. The medical examiner will be required to assess whether the person is suitable for working in the Mann Field. Information will remain confidential between the employee and the medical examiner unless express written permission is given by the employee to make available this information to MPRL E&P.

MPRL E&P undertakes to provide medevac facilities to all staff working on the MPRL E&P project in Mann Field. This facility is extended to sub-contracted personnel. This includes a field clinic at the worker base camp. Emergency treatment can be provided by MPRL E&P's medical staff at the field clinic, backed up by MEDEVAC support, if necessary.

5.6.1 MEDEVAC Procedure Implementation and Progress

MPRL E&P developed the procedures that must be followed in the event of a medical evacuation (MEDEVAC) of an injured or ill person from the Mann Field. MPRL E&P undertakes to provide medevac facilities to all staff working on the project in Mann Field which include a field clinic with a site doctor at the worker base camp, an ambulance and medical stocks for readiness. The procedure also tailored to achieve minimum time taken to medevac a patient to a hospital with appropriate standards.

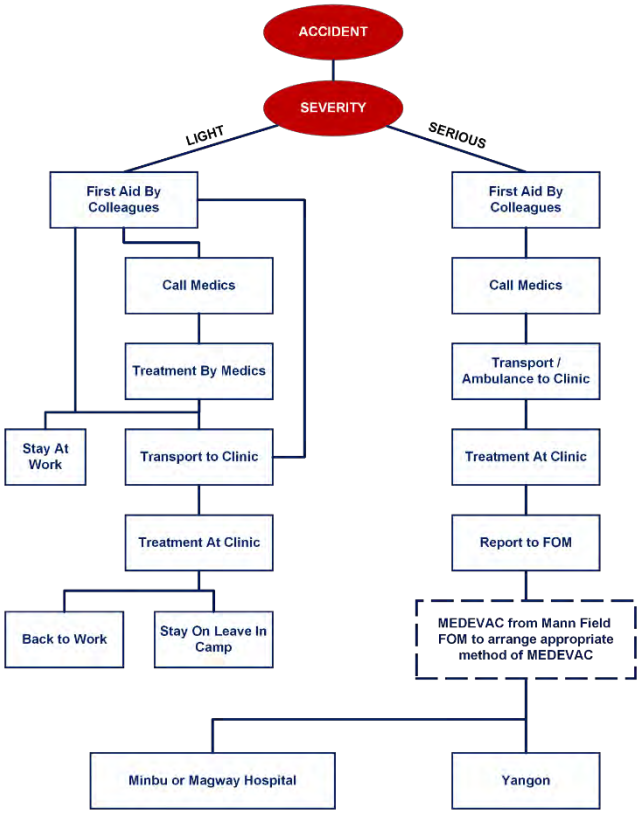


Figure 21: Medical Evacuation Flowchart

To get all employees familiar with the medical emergency condition and to be able to handle per the set procedure, MEDEVAC drills are planned and conducted in the fiscal year 2022 – 2023.

5.7 Transportation Management Procedures

The objectives of the Transportation Management Procedures are to define controls over traffic routes, speed restrictions, appropriate road safety requirements, vehicle loading and maintenance measures, and response procedures to traffic-related emergencies.

The following management actions are covered under Transportation Management Procedures:

- Good practices on rest regime, timing routes and speed of driving,
- Safety rules related to MPRL E&P vehicles usage,
- Procedures for road risk assessment, and
- Procedures to rescue the driver and passenger(s) who fail to get to their check calls or destination by the ETA designated on the Journey Management Plan

5.7.1 Transportation Management Procedures Implementation and Progress

MPRL E&P has set up a transport management procedure to control traffic routes, speed restrictions, appropriate road safety, vehicle loading, and maintenance measures. It also contains procedures for responding to traffic emergencies. To achieve such a high standard, MPRL E&P outsourced transportation to sister company M&AS. M&AS also follows the safety rules related to MPRL E&P vehicle usage and preform good practices like road risk assessments, and best practices on rest regime, timing routes, speed of driving and alcohol testing.

MPRL E&P perform safe crews change activities to achieve maximum reliability and safety. The vehicles are inspected whether safe to use and a test drive is performed if needed. Driver behavior assessment is performed on vehicle operators. Defensive driving training and refresher training are conducted twice each year. During the pandemic, MPRL E&P also performs COVID-19 antigen testing for vehicle operators and passengers to prevent infections. In addition, the sitting plan was established according to the guidelines of the Ministry of Health.

Figure 22: COVID-19 Antigen Testing for Drivers and Passengers

Figure 23: Safe Crew Change Activities

5.8 Contractor Environmental Management Plan(s)

The Project will sometimes require engaging contractors to carry out Project activities. The contractors are responsible for performing all work:

- In compliance with relevant national and international HSE legislation and regulations and with other requirements to which the project subscribes,
- In conformance with the Project's EMP, and
- By contractual technical and quality specifications

The Project will also provide a specification for environmental compliance and performance (through approved EIA and EMP and the associated plans) and, as a contractual requirement, the contractor will develop and provide to the Project its specific management plans demonstrating how they intend to comply with the stipulated requirements.

Contractors must also provide documentation detailing their plans for:

- Implementing the measures required in the EIA and this EMP,
- Local content,
- Logistics,
- Community relations

The contractor management plans must conform to the requirements of the Project's overarching plans. Contractor plans will be reviewed and approved by MPRL E&P and incorporated into, and form part of, the Project's overall EMP.

Contractors will be required to self-monitor against their plan and the contractor's compliance with the plan will be routinely monitored by MPRL E&P directly or by third parties. Contractors will be required to submit regular reports of monitoring activities and the Project will review these regularly. An external assurance process will be conducted on an annual basis the results of which will be disclosed after the process.

As a contractual requirement, the subcontractors are required to provide sufficient resources to manage HSE aspects of the work to be performed. This includes providing resources to ensure compliance of next-tier subcontractors and a process for emergency stop-work orders in response to monitoring triggers.

5.8.1 Contractor Environmental Management Plan(s) Implementation

In Mann Field, there are no other contractors working activities and the only contractor, M&AS, provides MPRL E&P for Manpower Services, Logistic Services, and Catering services for the field operations team. M&AS is involved in the MPRL E&P camp rules and fulfilled the environmental-related management plans including waste management procedures. If there is any contractor or third-party monitoring team working in the Mann Field, also required to respect and obey MPRL E&P HSE rules and policies.

Figure 24: Tool Box Talk and Induction Training to Contractors concerning HSE

6. Environmental Monitoring Plan

Monitoring will be conducted to ensure compliance with regulatory requirements as well as to evaluate the effectiveness of operational controls and other measures intended to mitigate potential impacts.

As a minimum, the following monitoring of the physical environment will be undertaken:

Physical Environmental Monitoring:

- Ambient Air Quality,
- Noise,
- Groundwater quality,
- Surface-water quality,
- Soil Quality

Monitoring will be taken during the following periods of the EOR and re-development program activities:

- At least two weeks before the construction activities for baseline data collection,
- Monthly monitoring for the first three months during both the construction and operation phases. After the three months, a review should be conducted to determine whether the collected data indicates an impact has occurred beyond what has been predicted within the EIA. Should no higher impacts be observed, monitoring can be reduced to a six-monthly or yearly program. Should higher impacts be observed, monitoring should continue, and appropriate actions are taken to alleviate the impacts to prevent any further impacts from occurring.

After the first monitoring report with a three-month survey during the six months, no higher impacts are observed from the existing operations, however after conducting the air quality and the results showed some monitoring points occurred CO, $PM_{2.5}$ and SO_2 value is still higher than based line value compared with May 2015 survey results.

As per EIA commitments, MPRL E&P was conducting Environmental Monitoring Activities regularly and submitted the monitoring report to ECD Bi-Annually. This is the fifth time monitoring report and the committed monitoring plan from EIA Report as stated in Table 7 (Environmental and Social Monitoring Programme, from Table 8.3 EIA Report). Self-Monitoring activities were conducted and tested at Golden DOWA and ALARM labs and they were covered in this report.

In addition, self-monitoring activities are involved depending on the management plans and operational control. Based on the activities, the following are stated in Table 6 as MPRL E&P's self-monitoring activities scheduled from Mann Field:

- Vent Gas Monitoring,
- Drinking-Water Monitoring,
- Discharged from Sewage Treatment System,

- Hydro-test Water Quality,
- Monitoring on Wastes

Table 6: MPRL E&P's Self-Monitoring Plan and Schedule

No.	Self-Monitoring Activities	Purpose of Monitoring	Locations	Parameters to be monitored	Frequency
1.	Vent Gas Monitoring	Regular monitor the amount of vent gas connection line, measuring with Echo meter.	All Vent Gas Wells	Methane, CH_4	Monthly and Bi-Annual
2.	Hydrogen Sulfide (H_2S) Monitoring	To fulfill the obligation from the ECC and ensure the safety of operations & personnel living nearby.	All Operating Wells	H_2S(ppm), CO(ppm), O_2(%), and LEL%	Monthly and Bi-Annual
3	Drinking-Water Monitoring	Ensuring Safe Drinking Water for the health of personnel	MPRL E&P Base Camp	pH, Turbidity, Apparent Color, Hardness, Arsenic, Chloride, Lead, Total Dissolved Solids, Iron, Electrical Conductivity, Sulphate, Calcium, Magnesium, Nitrate-Nitrogen	Bi-Annual
4.	Discharged of Sewage Treatment System	To mitigate the pollution of soil and ground water, and environment	MPRL E&P Base Camp	pH, Temperature, TSS, BOD_5, COD, Total Phosphorous, Oil & Grease, Total Nitrogen, Turbidity, Electrical Conductivity, Total Coliforms	Bi-Annual
5.	Hydrotest Water Quality	to monitor the quality of water	Warehouse	BOD_5, COD, Chloride, Heavy Metals (Total), pH, Phenols, Sulfides, Total hydrocarbon content, Total suspended solids	Bi-Annual

No.	Self-Monitoring Activities	Purpose of Monitoring	Locations	Parameters to be monitored	Frequency
6.	Domestic water	to monitor the quality of water	Downhole Workshop & Mechanical Workshop	BOD_5, COD, Ammonia, Arsenic, Cadmium, Chlorine (Total residual), Chromium (hexavalent), Chromium (total), Copper, Cyanide (free), Cyanide (total), Fluoride, Heavy Metals (Total), Iron, Lead, Mercury, Nickel, Oil & Grease, pH, Phenols, selenium, Silver, Sulfides, Temperature increase, Total coliforms, Total phosphorous, Total suspended solids, Zinc	Bi-annual
7.	Ground water (Tube-well)	To monitor the quality of groundwater near wells of chemical treatment for EOR	Ko Win Maung & Ma Nyein (near #132)	pH, DO, Turbidity, Apparent Color, Alkalinity, Hardness, BOD_5, COD, total Nitrogen, total Phosphorous, Oil & Grease, TSS, E. coli, Total coliforms, Arsenic, Barium, Boron, Total Chromium, Flouride, Selenium, Uranium, Electrical Conductivity	Bi-annual
8.	Produced Water Monitoring	Zero discharge by injecting 100% to shut-in wells	All Operating Wells	produced volume and disposal volume	Daily
9.	Monitoring on Wastes	Implementing as per Waste Management Procedure	Waste Management Compound and Sludge Management Compound	General, Recyclable, Organic, Hazardous	Weekly

Table 7: Environmental and Social Monitoring Programme (Construction and Operation Phase)

Project Stage	Potential Impact	Parameters to be Monitored	Location	Measurements	Frequency	Responsibility
At least two weeks before the construction activities for baseline data collection. Construction and Operation	Air Quality	NOx, SO_2, $PM_{2.5}$, PM_{10}, CO. Check compliance with Myanmar National Environmental Quality (Emission) Guidelines (2015).	Z1AQN, Z2AQN, Z3AQN and Z4AQN, locations indicated on Table 5.1 and Figure 5.10	Sampling and analysis of ambient air pollutants to be conducted accordingly to the guidelines of Myanmar NEQEG. Haz-Scanner EPAS Wireless Environmental Perimeter Air Station to be used for measurement.	Monthly monitoring for the first three months during both the construction and operation phase. After the three month period, a review should be conducted to determine whether the collected data indicates an impact has occurred beyond what has been predicted within the EIA. Should no higher impacts be observed, monitoring can be reduced to a six-monthly or yearly programme. Should higher impacts be observed, monitoring should continue and appropriate actions be taken to alleviate the impacts with an aim to prevent any further impacts from occurring.	MPRL E&P HSE Coordinator

Project Stage	Potential Impact	Parameters to be Monitored	Location	Measurements	Frequency	Responsibility
At least two weeks before the construction activities for baseline data collection. Construction and Operation	Noise	Check compliance with Myanmar National Environmental Quality (Emission) Guidelines (2015)	Z1AQN, Z2AQN, Z3AQN and Z4AQN, locations indicated on Table 5.1 and Figure 5.10	24-hour noise monitoring using the portable sound meter (Lutron, SL-0423SD, unit: dB). Noise level (LAeq) measured and recorded at a ten-minute interval and averaged at an hourly and daily (i.e. 24-hour) interval.	As above	MPRL E&P HSE Coordinator
At least two weeks before the construction activities for baseline data collection. Construction and Operation	Groundwater Quality	In-situ measurements for transparency, temperature, pH, DO, turbidity, colour, alkalinity and hardness. Laboratory analysis of BOD5, COD, Total Nitrogen, Total Phosphorus, Oil and grease, TSS, E. coli, Arsenic, Barium, Boron, Total Chromium, Floride, Selenium, Uranium	Z1GW, Z2GW, Z3GW and Z4GW, locations indicated on Table 5.11and Figure 5.14	In-situ measurements for transparency, temperature, pH DO, turbidity, colour, alkalinity and hardness. Laboratory analysis of BOD5, COD, Total Nitrogen, Total Phosphorus, Oil and grease, TSS, E. coli, Arsenic, Barium, Boron, Total Chromium, Floride, Selenium, Uranium	As above	MPRL E&P HSE Coordinator

Project Stage	Potential Impact	Parameters to be Monitored	Location	Measurements	Frequency	Responsibility
At least two weeks before the construction activities for baseline data collection. Construction and Operation	Surface Water Quality	In-situ measurements for transparency, temperature, pH DO, turbidity, colour, alkalinity and hardness. Laboratory analysis of BOD5, COD, Total Nitrogen, Total Phosphorus, Oil and grease, TSS, E. coli, Arsenic, Barium, Boron, Total Chromium, Floride, Selenium, Uranium	Z1SW, Z2SW, Z3SW and Z4SW, locations indicated on Table 5.7 and Figure 5.12	In-situ measurements for transparency, temperature, pH DO, turbidity, colour, alkalinity and hardness. Laboratory analysis of BOD5, COD, Total Nitrogen, Total Phosphorus, Oil and grease, TSS, E. coli, Arsenic, Barium, Boron, Total Chromium, Floride, Selenium, Uranium	As above	MPRL E&P HSE Coordinator
At least two weeks before the construction activities for baseline data collection. Construction and Operation	Soil Quality	pH; Arsenic (As); Lead (Pb); Cadmium (Cd); Copper (Cu); Zinc (Zn); Manganese (Mn); and Iron (Fe). Comparison with the Dutch Standard 2000.	Z1S, Z2S, Z3S and Z4S, locations indicated on Table 5.13 and Figure 5.16	Follow sampling procedure, sample preservation and sample analysis recommended in Myanmar NEQEG. Laboratory analysis of pH; Arsenic (As); Lead (Pb); Cadmium (Cd); Copper (Cu); Zinc (Zn); Manganese (Mn); and Iron (Fe).	As above	MPRL E&P HSE Coordinator

Project Stage	Potential Impact	Parameters to be Monitored	Location	Measurements	Frequency	Responsibility
Construction and Operation	Discharge of treated wastewater and runoff	Check compliance with Myanmar National Environmental Quality (Emissions) Guidelines for site runoff and wastewater discharges (for BOD, COD, TSS, oil and grease, pH, total coliform bacteria, total nitrogen, total phosphorus) during construction. Check compliance with Myanmar National Environmental Quality (Emissions) Guidelines for Onshore Oil and Gas Development during operation.	Treated wastewater discharge points at discharge points such as worker camps, GOCS, shut in wells.	In-situ measurements for pH, temperature, dissolved oxygen (DO), electrical conductivity (EC), and turbidity. Laboratory analysis of BOD5, COD, Total Suspended Solids, Total Nitrogen, Total Phosphorous, Oil and Grease	As above	MPRL E&P HSE Coordinator

Project Stage	Potential Impact	Parameters to be Monitored	Location	Measurements	Frequency	Responsibility
Operation	Vented gas	Check compliance with Myanmar National Environmental Quality(Emissions) Guidelines for Onshore Oil and Gas Development during operation (H2S)	Three vented gas location (randomly selected)	Real-time measurement	Monthly monitoring for the first three months during operation phase. After the three month period, a review should be conducted to determine whether the collected data indicates an impact has occurred beyond what has been predicted within the EIA. Should no higher impacts be observed, monitoring can be reduced to a six-monthly or yearly programme. Should higher impacts be observed, monitoring should continue and appropriate actions be taken to alleviate the impacts with an aim to prevent any further impacts from occurring	MPRL E&P HSE Coordinator

7. Decommissioning Plan

MPRL E&P was originally planned for the chemical flooding for redevelopment and enhanced oil recovery program in Mann Field Production Enhancement Project. However, that program was cancelled, and MPRL E&P did not perform the chemical flooding or injection process to the wells but initiated with injection of produced water (Produced water management) to the shut-in wells by using injection pumps to maintain reservoir / formations energy for the enhanced oil recovery project.

Referring to the terms and conditions in our PCC, MOGE is the operator of the project and MPRL E&P is the contractor role. At the end of the PCC (including any extensions), MPRL E&P will transfer back the production operational activities to MOGE.

In addition, Mann Field is a mature field so that there always have opportunities to rejuvenate the field management plan by reentering or reactivating the old shut-in wells in order to unlock the bypass oil to be able to increase recoverable reserve. Therefore, as per Article 109 (C) of EIA Procedure, we would like to get an opportunity to mention in this monitoring report that decommissioning of the project is not required to be executed by MPRL E&P as the PCC's contractor, and MOGE or other contractors maybe carry out production operations once the field has been transferred back to MOGE at the end of the current PCC (including any extensions) between MOGE & MPRL E&P.

8. Monitoring Survey & Activities

During the monitoring periods from April 2022 to September 2022, the conducted monitoring survey and activities are presented in each article. The summary of the conducted monitoring activities is as below:

Figure 25: Time-line of Environmental Monitoring Plan

MPRL E&Ps conducted self-monitoring activities and were not able to conduct some monitoring activities with the third party such as air quality monitoring, noise monitoring, soil quality monitoring, surface and ground water monitoring due to the recent political crisis and COVID-19 pandemic situation. Monitoring activities are conducted as much as possible during these situations and MPRL E&P remains highly committed to monitoring as the obligation and commitment from the ECC and EIA if the situations are permits.

8.1 Monitoring on Sludge Management Status

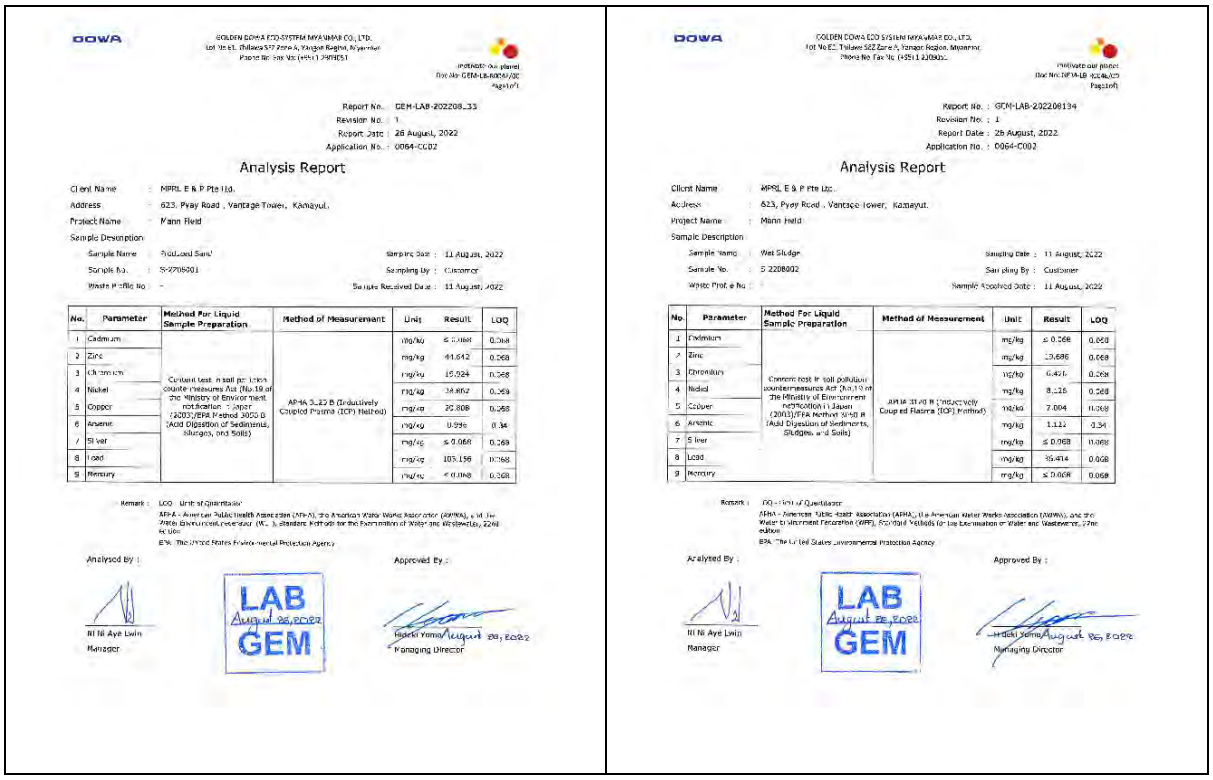
Produced water generated from everyday production of about 1500 BBL per day in the Mann Field. Produced water typically contains a mixture of inorganic (dissolved salts, trace metals, suspended particles) and organic (dispersed and dissolved hydrocarbons, organic acids) compounds. Produced water generates sludge due to the compound sediments, and improper discharge of sludge may cause potential impacts on the receiving environment (i.e. soil, surface water, and groundwater) and community health as well as terrestrial and aquatic ecological resources.

Dried sludge, about 84 Ton (estimated weight) is temporary storage at Waste Management Compound and we have planned to construct the temp storage area in the Sludge management compound and also will perform a pilot test with the bioremediation process. Currently, all sludge is proper storage in concrete pits.

Figure 26: Sludge Management Compound (SMC)

As a part of Self-Environmental monitoring, discussed with Golden DOWA Eco-System Myanmar Co., Ltd. Concerning with sludge disposal services and as a first step, sludge composition test of produced sand/ dry sludge and wet sludge were made at their lab based on their available facilities and parameters except oil content parameter.

All the sludge collected is in proper storage in concrete pits to meet the guideline levels in NEQEG for Onshore Oil and Gas Development and all the hazardous waste will be disposed as per ECC commitments.



DOWA

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description :
Sample Name : Produced Sand
Sample No. : S-2208001
Waste Profile No. : -
Sampling Date : 11 August, 2022
Sampling By : Customer
Sample Received Date : 11 August, 2022

No.	Parameter	Method For Liquid Sample Preparation	Method of Measurement	Unit	Result	LOQ
1	Cadmium	Content test in soil pollution countermeasures Act (No.19 of the Ministry of Environment notification 13 Japan (2003)/EPA Method 3050 B (Acid Digestion of Sediments, Sludges, and Soils)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/kg	≤ 0.068	0.068
2	Zinc			mg/kg	44.642	0.068
3	Chromium			mg/kg	15.024	0.068
4	Nickel			mg/kg	14.862	0.068
5	Copper			mg/kg	20.808	0.068
6	Arsenic			mg/kg	0.996	0.34
7	Silver			mg/kg	≤ 0.068	0.068
8	Lead			mg/kg	103.156	0.068
9	Mercury			mg/kg	< 0.068	0.068

Remark : LOQ : Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition
EPA : The United States Environmental Protection Agency

Analysed By : Ni Ni Aye Lwin, Manager
Approved By : Hideki Yoma, August 26, 2022, Managing Director

LAB GEM August 26, 2022

DOWA

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description :
Sample Name : Wet Sludge
Sample No. : S-2208002
Waste Profile No. :
Sampling Date : 11 August, 2022
Sampling By : Customer
Sample Received Date : 11 August, 2022

No.	Parameter	Method For Liquid Sample Preparation	Method of Measurement	Unit	Result	LOQ
1	Cadmium	Content test in soil pollution countermeasures Act (No.19 of the Ministry of Environment notification 13 Japan (2003)/EPA Method 3050 B (Acid Digestion of Sediments, Sludges, and Soils)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/kg	≤ 0.068	0.068
2	Zinc			mg/kg	20.686	0.068
3	Chromium			mg/kg	6.401	0.068
4	Nickel			mg/kg	8.126	0.068
5	Copper			mg/kg	7.004	0.068
6	Arsenic			mg/kg	1.122	0.34
7	Silver			mg/kg	≤ 0.068	0.068
8	Lead			mg/kg	35.474	0.068
9	Mercury			mg/kg	≤ 0.068	0.068

Remark : LOQ : Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition
EPA : The United States Environmental Protection Agency

Analysed By : Ni Ni Aye Lwin, Manager
Approved By : Hideki Yoma, August 26, 2022, Managing Director

LAB GEM August 26, 2022

Figure 27: Sludge Composition Test Results

8.2 Monitoring on Produced Water Management Status

MPRL E&P to minimize environmental impact to Zero Discharge in produced water management. The team recording milestones on achievements of Zero Discharge on produced water management was implemented on 24 August 2017.

MPRL E&P is undertaking to inject all produced water (100%) into the shut-in wells by using 5 units of injection pumps to meet guideline levels in NEQEG for Onshore Oil and Gas Development.

Figure 28: Produced Water Management at GOCS-2

Figure 29: Produced Water Injection at M-627 and M-303

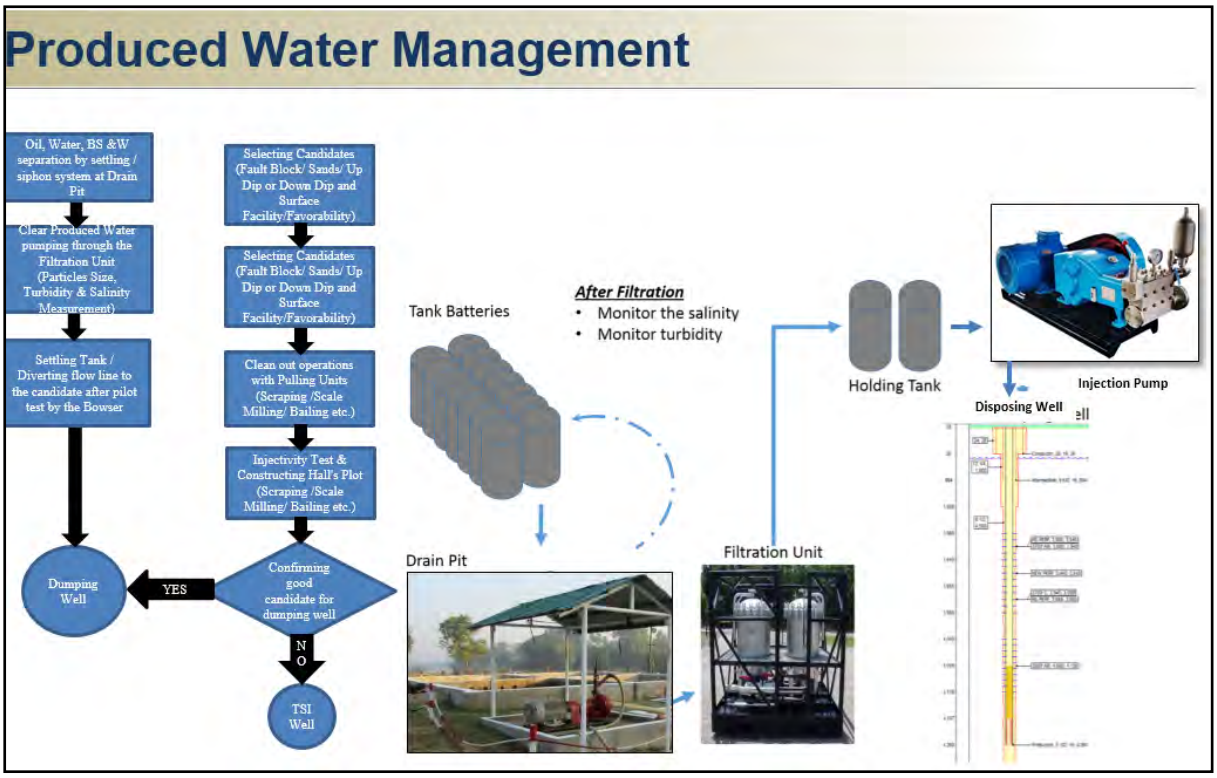


Figure 30: Produced Water Management Process

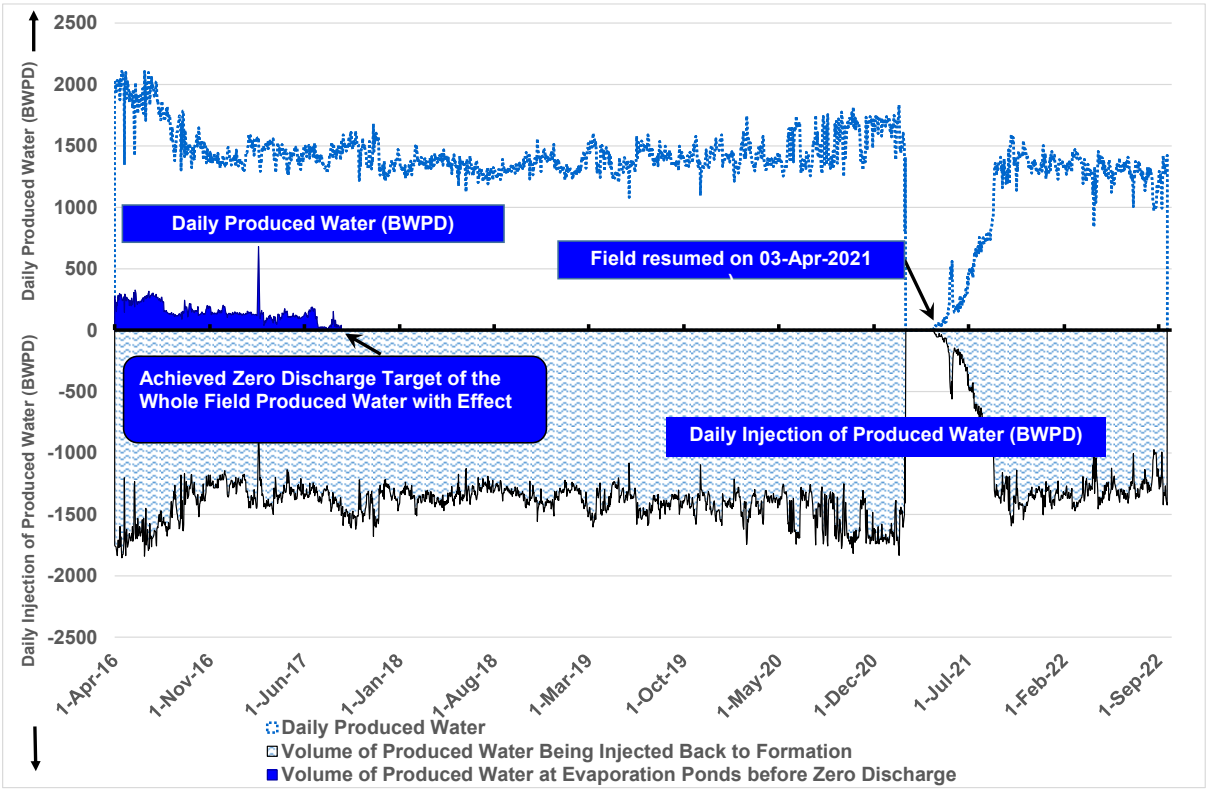


Figure 31: Produced Water Management

According to Table 7 in this report, as per table 8.3 Environmental and Social Monitoring Program of the approved EIA report, it is committed to testing the wastewaters from the discharged points. However, all the produced water from the GOCS is being disposed of back into the formation and thus there is no discharge to the environment. Again, there is no discharge from the hydro test activities and also from shut-in wells.

Therefore, wastewater monitoring will be continued with the parameters committed in table 8.3 of the approved EIA report on the treated discharged water of the base camp.

8.3 Monitoring on Discharge of Treated Wastewater and Runoff

MPRL E&P monitored the discharged water quality on the domestic wastewater treated from Bio-filter water, hydro test water from Warehouse, Drinking Water Quality, Domestic Wastewater Quality from Down-hole and Mobile Workshop Zero Discharged Tank, and the Groundwater Quality near the chemical treatment well. These monitoring activities are self-monitoring activities and are conducted as per the planned schedule.

8.3.1 Base Camp Water Discharge

Domestic-type wastewater and sewage are under management in the existing operational phase. Based on the camp water consumption monitoring results, the sewage and wastewater about 10,000 liter per day were generated from the base camp within the Mann Field which can accommodate 80 – 100 workers.

Water consumption is monitored by using the water flow meter in the base camp, workshop, warehouse, and down-hole workshop. In the meantime, the team is fully aware of the consumption of water to reduce the volume of water consumption.

Occasionally, awareness on water conservation, energy conservation and water pollution topics were conducted to all crews in every safety meetings and tool box talks. Moreover, checking the waste of water from pipe lines and basins are maintained as per regular camp inspection.

Figure 32: Bio-Filter Treatment System at MFO

Sanitary wastewater and domestic wastewater are implemented as per the mitigation plan.

- Sanitary wastewater is collected in the septic holding tanks in the main camp and a retained licensed firm periodically cleans and services the septic holding tanks. Currently, sanitary wastewater is collected in the concrete pit and there is no discharge outside.
- MPRL E&P has installed the wastewater treatment unit to treat sanitary wastewater properly to meet NEQEG guidelines. The field team is implementing monitoring of the discharge water parameter quarterly basics.
- Storm water run-off is routed to a pond to remove silt particles before discharge via a storm drain.
- Surface runoff from potential sources of contamination was prevented.
- All discharge facilities and sediment control structures are inspected regularly and maintained to always confirm proper and efficient operation and particularly during rainstorms. Deposited silt and grit were removed regularly.
- Runoff from areas without potential sources of contamination minimized (e.g. by minimizing the area of impermeable surfaces) and the peak discharge rate will be reduced (e.g. by using vegetated swales and retention ponds).
- Oil-water separators and grease traps have been constructed and maintained as appropriate at refueling facilities, workshops, parking areas, fuel storage, and containment areas.
- The discharged point of treated sewage effluent to surface water (location not confirmed based on existing project design) will be located where there is adequate assimilative capacity of the surface waters.

8.3.2 Monitoring of Sewage Treatment System Water Quality

In August 2022, a total of eight parameters were monitored and total coliform, BOD5, Oil & Grease, total nitrogen and total phosphorus are over the NEQEG guideline.

The monitoring result is described in the following table – 8: Bio-filter outlet water quality monitoring (Sewage Treatment System).

Table 8: Bio-filter Outlet Water Quality Monitoring (Sewage Treatment System)

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	NEQEG (2015)
1	BOD5	mg/l	5	29	32	30
2	COD	mg/l	<30	78	65	125
3	Oil and Grease	mg/l	2	3	12	10
4	pH	S.U	7.7	7	7.2	6-9
5	Total Coliform Bacteria	MPN/100ml	-	1100	>1100	400
6	Total Nitrogen	mg/l	<5	0.7	32	10
7	Total Phosphorous	mg/l	0.5	1.8	3	2
8	Total Suspended Solids (TSS)	mg/l	1	5	5	50

The sewage discharge water was treated with bio-filter in Base Camp and we collected that discharge water into the concrete tank. That collected water is reused for watering the plants and spraying the ground as dust control.

Due to the security concerns and the re-increasing rate of COVID-19 pandemic, the service provider and bio-filter maintenance team could not made in last six months and they have planned to do service in October 2022. At that time, MPRL E&P shall made a test on its treated water quality again.

8.3.3 Hydro-test Water and Domestic Water

In the Mann field warehouse, the team used to perform the hydro test for the tubing in the designated pressure test area. The field team reduced and minimized the usage of water volume by using recycled water with zero discharge.

Figure 33: Warehouse Tubular Section

8.3.4 Monitoring of Discharge Water from Warehouse (Tubular Section)

Figure 34: Water Sample Collection at Warehouse Zero Discharge Tank

Monitoring activities for the Hydro-test water monitoring schedule was made during August 2022 and found that all the parameters are under NEQEG. The monitoring result is described in the following table – 9 monitoring of discharge water from Warehouse (Tubular Section).

Table 9: Discharge Water from Warehouse (Tubular Section)

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	NEQEG (2015)
1	BOD5	mg/l		-	18	25
2	Arsenic	mg/l		-	0.005	-
3	Cadmium	mg/l		-	0.01	-
4	COD	mg/l		-	33	125
5	Chromium (Hexavalent)	mg/l		-	0.32	-
6	Copper	mg/l		-	0.1	-
7	TSS	mg/l			21	35
8	Chloride	mg/l			68	600
9	Lead	mg/l		-	ND	-
10	Mercury	mg/l		-	0.32	-
11	Nickel	mg/l		-	<0.2	-
12	pH	S.U		-	7.2	6-9
13	Phenols	mg/l		-	0.14	0.5

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	NEQEG (2015)
14	Silver	mg/l		-	≤0.005	-
15	Sulfide	mg/l		-	<0.04	1
16	Zinc	mg/l		-	<0.02	-

Down-hole Workshop: Down-hole tools servicing, cleaning, inspection, pressure testing and the cleaning process with steam are carried out in the Down-hole Workshop. The used water is disposed of at the zero discharge pits to preserve the environment.

8.3.5 Monitoring of Discharge Water from Equipment Maintenance Workshop (Down-hole Workshop)

During the monitoring periods from April 2022 to September 2022, there was one-time monitoring conducted for the discharge of water from the Equipment Maintenance Workshop (Down-hole Workshop) of the ZERO Discharge Tank. In August 2022, a total of eight (28) parameters were monitored the rest of the parameters were within the NEQEG except the total coliform bacteria, total phosphorous, total nitrogen, chromium (hexavalent) and oil and grease parameters.

Figure 35: Down-hole Workshop

The water uses in the daily operation of the down-hole workshop were collected in a concrete tank via a drain line and reused that water again as recycling and avoiding discharge to the environment.

Zero Discharged Tank was used in the down-hole workshop and some parameters may be exceeding due to the surrounding environment and accumulate effect due to storage condition.

The monitoring result is described in the following table – 10 Discharge water from Equipment Maintenance Workshop (Down-hole Workshop).

Table 10: Discharge Water from Equipment Maintenance Workshop (Down-hole Workshop)

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	NEQEG (2015)
1	BOD5	mg/l	14	34	40	50
2	Ammonia	mg/l	<0.02	<0.02	6.3	10
3	Arsenic	mg/l	0	0.025	≤0.010	0.1
4	Cadmium	mg/l	ND	ND	≤0.005	0.1
5	COD	mg/l	<30	76	65	250
6	Chlorine (Total Residual)	mg/l	0.14	0.38	<0.02	0.2
7	Chromium (Hexavalent)	mg/l	12	0	0.15	0.1
8	Chromium (Total)	mg/l	-	<0.02	0.048	0.5
9	Copper	mg/l	ND	ND	0.112	0.5
10	Cyanide (Free)	mg/l	<0.01	-	<0.002	0.1
11	Cyanide (Total)	mg/l	-	<0.01	0.004	1
12	Fluoride	mg/l	0.33	0	0	20
13	Heavy Metals (Total)	mg/l	-	-	-	10
14	Iron	mg/l	0.24	0.26	0.3	3.5
15	Lead	mg/l	ND	ND	≤0.005	0.1
16	Mercury	mg/l	-	0	≤0.002	0.01
17	Nickel	mg/l	ND	<0.2	0.148	0.5
18	Oil and Grease	mg/l	14	4	16	10
19	pH	S.U	7.4	7	7.3	6-9
20	Phenols	mg/l	<0.1	<0.1	<0.1	0.5
21	Selenium	mg/l	-	≤0.01	0.1	0.1
22	Silver	mg/l	-	≤0.002	≤0.005	0.5
23	Sulfide	mg/l	0.04	<0.04	<0.04	1
24	Temperature increase	mg/l	24	25	27	<3
25	Total coliform bacteria	MPN/100 ml	-	>1100	>1100	400
26	Total Phosphorous	mg/l	0.18	<1.5	40	2
27	Total Suspended Solids	mg/l	11	3	5	50
28	Zinc	mg/l	<0.02	0.02	<0.02	2

Mechanical Workshop: pulling units, work-over rigs, trucks, bulldozers, backhoe, tractors and pumps are serviced in the workshop. Large amounts of water are used in car washes and general cleaning. Water reclaim systems are applied in the workshop.

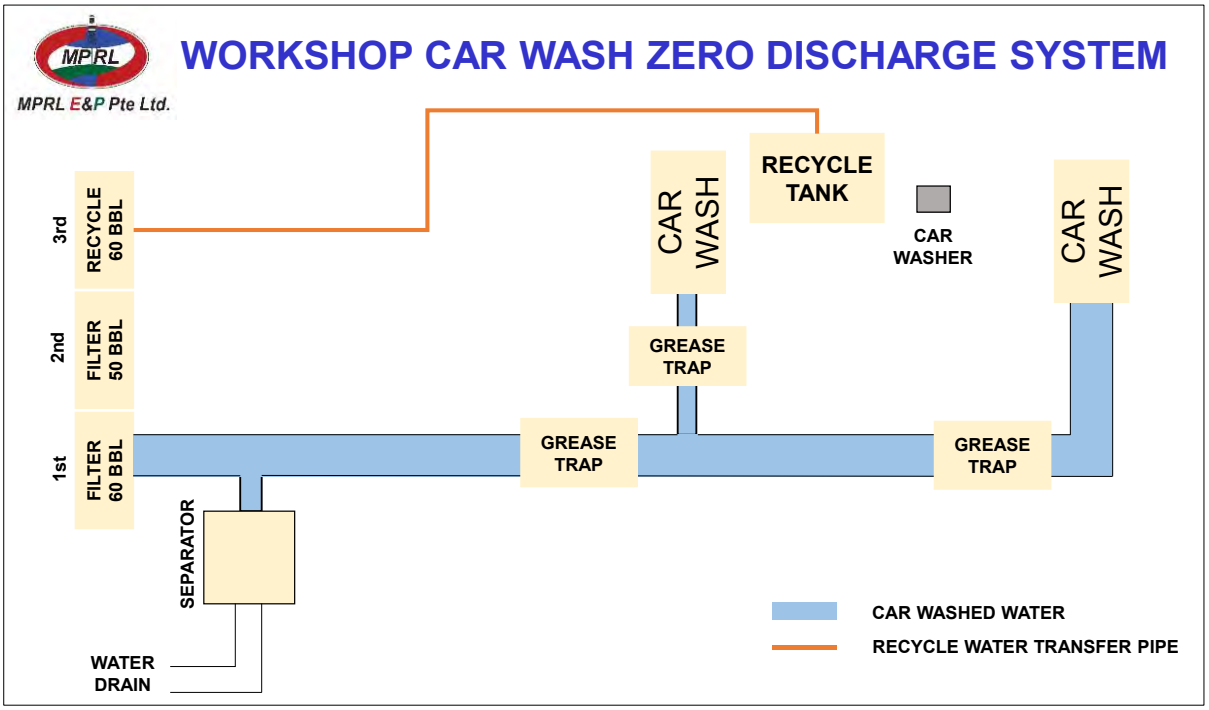


Figure 36: Recycle Water Usage System with Zero Discharge at Mechanical Workshop

8.3.6 Monitoring of Discharge Water from Equipment Maintenance Workshop (Mechanical Workshop)

The vehicles and machine parts are doing maintenance and repairing jobs at the mobile workshop. The water used in the daily operation of the workshop was collected in a concrete tank and reused that water again.

During the monitoring periods from April 2022 to September 2022, there was one-time monitoring conducted for the discharge of water from the Equipment Maintenance Workshop (Mechanical Workshop) of the Zero Discharge Tank. In August 2022, a total of twenty-eight (28) parameters were monitored and amongst them some parameters are over the guideline values especially total coliform bacteria, chromium (hexavalent), oil and grease and total phosphorous parameters.

The reason may be not only the cover of the collecting tank was made with iron rod mesh and that the bird feces and other transmissions through the drain line may became affected water quality but also the surrounding environment of Zero Discharged Tank and its accumulate effect due to storage condition.

The monitoring result is described in the following table – 11 Discharge water from Equipment Maintenance Workshop (Mechanical Workshop).

Table 11: Discharge Water from Equipment Maintenance Workshop (Mechanical Workshop)

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	NEQEG (2015)
1	BOD5	mg/l	12	36	18	50
2	Ammonia	mg/l	<0.02	<0.02	2.3	10
3	Arsenic	mg/l	0	0	≤0.010	0.1
4	Cadmium	mg/l	ND	ND	≤0.005	0.1
5	COD	mg/l	<30	81	36	250
6	Chlorine (Total Residual)	mg/l	0.02	0.04	<0.02	0.2
7	Chromium (Hexavalent)	mg/l	2	0	0.34	0.1
8	Chromium (Total)	mg/l	-	<0.02	0.046	0.5
9	Copper	mg/l	0.02	ND	≤0.005	0.5
10	Cyanide (Free)	mg/l	<0.01		<0.002	0.1
11	Cyanide (Total)	mg/l		<0.01	0.004	1
12	Fluoride	mg/l	0.46	0	0.02	20
13	Heavy Metals (Total)	mg/l	-	-	-	10
14	Iron	mg/l	0.12	0.11	0.6	3.5
15	Lead	mg/l	ND	ND	≤0.005	0.1
16	Mercury	mg/l	-	0	≤0.002	0.01
17	Nickel	mg/l	ND	<0.2	0.142	0.5
18	Oil and Grease	mg/l	12	6	21	10
19	pH	S.U	7.7	6.9	7.4	6-9
20	Phenols	mg/l	<0.1	<0.1	<0.1	0.5
21	Selenium	mg/l	-	≤0.01	0.104	0.1
22	Silver	mg/l	-	≤0.002	≤0.005	0.5
23	Sulfide	mg/l	<0.04	<0.04	<0.04	1
24	Temperature increase	mg/l	24	25	27	<3
25	Total coliform bacteria	MPN/100 ml	-	460	>1100	400
26	Total Phosphorous	mg/l	0.3	<1.5	20	2
27	Total Suspended Solids	mg/l	2	0	3	50
28	Zinc	mg/l	<0.02	0.02	<0.02	2

8.4 Use of Chemicals for EOR

During the EOR operation, chemicals were injected into the wells to alter the property of oil for enhanced recovery. The chemicals that may be used for the Project included alkaline and polymers. The injection of chemicals into the well may cause groundwater contamination and indirectly affect community health.

In Mann Field, MPRL E&P applied the GreenZyme® to inject the formation that does not expose nor discharge to the environment. There is no environmental issue since the injection project had been conducted according to the standard operating procedure by protecting not spilling into the environment. According to the work program, MPRL E&P did not conduct the GreenZyme® treatment operation during this fiscal year 2022-23 and observing the result of the previous year's GreenZyme® treatment wells.

GreenZyme® is not a chemical but a biological liquid enzyme which is a kind of environmentally friendly fluid. It is a protein-based non-living catalyst, which facilitates the completion of biological reactions, to enhance crude oil recovery from most oil wells, both onshore and offshore EOR. GreenZyme® is produced by a proprietary process, which involves impregnating a high protein nutrient soup, with the DNA of selectively cultured microbes. The final product contains enzymes associated with the oil-eating microbe's DNA. Nearly all-living microbes are made inert at the end of the manufacturing process.

8.5 Monitoring of Camp Water Quality (Drinking Water Quality)

A purified drinking water machine (Reverse Osmosis – RO System) have been installed for drinking and food preparation to cover enough consumption for all staff who are living in the base camp. The team is monitoring water quality quarterly and performing hygiene inspections and audits by the site doctor and HSE team as per the planned schedule.

Figure 37: Reverse Osmosis (RO) Treatment System at Base Camp

As the safe water to drink is vital to everyone, upgrading of the newly RO treatment system was installed and replaced on 24 March 2022 and the regular service and maintenance was planned and implemented.

Monitoring Results of Drinking Water Quality

The sample of purified drinking water quality (RO system) at MPRL E&P was collected and tested in August 2022 and the results shows that all parameters are under DWQS (2019) and safe to drink. Testing of taste parameter is not available in the lab.

The tested results of the purified drinking water quality (RO system) is described in the following table 12: Drinking water quality monitoring from MPRL E&P Base Camp (RO Outlet)

Table 12: Drinking Water Quality Monitoring from MPRL E&P Base Camp (RO Outlet)

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	DWQS (2019)
1	pH	S.U	7.1	7.1	8.2	6.5-8.5
2	Turbidity	NTU	1	<5	<5	5
3	Colour	TCU	Nil	0	12	15
4	Hardness	mg/l as CaCO3	28	6	17	500
5	Arsenic	mg/l	-	0	0.005	0.05
6	Chloride	mg/l	7	<0.5	42	250
7	Lead	mg/l	-	ND	ND	0.01
8	Total Dissolved Solids (TDS)	mg/l	72	101	22	1000
9	Iron	mg/l	0.07	<0.1	0.2	1
10	Sulphate	mg/l	12	10.6	4.9	250
11	Manganese	mg/l	Nil	<0.2	0.2	0.4
12	Nitrate	mg/l	-	1.4	≤0.067	50
13	Total Coliform Count	MPN/100ml	-	>1100	0	0
14	Total Fecal Coliform Count	MPN/100ml	-	>1100	0	0
15	Odor	Acceptable	-	-	1	-

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8.6 Monitoring of Ground Water Quality

MPRL E&P did not perform the chemical flooding or injection process to the wells but initiated with injection of produced water to the shut-in wells by using injection pumps to maintain reservoir for the enhanced oil recovery project.

As part of the Environmental monitoring plan, the groundwater near the injection well was monitoring bi-annually and the purpose of this monitoring is to consider the contamination or any impact on ground water. There were two tube wells near shut-in well 132 named Ko Win Maung and Ma Nyein Wells. The monitoring was conducted as regularly every six months per one time and conducted in August 2022 but Taste could not be tested as per availability of labs. The monitoring results are stated in tables 13 and 14.

Table 13: Groundwater Quality Monitoring near Injection Well 132 (Ko Win Maung)

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	DWQS (2019)
1	pH	S.U	7.2	7.3	7.1	6.5-8.5
2	Turbidity	FAU/NTU	<5	<5	<5	5
3	Colour	HU	16	14	18	15
4	Hardness	mg/l as CaCO3	41	23	60	500
5	TDS	mg/l	-	-	1102	≤1000
6	Chloride	mg/l	-	-	67	250
7	Total Coliforms	MPN/100ml	-	460	>1100	0
8	Total Faecal Coliforms	MPN/100ml	-	-	460	0
9	Arsenic	mg/l	0	0	0.005	0.05
10	Iron	mg/l	-	-	0.3	1
11	Lead	mg/l	-	-	ND	0.01
12	Manganese	mg/l	-	-	0.8	0.4
13	Sulfate	mg/l	-	-	<2	250
14	Nitrate	mg/l	-	-	31.859	50
15	Odour	Acceptable	-	-	1	-

Table 14: Groundwater Quality Monitoring near Injection Well 132 (Ma Nyein)

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	DWQS (2019)
1	pH	S.U	7.1	7.5	7.5	6.5-8.5
2	Turbidity	FAU/NTU	<5	<5	<5	5
3	Colour	HU	3	10	4	15
4	Hardness	mg/l as CaCO3	147	47	95	500
5	TDS	mg/l	-	-	410	≤1000
6	Chloride	mg/l	-	-	120	250
7	Total Coliforms	MPN/100ml	-	23	93	0
8	Total Faecal Coliforms	MPN/100ml	-	-	0	0
9	Arsenic	mg/l	0	0	0.005	0.05
10	Iron	mg/l	-	-	0.3	1
11	Lead	mg/l	-	-	ND	0.01

No	Quality Parameter	Units	Results (Dec 2020)	Results (Dec 2021)	Results (Aug 2022)	DWQS (2019)
12	Manganese	mg/l	-	-	0.6	0.4
13	Sulfate	mg/l	-	-	152	250
14	Nitrate	mg/l	-	-	10.2	50
15	Odour	Acceptable	-	-	1	-

MPRL E&P conducted the groundwater quality monitoring near well 132 (Ko Win Maung) in August 2022 and except from some parameters such as total coliform, total fecal coliform and manganese, all the results show under Drinking Water Quality Standard (2019).

As the observation on that well, the tube well is almost 20 feet in depth and is normally used to bathe and wash. The discharge of water from animal farms, toilets, fertilizers, animal feces can cause pollution to groundwater as well as tube-well. In summer that tube well is no more able to use as dried up. During the ground water quality testing in February 2022, the result of total coliform is also high.

At the Ma Nyein Well, all the results shown under the Drinking Water Quality Standard (2019) and except total coliforms and manganese. That tube-well is also about 20 feet in depth and is mainly used for washing and bathing purposes. As a result of the observation on that the discharge of water from animal farms, fertilizers, and nearness to toilets may cause pollution to the groundwater source as the well is not enough in-depth. During the ground water quality testing in February 2022, the Ma Nyein tube well cannot produce water as it was draught in summer.

8.7 Monitoring on Gas Venting

As per the gas venting monitoring program, MPRL E&P's technical team is monitoring and measuring by using an Echo Meter to check for gas volume. Based on the results, if the gas volume is significantly higher than the previous measurement volume, use the orifice meter to confirm the gas volume measured within 24 hours. The team connected to the gas line after confirming gas volume is enough to collect to the existing facility of the gas supply lines to the LPG plant.

Location of the Gas Venting Wells

As per the planned monitoring program, the team randomly selected the six wells and measured by using an orifice meter on the wells as follows;

Table 15: Selected Gas Venting Wells Locations

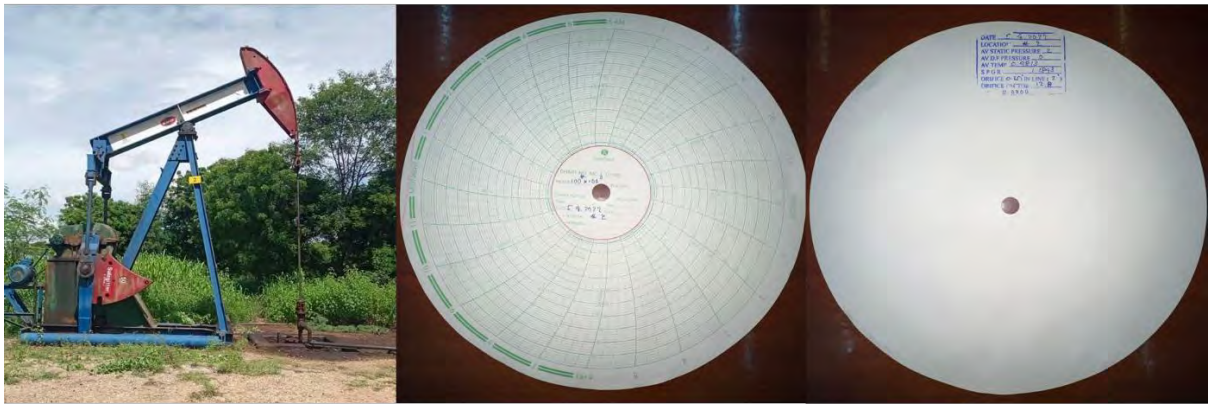
Well No	Location	Gas Volume	Date
M 2	N 20°13'38.71" E 94°51'20.4"	0 – MMCFD	05 April 2022
M 34	N 20°12'32.93" E 94°51'55.76"	0 – MMCFD	15 May 2022
M 319	N 20°12'34.11" E 94°51'29.79"	0 – MMCFD	20 June 2022
M 481	N 20°11'59.72" E 94°51'33.21"	0 – MMCFD	10 July 2022
M 521	N 20°13'0.78" E 94°51'22.95"	0 – MMCFD	02 August 2022
M 633	N 20°13'1.48" E 94°51'12.17"	0 – MMCFD	01 September 2022

Location : Well – 2

Measurement : Gas Volume Measurement by using Orifice Meter

Date : 05 April 2022

Gas Volume : 0 MMCFD

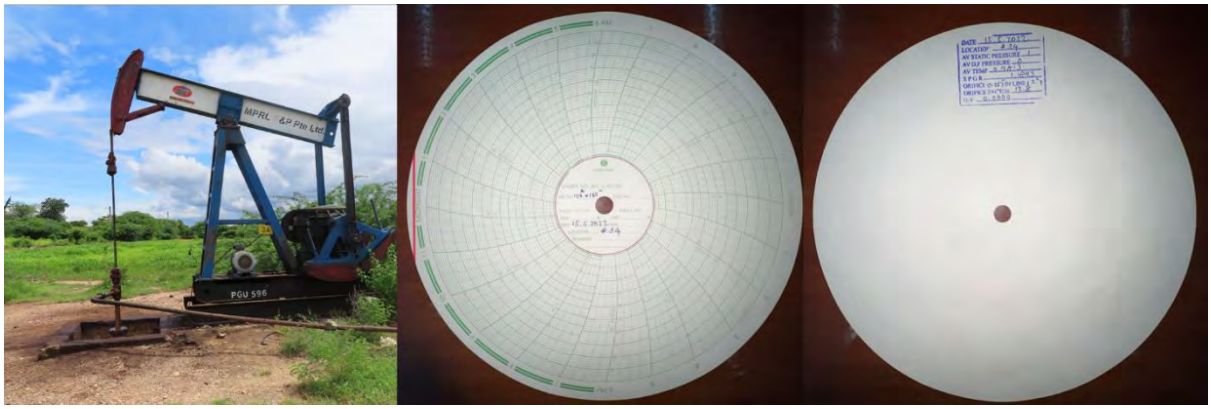


Location : Well – 34

Measurement : Gas Volume Measurement by using Orifice Meter

Date : 15 May 2022

Gas Volume : 0 MMCFD

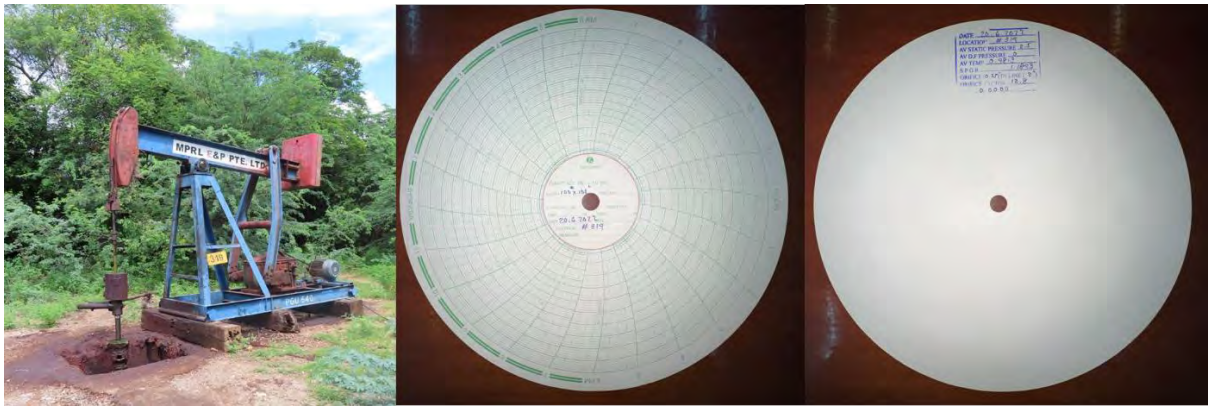


Location : Well – 319

Measurement : Gas Volume Measurement by using Orifice Meter

Date : 20 June 2022

Gas Volume : 0 MMCFD

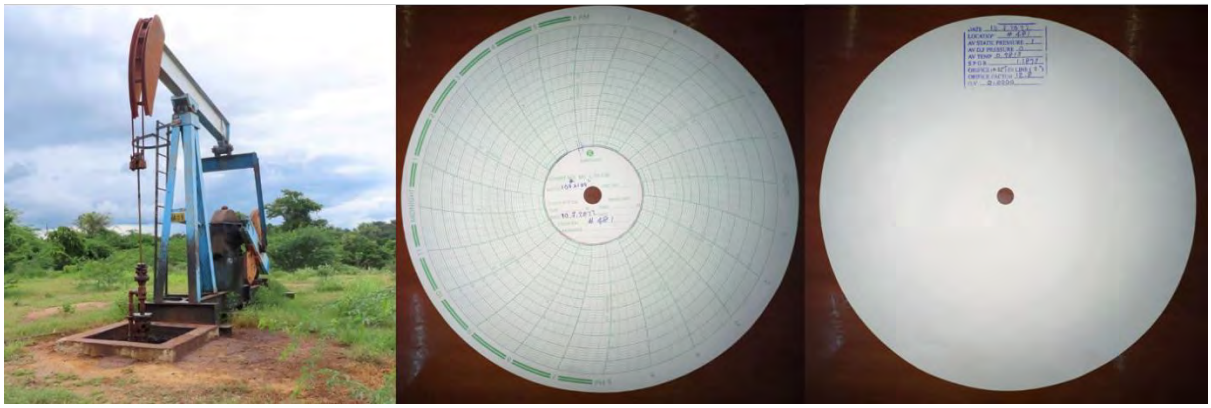


Location : Well – 481

Measurement : Gas Volume Measurement by using Orifice Meter

Date : 10 July 2022

Gas Volume : 0 MMCFD

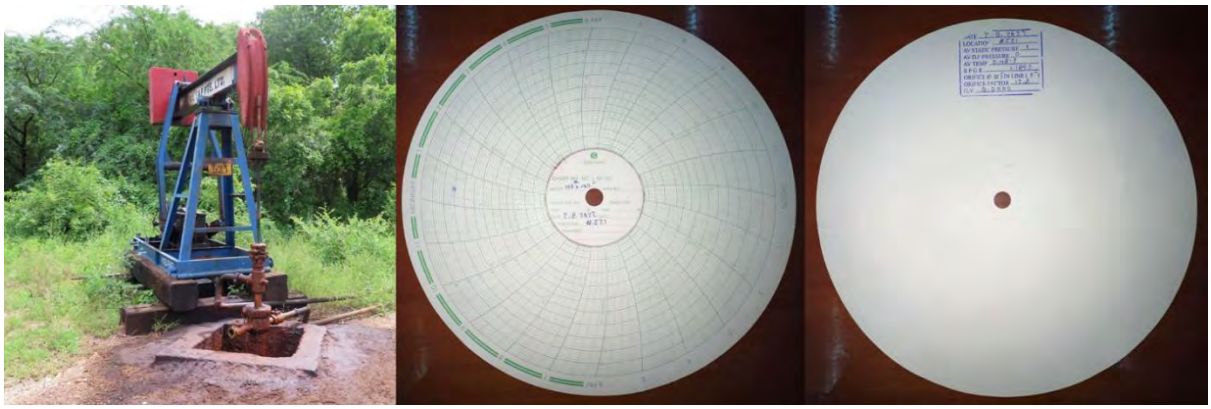


Location : Well – 521

Measurement : Gas Volume Measurement by using Orifice Meter

Date : 02 August 2022

Gas Volume : 0 MMCFD

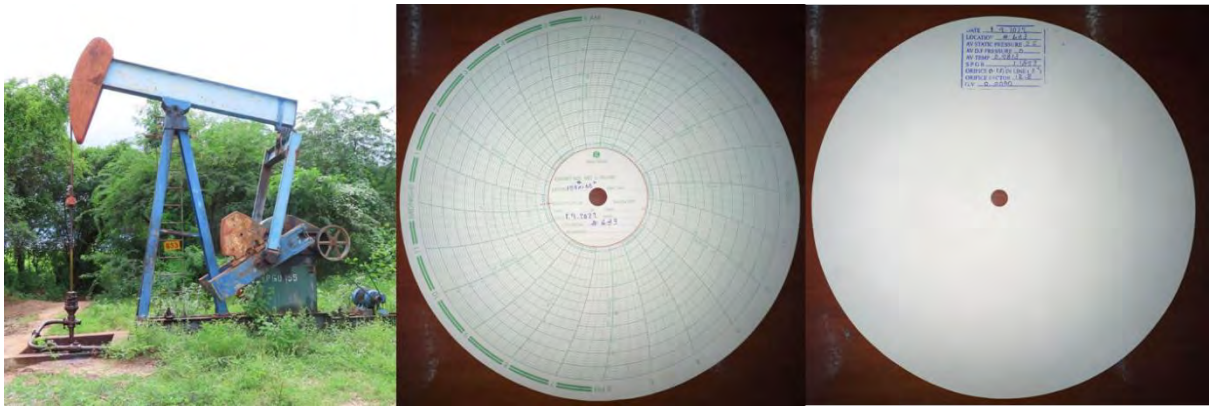


Location : Well – 633

Measurement : Gas Volume Measurement by using Orifice Meter

Date : 01 September 2022

Gas Volume : 0 MMCFD



8.7.1 Monitoring of Hydrogen Sulphide (H_2S)

Hydrogen Sulphide (H_2S) monitored by HSE Team Members at the randomly selected potential gas venting wells and detail results of the six (6) wells were stated in this monitoring report.

Table 16: Monitoring Results on the Gas Venting Wells

Sr. No:	Location	Date	Measured time	H_2S (PPM)	CO (PPM)	O_2 %	LEL %
1	M-22	12-September-2022	14:56 PM	0	0	20.9	0
2	M-321	12-September-2022	15:05 PM	0	0	20.9	0
3	M-362	13-September-2022	12:01 PM	0	0	20.9	0
4	M-80	14-September-2022	15:40 PM	0	0	20.9	0

Sr. No:	Location	Date	Measured time	H_2S (PPM)	CO (PPM)	O_2 %	LEL %
5	M-537	14-September-2022	15:44 PM	0	0	20.9	0
6	M-98	14-September-2022	16:02 PM	0	0	20.9	0

This is monitored with the In-house portable gas detector (VENTIS MX4 Gas Detector) which have been calibrated equipment as attached in Annex – 2 Equipment Calibration Certificate and four (4) parameters able to monitor with this equipment. As the monitoring result, there is no detective of the H_2S parameters and the result of each well are listed as above table 16.

H_2S Monitoring Activities

Figure 38: Monitoring at M-98

Figure 39: Monitoring at M-362

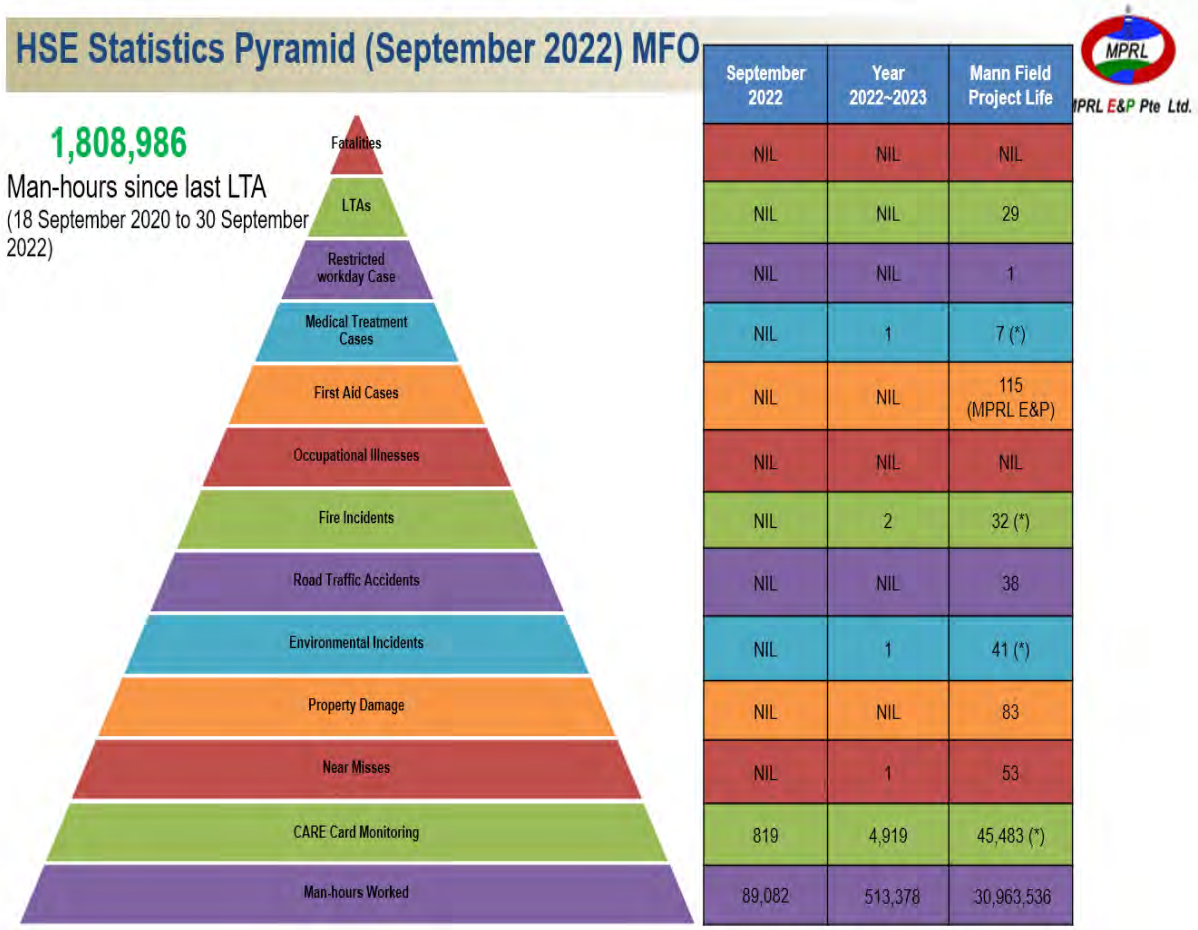
Figure 40: Monitoring at M-537

9. Occupational Health and Safety Performance

Occupational Health and Safety System Framework

The current arrangement of health and safety management within MPRL E&P one of the flagship oil and gas exploration and production companies is carried out by fulfilling the international health and safety management system standards and requirements such as HSG 65 and ISO 45001:2018, as well as local applicable laws and international standards and industry best practices such as API requirements.

9.1. HSE Statistics Pyramid



September 2022	Year 2022~2023	Mann Field Project Life
NIL	NIL	NIL
NIL	NIL	29
NIL	NIL	1
NIL	1	7 (*)
NIL	NIL	115 (MPRL E&P)
NIL	NIL	NIL
NIL	2	32 (*)
NIL	NIL	38
NIL	1	41 (*)
NIL	NIL	83
NIL	1	53
819	4,919	45,483 (*)
89,082	513,378	30,963,536

Figure 41: HSE Statistics Pyramid from 1 April 2022 up to 30 September 2022 Status

9.2. Incidents Status

In the fiscal year of 2022 – 2023, there were a total of 5 incident occurrences in the Mann field operation, fire Incident 2 time (arson) followed by an environmental incident (oil spill due to pilfering), a near miss case (food safety) and a medical treatment case (non-work-related) respectively. Most of the incidents are non-work-related and the number of the total recordable case still meet the KPI Target for 2022-23.

9.3. HSE Audits & Inspection

A thorough and specific HSE audit on the transportation management was first time initiated in the fiscal year of 2022-23 and was conducted from on 20th & 21st July 2022. The audit aims to conduct a detailed analysis of the effectiveness of the HSE requirements established in the transportation management system and its arrangement.

The objectives of the HSE audit are:

1. To ensure the current implementation of the transportation management is aligned with the standards,
2. To identify gaps & areas for improvement,
3. Not to apportion blame but to achieve continuous improvement in the company's services, standards & continuous reduction in the number of road traffic accidents (RTAs)

To ensure the safety and reliability of lifting and hoisting gear in compliance with the HSE requirements, the 3rd party Asia Drilling team conducted the "Annual Lifting and Hoisting Gear Visual Inspection and NDT Test" in Mann Field.

Due to the severe COVID-19 pandemic and sociopolitical conditions, the HSE bi-annual audit for the fiscal year of 2022-23 was postponed and will conduct if the saturation permits with the higher management approval.

Figure 42: Transportation Management Audit

Figure 43: Third Party ADL Team, conducted "Annual Lifting and Hoisting gear Visual Inspection and NDT Test" in Mann Field

9.4. HSE Training

In the first half of the fiscal year 2022-2023, there was a total of (3,900) HSE training hours achieved.

The topics covered are described below. Most of the topics were conducted internally mainly by the HSE department. Basic First Aid Training and COVID-19 Awareness Session about Vaccination are conducted by trainers from the Myanmar Red Cross Society and by Pan Hlaing Hospital respectively.

Due to the nature of operations, understanding the difference between hazard and risk and understanding different types of hazards in a workplace is critical to the health and safety of operating workers. To understand the overview of qualitative risk assessment, to embark on the concept of risk management, and to develop the HSE Knowledge of the employees, HSE Department also conducted a "Risk Management Concepts" awareness session via Microsoft Team.

Since the Mann field is in a tropical region, temperature plays an important role in the health and safety of crew members. To raise awareness and prevent heat stress and heat stroke, the field HSE team and site doctor conducted heat stress awareness campaigns and shared their knowledge.

From the beginning of the pandemic, MPRL E&P has worked hard to raise awareness of COVID-19 among workers by providing them with accurate information. Training is provided progressively and up-to-date information is also shared proactively.

Year 2022 – 2023 HSE training as per follow

- Human Factors, HSE Awareness Training
- Fire Extinguisher Training
- Heat Stroke Awareness
- NEBOSH IGC HSE Awareness Training
- First Aid Refresher Training
- Structure Training
- Fire Safety Awareness Training

- Water Sampling Procedure Training
- CARE Card Reporting Procedure Training
- Assist & Assure (A/A) Application Guidance Training
- How to Check Fire Extinguisher Training
- World Environmental Day Awareness Session
- Electrical Safety Awareness Training
- Driver's Behavior Change Program for Drivers Training
- Driver's Behavior Change Observer Refresh Training
- Arthritis Awareness Session Training
- Basic First Aid Training
- Emergency Warden Refresh Training
- Hypertension Awareness Training
- Colorectal Carcinoma, Earthquake, and COVID-19 Awareness Session
- Monkeypox Awareness Session
- Incident Investigation Training
- Risk Management Concept Awareness Session
- Permit to Work Procedure Training
- World Ozone Day Awareness Training
- COVID-19 Awareness Session about Vaccination

Figure 44: Heat Stroke Awareness Training in Mann Field (9 & 24 April 2022)

Figure 45: Human Factors, HSE Awareness Training (20, 21& 22 April 2022)

Figure 46: Fire Safety Awareness Training in Mann Field (5 & 14 May 2022)

Figure 47: Stretcher Handling Training in Mann Field (5 May 2022)

Figure 48: Basic First Aid Training in Mann Field (5 May 2022)

Figure 49: Assist & Assure (A/A) Application Guidance" Awareness Training in Mann Field (17 May 2022)

Figure 50: NEBOSH" Knowledge Sharing Session for HSE Department (26 May 2022)

Figure 51: Water Sampling Procedures Training (10 May 2022)

Figure 52: Electrical Safety Awareness Training (4 & 11 June 2022)

Figure 53: Basic First Aid Training (14 to 17 June 2022)

Figure 54: Drivers' Behavior Change Program Awareness Session

Figure 55: World Environment Day (Only One Earth) Awareness Session (3 June 2022)

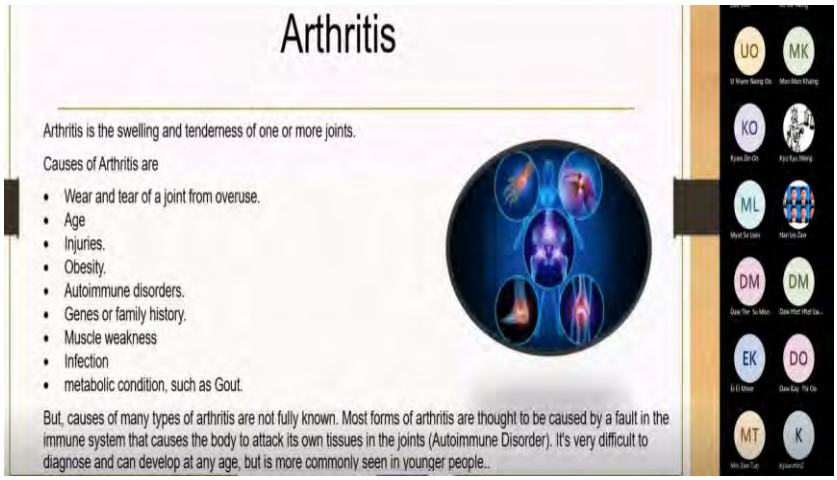


Figure 56: Arthritis Awareness Session (10 June 2022)

Figure 57: Hypertension Awareness Session (2 & 16 July 2022)

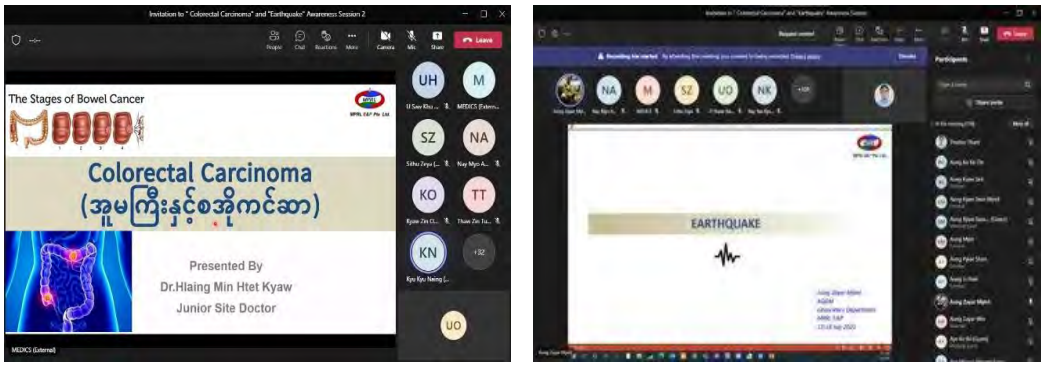


Figure 58: Colorectal Carcinoma, Earthquake, and COVID-19 Awareness

Figure 59: Incident Investigation Training in Mann Field (6 & 20 July 2022)

Figure 60: Monkeypox Awareness Session (6 & 20 August 2022)

Figure 61: NEBOSH IG2 Element 7: Chemical and Biological Agents" Knowledge Sharing Session (12 August 2022)

Figure 62: Risk Management Concepts Training (18 & 19 August 2022)

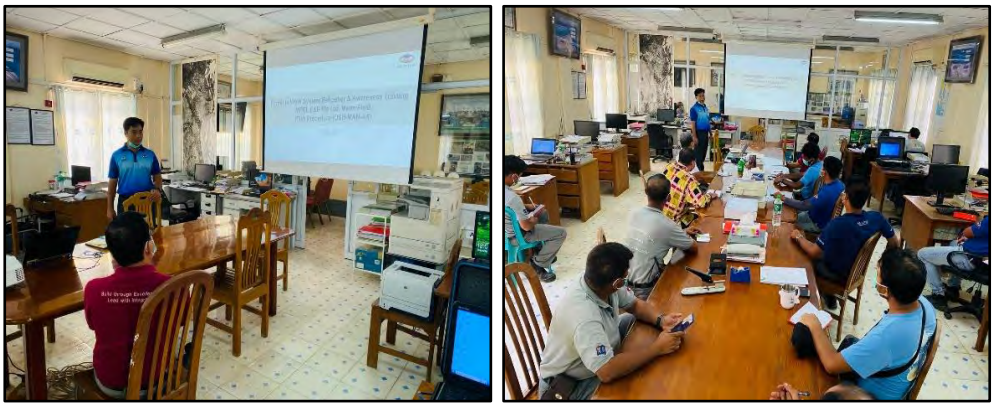


Figure 63: Permit to Work Procedure Training in Mann Field (14 September 2022)

9.5. Effective Worker's Participation Towards HSE

To promote positive safety culture among operation teams, award programs were used as driving forces. To improve the HSE culture in the organization, the "Outstanding HSE Best Performance" award program has been ongoing. To stimulate more involvement in HSE activity, "Contribution Award in HSE Activity" awards are given to the nominated personnel. The Best Quality Care Card Award is aimed at promoting ownership and reducing property damage and loss.

U Than Htike

(MPRL E&P Warehouse Casual Crew)

U Than Tun

(MOGE Pulling Unit Crew)

Figure 64: Outstanding HSE Best Performance Award for Jan, Feb & March 2022

U Lay Aung

(MPRL E&P Downhole Casual Crew)

U Zaw Myat Soe

(MOGE Pulling Unit Crew)

Figure 65: Outstanding HSE Best Performance Award for April, May & June 2022

Figure 66: Recognition of the Active Participation & Contribution Towards HSE of the Organization

Figure 67: Contribution Award in HSE Activity

M.O.G.E.

MPRL E&P

Operational Grievance Mechanism &

Corporate Social Responsibility

10. Corporate Social Responsibility

10.1 Executive Summary

MPRL E&P remains a purpose-driven business organization operating in Myanmar's upstream energy sector. As a long-term investor in the country's energy sector, we strive to conduct our business operations in line with the highest standards in governance, social and environmental responsibility that reflects our values and expectations of our stakeholders including government, communities, and employees. Our sustainability business strategies will help us grow and thrive. In the same way, we contribute to solving the country's problems from employment to energy access to local development.

We have worked to embed this sustainability commitment into our strategy, our business processes and decision-making. We aim to be a good neighbour wherever we work, by contributing to the well-being of communities. We work closely with them to manage the social impacts of our business activities, address any concerns about our operations, and enhance the benefits that we are able to bring. We continue to adopt the UNGC's principles in the areas of human rights, labor, anti-corruption, and the environment. We remain highly committed to the global sustainability initiative from the world body.

Respectful engagement with local communities is critical to the success of project and long-term operations. We do this through mutually agreed, transparent and culturally appropriate consultation and impact management processes. MPRL E&P engages with government departments, government technical training schools, private training centers, non-profit organizations and local welfare societies in order to leverage their capacity and create a multiplier effect of the CSR initiatives.

We understand the priorities and address the concerns or grievances people may have. It is important to us that people in communities are able to contact MPRL E&P, give feedback and receive a response or action from us. We have implemented the Operational Grievance Mechanism at Mann Field to receive, track and respond to concerns or grievances from community members before they can escalate.

10.2 Our Approach & Objectives

Our social investment strategy prioritizes the areas where we believe our investments will have the biggest potential to multiply our impact and achieve sustainable results for the 14 communities living near our operations in Mann Field. Our social investment themes have been:

- Community infrastructure
- Education, sanitation and basic health
- Livelihood development and economic empowerment
- Capacity building and partnerships
- Critical human needs and disaster response

In this regard, we continue to apply the community-led approach to our community initiatives in Mann Field in order promote inclusive and participatory decision-making, transparent and accountable village development, and strengthen grassroots level governance capacity.

At the department level, we are working to achieve the following goals which are ultimately tied to a set of Corporate Goals with regard to our Mann Field asset:

- Maintain a social license to operate from all key project stakeholders including community and regional government.

- Meet all legal requirements in compliance with the Myanmar EIA Procedures in Mann Field.
- Proactively build on our brand as a leading Myanmar national led upstream energy company to ensure both the government and general public are informed about the value we create as a business.

Our sustainability strategy is aligned with the UN Sustainable Development Goals, and we have an important role to play in supporting these ambitions. We can make the greatest contribution to six goals: Decent work and economic growth (Goal 8), Responsible Consumption and Production (Goal 12), Climate action (Goal 13), Life below water (Goal 14), Peace, justice and strong institutions (Goal 16) and Partnerships for the goals (Goal 17).

10.3 CSR Implementation Mechanism

The CSR & Communications Department implements its interventions in a combined method of direct implementation and through the involvement of communities as well as local and regional organizations, either private or public. The CSR and Communications Department carries out multi-stakeholder needs assessment activities in Mann Field on a yearly basis to develop a CSR work program. For the Fiscal Year 2022 - 2023, we have allocated USD 117,890 to fund CSR initiatives at Mann Field. The year-to-date expenditure of MPRL E&P's CSR Program is USD 67,949.56.

The whole CSR work program outlines goals, rationales, timelines, and measurable parameters. Each CSR intervention has a set of key performance indicators. Pilots are designed and implemented in order to ensure community involvement, capacity development and sustainability of a project. Technical knowledge transfer is encouraged whenever possible in addition to input support to facilitate transformation of subsistence agriculture and livestock into a modern, productive one.

10.4 Community Investment Initiatives

The success of our Corporate Social Responsibility Program in Mann Field is the product of a local community partnership model which involves and empowers an array of stakeholders including Community Volunteers. Our CSR initiatives aim to raise rural living standards through increased investment in community infrastructure, human resources and services for employment and income generation. Our social investments are attuned to local needs, through needs assessment, where-in the local needs are identified, and the final design and outcomes of the project are decided. Each project aims to ultimately enable the beneficiaries to become change makers in their communities.

Infographics: Community Investment Initiatives in Mann Field

 Community Infrastructure Development Initiatives - 6	 Agriculture & Livestock Farming Initiatives - 4	 Vocational & Livelihood Trainings – 3
 Waste Management Cargo Trips – 227.5	 Waste Collected Metric Tons - 492.56	 Addressed Grievance Cases – 6
 Stakeholder Engagement Hours – 987.5	 Reporting and Communications – 15	 Total Contributions (as of August 2022) – USD 67,949.56

10.5 Key Performance Highlights

The followings are some of our key performance highlights for the first six months (April 2022-September 2022) of the Fiscal Year 2022-2023:

- Provided furniture and workout equipment for community center pilot project in Aye Mya Village.
- Supplied water pump, water well drilling cost and roof construction project in Kywe Cha Village.
- Supported water pump and PVC pipe for water supply improvement project in Ywar Thar Village.
- Completed provision of 520-feet tube well digging project at Pauk Kone Village.
- Wrapped up provision of concrete culvert construction project in Makyee Chaung Village.
- Implemented road concrete slab and drainage construction project in Mann Kyoe Village.
- Conducted annual water quality test from water filtration units at (10) schools in Mann Field.
- Monitored gardening and weeding activities of Green Schoolyards in Mei Bayt Kone and Let Pan Ta Pin Schools.
- Held knowledge sharing session on “Seed Treatment and Packaging” in Kywe Cha Village.
- Organized hands-on trainings on “Fish Amino Acid” at Mei Bayt Kone and Auk Kyaung Villages.
- Distributed chickpea, sunflower, tomato seeds and plastic mulches to farmers in Mann Field Communities.
- Ran agricultural knowledge sharing sessions in collaboration with Yetagon Farm Advisory Service.
- Facilitated in cattle vaccination program and delivering purchase order of Mann Field Community products.
- Initiated collecting animal breeder list and assessed animal husbandry practices for livestock breeding pilot project.
- Equipped (14) members of Emergency Response Team with MRCS uniforms and facilitation supports.
- Provided a total of (20) local women with “Value-Added Tomato Products Making Training” in collaboration with SSID (Magway).
- Awarded scholarship support to (7) community youths for SAI (Pwint Phyu) training and (3) community youths for GTHS (Magway) training.
- Offered free healthcare and home visit services to Mann Field Communities under Mobile Clinic Program.
- Empowered Mann Field Communities with “Health Education Talks on Diabetes and Hypertension”.
- Supervised regular waste collecting service, Trash Hero Minbu’s cleanups and World Environment Day 2022 celebration.
- Delivered (11) sessions of knowledge sharing on “Water, Sanitation and Hygiene (WASH) and 5R’s” to a total of (460) students.

- Received six OGM cases in the first six months of FY 2022-2023.
- Held “Recognition and Appreciation Event” for Community-based Volunteers in Mann Field.
- Hosted “2nd Biannual CSR Progress Update and Review Meeting of FY 2021 – 2022” with MOGE in Nay Pyi Taw and the local communities in Mann Field.
- Conducted regular meetings and periodic discussions on community investment projects with the local stakeholders.
- Published Insight! Newsletter (Issue 31 and Issue 32), Doh Mann Myay Newsletter (Issue 5 and Issue 6), Impact Assessment Report and Quarterly OGM Reports, Quarterly CSR Progress Reports.
- Assembled (15) boxes of Doh Mann Myay Newsletter display stands at 14 Villages and Mann Field Office.
- Monitored and updated MPRL E&P’s Website as the key communication channel.
- Donated (120) copies of “Myanmar Energy Magnate: Biography of U Moe Myint” to IPRD (Magway) and (37) Copies to the Communities.
- Contributed MMK 3,500,000 for a hearse vehicle donation to Parahita Association and MMK 860,000 for meal donation on Sabbath Day.

10.6 General Performance Progress (April 2022 - September 2022)

10.6.1 Community Infrastructure Development

MPRL E&P's holistic approach to sustainable development lies at the heart of the Company's community development program which aims to raise the living standards of Mann Field Communities through strategic investments in infrastructure. MPRL E&P makes sure that community infrastructure in the Mann Field communities is provided in appropriate locations, responds to current needs, and remains adaptable to the needs of an evolving community. MPRL E&P's community infrastructure development focuses around strengthening local capacity to address the need for infrastructure by involving local communities, by increasing the efficiency in terms of how infrastructure is planned, designed, implemented and maintained, and relying to the extent possible on locally available resources.

Village Infrastructure Development

The Company's provision for community infrastructure development has been prioritized based on the results after community needs assessment. Before implementation process, the CSR Team always conducts site assessments and surveys on infrastructure situations with the support of Special Project Team from Mann Field Operations Department. According to the needs assessment results, MPRL E&P's CSR Program implemented village infrastructure development initiatives as the priority in the Fiscal Year 2022-2023 and successfully completed a total of (6) village infrastructure development initiatives in the first six months (April 2022-September 2022).

Progress Highlights

- Donated a total cost of MMK 3,028,200 of furniture (cabinet, tables, benches, chairs, shelves and whiteboard) and workout equipment for the Community Center Pilot Project in Aye Mya Village in April 2022.
- Discussed the current situation of the community libraries and information of transforming community libraries as community centers with Village Administrators, Village Development Committee and Community Volunteers of Kyar Kan Village and Nan U Village for Community Center Pilot Project initiative in April.
- Conducted several discussions on water supply improvement projects with Village Administrators, Village Development Committees and Volunteers of Pauk Kone, Kywe Cha and Ywar Thar Villages in May.
- Completed digging a water well, constructing a roof at the well, providing a water pump and necessary items for Kywe Cha Village with the total contribution of MMK 1,100,000 donated by the CSR Program and MMK 400,000 contributed by the Kywe Cha Communities in June.
- Accomplished providing a 25 hp diesel engine water pump, 1,300 feet of 3-inch PVC pipe and water pump accessories for the community infrastructure development in Ywar Thar Village in June. The total cost of the Ywar Thar project was MMK 5,776,250 and the CSR Program contributed MMK 5,444,250 and the Ywar Thar Communities donated MMK 332,000 in the project.
- Constructed the concrete slab at Khayay and Khwar Nyo Roads in Makyee Chaung Village in July. The CSR Program spent MMK 2,235,000 for the project and the Village contributed MMK 310,000.
- Initiated digging a 520-feet tube well in Pauk Kone Village in July and completed the community water supply improvement project of Pauk Kone Village with the contribution of MMK 6,369,250 by the CSR Program and the donation of MMK 900,000 by the Pauk Kone Community in August.
- Completed construction of road concrete slab and drainage construction in Mann Kyoe Village in September. The CSR Program contributed MMK 3,092,200 for the project and the Village donated MMK 528,900.

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Figure 68: Provision of Furniture and Workout Equipment for Community Center Pilot Project in Aye Mya Village

ကျေးရွာဖွံ့ဖြိုးရေးကော်မတီ

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Figure 69: Provision of Water Pump, Water Well Drilling Cost and Roof Construction Project at Kywe Cha Village

ကျေးရွာဖွံ့ဖြိုးရေးကော်မတီ

ရွာသာကျေးရွာ

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လက်မှတ်

အမည် ဦး ထိန်းဝေ — ကျေးရွာအုပ်ချုပ်ရေးမှူး, ရွာသာကျေးရွာ

ဦး ကြည်လှိုင် — ကျေးရွာဖွံ့ဖြိုးရေးကော်မတီ, ရွာသာကျေးရွာ

ဦး ဝေးဝင်း — စေတနာ့ဝန်ထမ်း, ရွာသာကျေးရွာ

ရက်စွဲ။ ။ ၂၀၂၂ ခုနှစ်၊ ဇွန်လ (၂၀) ရက်

Figure 70: Provision of Water Pump and PVC Pipe for Water Supply Project at Ywar Thar Village

ကျေးရွာဖွံ့ဖြိုးရေးကော်မတီ

မကြီးချောင်းရပ်ကွက်

ဂုဏ်ပြုမှတ်တမ်းလွှာ

မကွေးတိုင်းဒေသကြီး၊ မင်းဘူး(စကု)မြို့နယ်၊ မကြီးချောင်းရပ်ကွက်တွင် အများပြည်သူသွားလာသော ခရေလမ်းနှင့် ခွဲညီလမ်းတို့တွင် ကွန်ကရစ် ရေကျော်လမ်းခင်းခြင်းတို့အတွက် ကုန်ကျစရိတ်စုစုပေါင်း ကျပ် ၂,၂၃၅,၀၀၀/ (ကျပ်နှစ်ဆယ့်နှစ်သိန်းသုံးသောင်းငါးထောင်တိတိ)ကို MPRL E&P (CSR အစီအစဉ်)ဖြင့် ပံ့ပိုး ပါသောကြောင့် ဤဂုဏ်ပြုမှတ်တမ်းလွှာဖြင့် မှတ်တမ်းတင် ဂုဏ်ပြုအပ်ပါသည်။

လက်မှတ်

အမည်

ကျေးရွာအုပ်ချုပ်ရေးမှူး
မကြီးချောင်းရပ်ကွက်

ကျေးရွာဖွံ့ဖြိုးရေးကော်မတီ (၁)
မကြီးချောင်းရပ်ကွက်

ကျေးရွာဖွံ့ဖြိုးရေးကော်မတီ (၂)
မကြီးချောင်းရပ်ကွက်

ရက်စွဲ။ ။ ၂၀၂၂ ခုနှစ်၊ ဇူလိုင်လ (၁၁) ရက်

Figure 71: Provision of Concrete Culvert Construction Project in Makyee Chaung Village

ကျေးရွာဖွံ့ဖြိုးရေးကော်မတီ

ပေါက်ကုန်းကျေးရွာ

ဂုဏ်ပြုမှတ်တမ်းလွှာ

မကွေးတိုင်းဒေသကြီး၊ မင်းဘူး(စက္)မြို့နယ်၊ ပေါက်ကုန်းရွာတွင် (၅၃၀) ပေ အနက်ရှိ အများသုံး စက်ရေတွင်းတူးဖော်ခြင်း၊ ရေစုပ်စက်နှင့် ဆက်စပ် ပစ္စည်းများ ဝယ်ယူခြင်းတို့အတွက် ကုန်ကျစရိတ်စုစုပေါင်း ကျပ် ၇,၂၆၉,၂၅၀/ မှ MPRL E&P (CSR အစီအစဉ်) ဖြင့် ကျပ် ၆,၃၆၉,၂၅၀/ (ကျပ်ခြောက်ဆယ့် သုံးသိန်းခြောက်သောင်းကိုးထောင်နှစ်ရာငါးဆယ်တိတိ) ကို ပံ့ပိုးပါသော ကြောင့် ဤဂုဏ်ပြုမှတ်တမ်းလွှာဖြင့် မှတ်တမ်းတင် ဂုဏ်ပြုအပ်ပါသည်။

လက်မှတ်

အမည်

ကျေးရွာအုပ်ချုပ်ရေးမှူး
ပေါက်ကုန်းကျေးရွာ

ကျေးရွာဖွံ့ဖြိုးရေးကော်မတီ
ပေါက်ကုန်းကျေးရွာ

စေတနာဝန်ထမ်း
ပေါက်ကုန်းကျေးရွာ

ရက်စွဲ။ ။ ၂၀၂၂ ခုနှစ်၊ ဩဂုတ်လ (၈) ရက်

Figure 72: Provision of 520-feet Tube Well Digging Project in Pauk Kone Village

Figure 73: Provision of Road Concrete Slab and Drainage Construction in Mann Kyoe Village

School Infrastructure Development

MPRL E&P always recognizes the importance of education and annually supports the learning environment of the children of our host communities in Mann Field. There are a total of 11 public schools - one high school and the rest middle and primary schools - in the 14 surrounding villages in Mann Field. MPRL E&P's CSR Program supports these schools on a needs basis and dedicates a portion of an annual infrastructural budget for school renovation and supply projects. In this reporting period, the CSR Program began carrying out both major and minor projects of school building renovation and school facility maintenances.

Progress Highlights

- Initiated site exploration and discussion on Mei Bayt Kone School building renovation project with the Special Project Team and School Development Committee in June.
- Conducted annual water quality test by collecting sample from water filtration units in (10) schools and delivering it to ISO Tech Laboratory for the water quality test of pH, color, turbidity, dissolved solid, salinity, total coliform and fecal coliform in June.
- Informed the Headmistresses the quality test results of water filtration units, that showed none of total coliform and fecal coliform detected in any school drinking water, and other elements were in the range of WHO's drinking water quality standards in July.
- Monitored the Green Schoolyards Program in Mei Bayt Kone and Let Pan Ta Pin Schools monthly and cleaned weed at the schoolyards and provided necessary support in gardening.

Figure 74: Site Exploration to Mei Bayt Kone School for Building Renovation

Figure 75: Collecting Drinking Water Sample from Water Filtration Units at 10 Schools in Mann Field for Quality Test

Figure 76: Informing Water Quality Test Results to Schools

Figure 77: Monitoring and Maintaining Green Schoolyards in Mei Bayt Kone and Let Pan Ta Pin Schools

Case Study

Community Center Pilot Project: First Step of Outreaching to the Wider Community

Many organizations are now proactively supporting the growth of the recreational hubs as part of their community outreach programs. At MPRL E&P, our objective is to bring benefits to the communities where we operate as part of our corporate social responsibility. We listen to the needs of our stakeholders because we believe in the importance of engagement and fostering community growth which all play a role in the prosperity of the country.

MPRL E&P began its community needs assessments in late 2021 by checking out several community libraries in Mann Field that were due for an upgrade. Leading in towards the first quarter of the fiscal year 2022-2023, MPRL E&P initiated its first ever project called Community Center Pilot Project at Aye Mya Village where we are building a small library which will eventually evolve into a small community center at the end of the fiscal year. Our initiatives include the provision of well-furnished, equipped, and ample spaces for educational and social activities. We hope that this project will bring a conducive learning environment and a better lifestyle for the youth and local communities.

Meanwhile, our CSR Team is in discussion with a multinational corporation called iGroup's mango STEEMS Pte Ltd. about a potential collaboration in providing digital education solutions for our communities. At the same time, we have been conducting minor restoration and renovation projects for the existing libraries in Mann Field including regular checking of the status and accessibility of current books and periodicals. In addition, we are providing necessary furniture for the library and setting up sports and recreation equipment outside of the library with assistance from MPRL E&P's Special Project Team.

Aside from these developments in our communities, we are in discussion with Regional Information and Public Relations Department to provide Library Management Training which will benefit the existing librarians with locating resources for reading, teaching, and learning purposes and managing the database of the books and catalogs. Last but not least, it will help in running reports and doing basic housekeeping functions of a library.

MPRL E&P's CSR Program provided a total worth of MMK 3,028,200 of furniture and workout equipment for the Community Center Pilot Project in Aye Mya Village and handed over the complete project to Village Development Committee in the first quarter of the Fiscal Year 2022-2023. We hope that this Community Center Pilot Project will be a sustainable program for other surrounding villages in Mann Field.

Provision of Water Supply for Mann Field Communities

In Mann Field, the government provides piped drinking water to 5 out of 14 surrounding villages on a regular basis and except for Pauk Kone and Let Pan Ta Pin Villages. In addition, there are five other villages without access to the government's drinking water pipeline, according to the Impact Assessment Survey conducted by CSR & Communications Team in March 2022. Therefore, the concerning access to water in dedicated villages becomes one of the priorities for MPRL E&P, which will be implemented as safe drinking water pilot projects in the Fiscal Year 2022-2023.

As part of the Community Infrastructure Development Program, MPRL E&P's CSR Team initiated the provision of water supply at Kywe Cha, Ywar Thar, and Pauk Kone Villages during the first quarter of this Fiscal Year. With the support and contributions from MPRL E&P and Kywe Cha Communities, the provision of a safe water supply inclusive of digging a water well, constructing a roof to cover the well, providing a reliable water pump, and other necessary items worth MMK 1.5 million were successfully executed on 6 June 2022. Moreover, MPRL E&P's CSR Program supplied a 25hp diesel engine water pump, 1,300 feet of 3-inch PVC pipe, and water pump accessories for the pumping station at Ywar Thar Village, which will enable water supply from the nearby Ayeyarwady River. MPRL E&P's CSR Program funded the project with MMK 5,444,250 on top of Ywar Thar Communities' donation in the amount of MMK 332,000 to help kick-start this initiative.

After several discussions with the Village Administrator, Village Development Committees, Community Volunteer from Pauk Kone Village, and CSR Field Team members, digging a 520 feet deep tube well, installing a water pump, cable wire, PVC pipe for water supply and related work were conducted in July and August with the budget of MMK 7,269,250 allocated by the collective contributions from MPRL E&P and Pauk Kone Village Communities. The tube well digging project at Pauk Kone Village was completed in August. Upon completion, 490 people from 119 households in the village will be able to enjoy safe drinking water and a reliable supply of groundwater all year-round.

Annual Assessment of Water Quality Testing for Mann Field School Children

Community investment initiatives performed by MPRL E&P aim to actively engage with local communities where we operate through an effective, functioning grievance mechanism as well as investing in sustainable livelihoods, improving the well-being of vulnerable families, and maintaining partnerships with local stakeholders. Enhancing and optimizing access to clean water is a basic necessity that can improve the overall health, economy, and social well-being of a community.

MPRL E&P has been at the forefront of providing safe water, sanitation, and hygiene facilities and services at Mann Field Communities for over six years. Acknowledging the fact that the community schools in Mann Field highly depend on water supply from Mann Creek, Ayeyarwady River, and tube well as their primary sources, of which turbidity is high, making it unsuitable for everyday drinking, MPRL E&P began an initiative in 2016. This program prioritizes providing water, sanitation, and hygiene facilities for 11 local schools by installing water filtration units and hand-washing stations coupled with some information sessions on water, sanitation, and waste management for school children.

MPRL E&P's CSR Team worked alongside the School Development Committees and provided technical assistance to ensure the safety standards and requirements were met. Additionally, the team conducted knowledge-transfer sessions with methods of maintaining the water filtration units and cleaning them on a timely basis, and lastly, testing the water for quality. In June 2022, CSR Team conducted an annual assessment of water quality testing by collecting drinking water samples from water filtration units with sterile sample bottles, which were preserved with ice and delivered to ISO Tech Laboratory within 24 hours. According to the Treatment Water testing result, no Total Coliform and Fecal Coliform were detected in the school drinking water. Moreover, other important factors were in the range of the WHO standards and all the results for pH levels in the water sample were within the range of 6.5 – 8.5. The annual assessment of water quality testing for this Fiscal Year was valued at MMK 415,500, which was funded by MPRL E&P's CSR Program. Currently, a WASH (Water, Sanitation, and Hygiene) program is ongoing in schools in Mann Field to further enhance personal hygiene practices and reduce all types of waste in communities through awareness sessions by the CSR Team members. MPRL E&P looks forward to making more contributions to help enrich the livelihoods of local communities in Mann Field.

"The best scenario is for MPRL E&P to continue operating Mann Field because it is a company well familiar with our development needs. We know we can count on it for our needs. The company has already implemented many beneficial projects up to now. Therefore, we want to express our heartfelt thanks to U Moe Myint."

Household Survey Participant

10.6.2 Community Livelihood Development

The livelihood and community development projects implemented by MPRL E&P have a holistic approach encompassing many components of health, education, skills training, capacity building and awareness. MPRL E&P is committed towards improving the life of the Mann Field community and helping them achieve self-reliance. In addition, we conduct regular follow-up and support activities to ensure the goal is achieved.

Promoting Agriculture and Livestock Development

MPRL E&P's CSR program undertakes focused interventions in agriculture, horticulture and livestock management. Such interventions have been designed to support the rural communities' livelihoods through increased agricultural and livestock production, improving household food security, alleviating poverty through better market participation as well as to improving farmers' access to resources, technologies, information and markets by characterizing and strengthening crop and livestock value chains.

Progress Highlights

- Conducted monitoring the progress update of Napier grass farms in Mei Bayt Kone and Kywe Cha Villages in April. Napier grass cultivation has been implemented as the pilot program for animal food security in Mann Field Communities.
- Supervised the Seeds Management Committee that collected seeds loan of chickpea and sunflower in April and discussed the purchase of new chickpea seeds ahead of upcoming growing season.
- Organized "Seed Treatment and Packaging Knowledge Sharing Session" with the collaboration of Department of Agriculture (DoA – Minbu) at Kywe Cha Village in May and received a total number of (24) attendees. During the session, the DoA Staff demonstrated how to treat and store seeds for long-term seed saving, and also shared the benefits of seed treatment application. The knowledge sharing session was the part of the Sunflower Seeds Production Project under Farmer Field School Program and produced (40) bags of sunflower seeds (3 kg per bag).
- Provided two sessions of Fish Amino Acid (FFA) Hands-on Trainings at Mei Bayt Kone Village and Auk Kyaung Village in May. A total of (17) local farmers attended the trainings and learnt steps to make FFA organic fertilizer, and its advantages in farming.
- Collected data of necessary seed quantity and inputs to provide as an agricultural initiative and conducted discussions on Seed Bank of chickpea, tomato and sunflower seeds in Kywe Cha, Chin Taung, Mann Kyoe, Mei Bayt Kone, Auk Kyaung and Kyar Kan Villages in May.
- Met with the Head of Department of Agriculture (DoA - Minbu) and the Head of Livestock Breeding and Veterinary Department (LBVD - Minbu) to discuss agricultural and livestock development initiatives in FY 2022-2023.
- Distributed (57) tins of chickpea seeds, (42) bags of sunflower seeds, (30) packs of tomato seeds and (15) rolls of plastic mulches to (66) farmers from Auk Kyaung, Chin Taung, Kyar Kan, Kywe Cha, Mann Kyoe, Mei Bayt Kone, Pauk Kone, and Let Pan Taw Villages in June.
- Monitored the progress of tomato farming in Mann Field Communities and provided technical support to farmers. A total of (7) farmers from Chin Taung, Kywe Cha, and Man Kyoe Villages started tomato farming and there were a total of (25) farmers who received tomato seeds supported by the CSR Program in June.
- Continued monitoring production and sale progress of mushroom seeds farm in Chin Taung Village monthly.
- Organized the knowledge sharing session on "Pests and Diseases Affecting Tomatoes, and Organic Pesticide" in collaboration with Yetagon Farm Advisory Service in Mann Kyoe Village for a total of (49) attendees in July.
- Held the knowledge sharing session on "Disease and Pest Control in Chili Farming" in collaboration with Yetagon Farm Advisory Service in Kywe Cha Village for a total of (35) attendees in August.

- Conducted meetings with animal breeders, Village Administrators, Village Development Committees and Volunteers from Mann Kyoe, Kywe Cha, Mei Bayt Kone, Auk Kyaung and Nan U Villages to collect animal breeder list and to assess animal husbandry practices in July.
- Facilitated the Livestock Breeding and Veterinary Department (LBVD - Minbu) for cattle vaccination program against seasonal disease in animal and provided vaccine shots to a total number of (222) cows in Mann Kyoe, Lay Eain Tan, Auk Kyaung, and Mei Bayt Kone Villages.
- Distributed (20) bottles of I-2 eye drop vaccine for chicken from LBVD (Minbu) to animal breeders from Mann Kyoe, Mei Bayt Kone, Lay Eain Tan and Auk Kyaung Villages in July and vaccinated (794) chicken in August.

Figure 78: Organizing Seed Treatment and Packaging Knowledge Sharing Session

Figure 79: Organizing Fish Amino Acid Hands-on Trainings at Mei Bayt Kone and Auk Kyaung Villages

Figure 80: Discussion on Seed Bank of Chickpea, Tomato and Sunflower Seeds

Figure 81: Meeting with the Head of DoA (Minbu) and the Head of LBVD (Minbu)

Figure 82: Provision of Chickpea, Sunflower, Tomato Seeds and Plastic Mulches to Farmers in Mann Field Communities

Figure 83: Collaboration with LBVD (Minbu) for Cattle Vaccination Program

Figure 84: Collaboration with LBVD (Minbu) for Chicken I-2 Eye Drop Vaccination Program

Figure 85: Monitoring Visit to Mushroom Seeds Production Farm

Figure 86: Knowledge Sharing Session on "Pests and Diseases Affecting Tomatoes, and Organic Pesticide" in Collaboration with Yetagon Farm Advisory Service

Figure 87: Yetagon Farm Advisory Service Team's Field Visit to Tomato Farm

Figure 88: Providing Technical Support and Agricultural Advices to Community Tomato Farming

Figure 89: Meeting with Animal Breeders, Village Administrators, Village Development Committees and Volunteers from Mann Kyoe, Kywe Cha, Mei Bayt Kone, Auk Kyaung and Nan U Villages

Figure 90: Knowledge Sharing Session on "Disease and Pest Control in Chili Farming" in Collaboration with Yetagon Farm Advisory Service

Case Study

Fish Amino Acid: Making Plants Healthier and Increasing Crop Yields

MPRL E&P's CSR Program always strives to foster a sustainable agricultural transformation in rural areas like Mann Field. As part of our agricultural development initiatives that bring out many benefits to the communities, we work together with local farmers by providing necessary inputs like seeds and plastic mulch. With the help of the farming experts, we provide agricultural advices ensuring they receive helpful agriculture knowledge and farming methods.

Under the Community Livelihood Development initiative of MPRL E&P, the CSR program came up with effective strategies inclusive of income improvement of local farmers and sustainable living. One of the initiatives that we introduced was the Fish Amino Acid training series which was intended to promote chemical-free crops and encourage affordable and effective organic fertilizer in Mann Field Communities. The training course took off in 2020 with seven training sessions and 105 attendees from Mann Kyoe, Chin Taung, Kywe Cha, Let Pan Ta Pin, Mei Bayt Kone, and Auk Kyaung Villages participated in these sessions.

For the first time in January 2020, an external trainer from East-West Seed Myanmar was invited to deliver Fish Amino Acid hands-on training which received a total of 30 attendees. Subsequent training series were demonstrated by U Win Ko, Community Liaison of MPRL E&P's CSR Program. We provided all necessary support including expenses for all the training because we know that this program will be a transformative change to local agriculture development.

Fish Amino Acid (FAA) is a farming supplement that is abundant in amino acids and nutrients. This natural fertilizer is a liquid made from fish that encourages growth of the plants and enhances crop yields. Introduced by MPRL E&P's CSR Team as part of the local agricultural development programs, it is now vastly practiced in Mann Field Communities. Here are a few success stories from our CSR Team and the community users.

Saw Eh Hsar Blute Htoo
Senior CSR Officer
CSR & Communications Department

"Fish Amino Acid (FAA) is a natural farming supplement that is rich in nitrogen and encourages plant growth during its vegetative state. Farmers prefer naturally made plant tonic because it is affordable, easily accessible, and locally produced. We plan to sell a liter of packaged FAA at the price of MMK 4,000. The liquid obtained after the hands-on training was handed over to the Seeds Bank Committee for sale, and the proceeds were used for the next training sessions. Our Community Liaison usually helps out the Seeds Bank Committee and farmers with making this fertilizer following the standard formula.

Although there is no systematic way to measure the efficiency results of using Fish Amino Acid, the surveys and words from the local farmers stated that this natural "fish juice" is affordable and beneficial for plant growth during their vegetative state. In light of today's rising agricultural input and commodity prices, FAA is a viable option for farmers. And if we compare FAA to other chemical fertilizers, either in terms of price or food safety, it has many benefits for farmers and consumers alike.

I am proud to see the positive impact of introducing FAA to our local communities in Mann Field through our training sessions, technical support, and agricultural inputs, and many farmers are realizing the benefits of using FAA. They are now implementing this new practice during planting and gardening.

Our next step is to support the pilot project of systematic production, registration, and distribution of FAA either on individual or group basis. We will continue to provide our support when required and we will ensure it is of good quality."

U Win Ko
Community Liaison

"In Mann Field, FAA fertilizer is used in tomato, chili, chickpea, peanut, and flower gardens. There are many benefits of using this fish protein – it promotes root development, improves photosynthesis, encourages plant growth, and is beneficial to flower bud differentiation and development, improving the overall quality. I also heard that recently, farmers have been using FAA in the cultivation of mushroom seeds.

Spraying this natural fertilizer on fruit trees, for instance, results in healthy leaves, disease reduction, and an increase in fruit and vegetable quality and yield. That is why we promote FAA since it is also a pollution-free and environment-friendly green fertilizer.

Making FAA and giving practical training on how to make this fertilizer is easy. I shared my knowledge with the farmers during the hands-on training and had interactive discussions with them. The CSR Team also developed pamphlets on how to make and use FAA using various tools, materials, and ingredients. We have many local farmers who make this fish liquid themselves and use it during the plantation. Some purchase the product from the Seeds Bank Committee. From what I know, there is no commercial production at this time.

Fish Amino Acid becomes more and more popular in Mann Field Communities because the farms that use FAA realized that it enhances the healthy development of buds, flowers, and fruits and results in good yield, good quality, and strong fruit and petals, etc. It is becoming quite popular in many communities, and FAA is gaining a reputation as a good fertilizer among the farmers."

U Aung Myint San

Mann Kyoe Village

"I am one of Fish Amino Acid users and enforcers in our community. Since I attended Fish Amino Acid hands-on training organized by MPRL E&P's CSR Program in 2020, I learned how to make natural fertilizer and have been applying it on my farms. I am currently growing tomatoes on 1 acre of land and chili and chickpea on 1.5 acres of land. As the fertilizer is organic and homemade, it is cheaper than chemical fertilizers. It helps produce good quality crops and vegetables resulting in a healthy rise in business income. I enjoy sharing my experiences with my peers and my knowledge of making plant tonics. I really appreciate the CSR Program and its efforts in establishing Community Seeds Bank, and providing agricultural and livelihood development training. I wish the company continues to support the development of Mann Field's agriculture sector."

U Soe Win

Mei Bayt Kone Village

"These days, chemical fertilizers are becoming more expensive, and it has been inconvenient to purchase expensive fertilizers for my flower farming business. However, after completing the Fish Amino Acid hands-on training by MPRL E&P's CSR Program, the expensive fertilizer problem has been solved. Now I make my own plant tonic at home and use it to spray flowers on my acre of land. I grow various kinds of jasmine flowers on my farm. Because of FAA, my flowers are looking healthier, and they are blooming several times more compared to last year. Great farming methodologies improve our livelihood and generate good business income for us. I always share my good experiences with FAA with my friends, and I will continue making this organic fertilizer for my farm! Thank you MPRL E&P for your support and commitment to agricultural development in our community."

Daw Aye Aye

Mei Bayt Kone Village

"I used Fish Amino Acid in my plantation since 2020 after attending the organic fertilizer making course by MPRL E&P's CSR Program. I am not too comfortable making the tonic yet, and that is why I have been purchasing it from the Seeds Bank Committee. I have used the tonic on plants including various types of jasmine flowers, guava, sesame, and peanuts on my 5-acre land. From what I discovered during my course on using FAA, the fertilizer results in higher yields and healthy flowers, and also, it is low cost and safer than chemical products. It is an efficient fertilizer for plant growth and the production of healthy flowers and fruits, resulting in bigger fruits with brighter colors and more quantities. I like this organic fertilizer very much and hope to use this fertilizer as part of my regular application. Special thanks to MPRL E&P and its CSR Program for their efforts in promoting a vibrant agriculture development community."

Vocational Skills Development

The program aims to improve the access of women and men from disadvantaged groups to quality vocational skills development (VSD) programs which results in employment or self-employment opportunities in the world of work. MPRL E&P works in partnership with government ministries and training institutes for the implementation of short technical and life skills courses. Post-training support, such as counselling and job linkages, is also provided to facilitate access to employment and self-employment opportunities.

Progress Highlights

- Coordinated (14) participants of former Basic First Aid Training in joining Emergency Response Team of Myanmar Red Cross Society (MRCS - Minbu), formed with (7) members per each team for the purpose of disaster preparedness and response capacity in the region in April.
- Supported Emergency Response Team's social work activity - participation in paying homage ceremony to the Community Elders organized by Myanmar Red Cross Society (MRCS - Minbu) as the celebration of Myanmar New Year.
- Provided supports of Emergency Response Team with MRCS uniforms in May and ordered those uniforms from Nammadar Women Group, former vocational trainees.
- Facilitated in delivering purchase order cost of MMK 1,010,000 of Step-in Step-up (SISU) Enterprise for Mann Field Community products, which included (500) bottles of Thuzar shampoo, (30) pcs of Nammadar fabric wallet and (10) pcs of tissue box cover, produced by former vocational trainees of the CSR Program in May.
- Conducted "Value-Added Tomato Products Making Training" in the collaboration with Small Scale Industries Department (SSID – Magway). A total of (20) local women from Mann Field Communities attended the seven-day training from 5 to 11 September and learned process of making tomato-based products both in theory and in practice.

Figure 91: Providing Support to Emergency Response Team's Social Work Activity

Figure 92: Providing Uniforms to Emergency Response Team

Figure 93: Facilitating Purchase Order of Step-in Step-up (SISU) Enterprise for Mann Field Community Products

Figure 94: Organizing "Value-Added Tomato Products Making Training" in collaboration with SSID (Magway)

Case Study

Collaboration with MRCS to Strengthen Emergency Response Capacity in Mann Field

MPRL E&P is a responsible energy company dedicated to developing skills and competencies in the communities where the business operates. Since our very first days as an oil and gas operator, responsible business has been at the heart of what we do. We believe that with great business operations, come great responsibility.

Creating a positive impact on host communities and investing in them for a sustainable future together is of importance to us. In Mann Field, we strive to establish strong relationships with the stakeholders and one of the ways is through promoting the well-being of the community based on mutual trust, shared value and recognition. Recently, MPRL E&P's CSR Program collaborated with Myanmar Red Cross Society (MRCS) of Minbu Township to enhance the intellectual knowledge of health and wellness. Through this workshop, we also helped promote community volunteerism and strengthen emergency response capacity in Mann Field Communities.

In March 2022, MPRL E&P's CSR Team organized three-day Basic First Aid Training course for 19 community members who have strong passion and interest in human welfare. The trainers from MRCS (Minbu) conducted the training course that focused on theoretical components with greater emphasis on anatomy and physiology, inclusive of detailed explanations on common physical injuries from a car or motorcycle accidents. All the trainees completed a post-training test and top three participants with the best test scores were awarded.

With coordination from the MPRL E&P's CSR Team, two MRCS's Emergency Response Teams were formed with 14 trainees (7 trainees on each team) who completed the Basic First Aid Training course for emergency disaster preparedness and response capabilities in the region. The volunteer recruitment was aimed to help those affected by natural disasters like floods, fires, and other unforeseen catastrophes and refer them to the right hospitals, if necessary.

Our CSR Program has played an important role in Mann Field communities – by contributing our efforts and support with uniforms for the volunteers, organizing team meetings and engaging in social work activities with the stakeholders. Recently, in April 2022, the CSR Team facilitated Emergency Response Team's social work activity by participating in paying homage ceremony to the Community Elders organized by Minbu Township General Administration Department for the celebration of Myanmar New Year. We look forward to many more welfare activities with the stakeholders in Mann Field!

"We thank MPRL E&P for always listening to our needs in terms of education, livelihood, health and infrastructure and fulfilling them. As a result, everyone can see how our life has improved in both essence and form."

Household Survey Participant

10.6.3 Educational Partnership and Scholarship Support for Youth Skills Development

The young generation plays a vital role in the nation's growth and development. The rise in youth population and unemployment, along with the volatile labor market and economy due to technological advancements are a few reasons why we must provide future generations with the vocational skills and entrepreneurial mindsets to endure and sustain in this changing world. If people and communities are to thrive, education and job training are of critical importance. Youth from the surrounding communities in Mann Field will receive financial and other necessary supports to attend technical and vocational education, also called technical training or career education, so that they can enter the job market or set up a small business. MPRL E&P has established formal agreements and terms of field attachment with TVET institutions in order to provide the students with good supervision and adequate time to acquire employability skills and behaviors.

Progress Highlights

- Acknowledged the completion of two-month course of Nurse Aide Training by (5) community youths under the support of MPRL E&P's Scholarship Program in April.
- Provided scholarship award to (7) community youths for State Agricultural Institute (SAI - Pwint Phyu) in May. Under the support of Educational Partnership Program, a total of (7) community youths: (4) males and (3) females from Kyar Kan, Ywar Thar, Chin Taung and Mei Bayt Kone Villages started the three-year training course at SAI (Pwint Phyu).
- Announced three-year Scholarship Training Program at Government Technical High School (GTHS - Magway) on community noticeboards in 14 Villages around Mann Field. A total of (17) community youths from different villages applied for the training and met with the CSR Team for interview session in May.
- Conducted meetings with the Headmasters of Training Centers: No.5 ITC (Magway), SAI (Pwint Phyu), GTHS (Magway), University of Computer Studies (Magway), and Noble Lamp Pharmacist Aide and Nurse Aide Training Center (Magway) in May.
- Awarded scholarship support to (3) community youths from Lay Eain Tan, Auk Kyaung and Aye Mya Villages for three-year course training at Government Technical High School (GTHS - Magway) in June.
- Met with the Headmaster of State Agricultural Institute (SAI - Pwint Phyu) to assess the needs of school ICT room and to monitor the progress of Scholarship Trainees in July.
- Paid monitoring visit to scholarship trainees to provide necessary support and to follow up their training progress monthly.

Figure 95: Graduation Day Memory of Nurse Aide Trainees

Figure 96: Monitoring Visit to No.5 ITC (Magway) Scholarship Trainees

Figure 97: Providing Scholarship Award to (7) Community Youths for Studying at SAI (Pwint Phyu)

Figure 98: Providing Scholarship Award to (3) Community Youths for Studying at GTHS (Magway)

Figure 99: Announcing Scholarship Training Program on Community Noticeboards

Figure 100: Meeting with Scholarship Training Applicants

Figure 101: Meeting with Headmasters for Educational Partnership Program

Case Study

Mann Field Community Youths Study under Educational Partnership Program

MPRL E&P's CSR Program aims to promote self-improvement, personal growth, and livelihood skills among the young community members through the Educational Partnership Program. We know that personal development is a process and can occur in different ways; by providing vocational skills training, we hope to empower any youth to perform better in the workplace and outside.

MPRL E&P first introduced its Educational Partnership Program in the Fiscal Year 2019 – 2020 which entails a beneficial program that consists of partners from the government agencies and selected training institutes. Unfortunately, when the pandemic hit, the program had to be temporarily suspended, however, as soon as the COVID-19 restrictions were lifted and training centers were reopened, we immediately resumed our program with trainee recruitment.

With the support of MPRL E&P's scholarship program, five community youths completed a two-month Nurse Aide Training course. The graduation ceremony was held on 5 April 2022 where the new graduates were awarded certificates. Among the graduates, Ko Kyaw Min Thu had joined the Ayeyarwaddy Training Center (Minbu) where he now works as a part-time trainer.

When the new semester began in May, the CSR Team conducted a meeting with the trainees from No.5 Industrial Training Center (ITC - Magway) and discussed the training progress and overall effectiveness of the program.

Furthermore, in May 2022, under the support of MPRL E&P's Educational Partnership Program, a total number of seven community youths: four males and three females from Kyar Kan, Ywar Thar, Chin Taung, and Mei Bayt Kone Villages started the three-year training course at the State Agriculture Institute (SAI - Pwint Phyu).

The CSR Team conducted periodic meetings with the principals from the training centers, the scholarship trainees from Mann Field Communities and Noble Lamp Pharmacist Aide and Nurse Aide Training Center (Magway) as part the Educational Partnership Program. Amongst many discussions, an announcement for a three-year Scholarship Training Program at Government Technical High School (GTHS - Magway) was made on the community noticeboards around 14 villages in Mann Field. A total of 17 community youths from different villages applied for the training and went through the interview process with the CSR Team. A total number of three youths: two males and one female from Aye Mya, Auk Kyaung, and Lay Eain Tan Villages received the CSR Program's scholarship support to attend at GTHS (Magway) in June 2022.

We believe that our Educational Partnership Program will be a great supporting hand in enhancing the skill set of youths around the communities and we hope that our initiatives provide career aspiration and interpersonal skills for the students.

Equipping Mann Field Community Youths with Technical and Vocational Skills

Aung Paing Phyo
Pauk Kone Village
No.5 ITC (Magway)

"I am Aung Paing Phyo from Pauk Kone Village. With the support of MPRL E&P Company's CSR Program, I am attending a one-year Automobile Maintenance Course at No. 5 Industrial Training Center (ITC - Magway). I heard from the village volunteers about the MPRL E&P's scholarship program at No. 5 ITC (Magway), and right away, I applied for it because I was eager to learn about Automobile Maintenance. Seven youths from Mann Field passed the No. 5 ITC (Magway)'s entrance exam - five male students attended the Automobile Maintenance Course and two female students took the CAD/CAM course. The training center not only teaches relevant subjects but also improves the spirit, discipline, and general knowledge of the trainees. It also helps the trainees with obtaining a driver's license and provides them with professional connections for employment opportunities.

Myat Thu Maung, who is also from Pauk Kone Village, completed the CAD/CAM (Computer-Aided Design and Computer-Aided Manufacturing) Course with the support of MPRL E&P's CSR Program and is currently working at SUZUKI Car Company in Yangon with the connection of the training center. MPRL E&P's scholarship program not only supports the education of the local youth in Mann Field but also improves employment opportunities for each trainee. It is a very beneficial program for the entire family and the community. Our local trainees are very grateful to MPRL E&P for its scholarship program. I will continue to learn more about automotive and strive to become an expert in automotive maintenance. I plan to share the knowledge and experience I have gained with my friends back home. We wish MPRL E&P Company to continue supporting the development of young people in Mann Field. We are very grateful to the MPRL E&P's CSR Program for supporting us and to the teachers at the No. 5 Industrial Training Center for teaching us with passion and commitment."

Ingyin Khaing

Mann Kyoe Village

No.5 ITC (Magway)

"I am Ingyin Khaing from Mann Kyoe Village. I passed the matriculation exam in 2020 and am currently studying CAD/CAM (Computer-Aided Design and Computer-Aided Manufacturing) at No. 5 Industrial Training Center (ITC - Magway) with the support of MPRL E&P's CSR Program. The course was for nine months; I learned about Auto Cad, Basic Computer Skills, English, Technical Drawing, Trade Technology, and some calculation, to name a few. During the first semester, I completed nine subjects, and for the second semester, I did more theoretical and practical studies. I also had to complete Master CAM as an additional subject. After receiving the opportunity to attend this training school through MPRL E&P's scholarship program, I was excited to enhance my current knowledge and skills. I also became more well-rounded and learn how to build new relationships with people.

I like to thank MPRL E&P for their kind contribution towards my education plus room and board. This generosity helps us with our financial burden and focus on our studies. I am proud to have received a very good grade on my first-semester exam. I heard about MPRL E&P's scholarship program through U Win Ko, Community Liaison. I also learned about fellow villagers, Ko Zeyar Phyo and Ko Yazar Aung, who attended the Automobile Maintenance Course at No. 5 ITC (Magway) with the scholarship funds from MPRL E&P. It is clear to see the importance of MPRL E&P's scholarship support program among the youth in Mann Field and how it plays a vital role in our lives. After completing this course, I hope to land a good job and help out with the development of the region."

Wai Wai Lin

Ywar Thar Village

SAI (Pwint Phyu)

"I am Wai Wai Lin from Ywar Thar Village, a scholarship recipient of MPRL E&P's CSR Program. I will do a three-year course at the State Agricultural Institute (SAI - Pwint Phyu). I applied for MPRL E&P's scholarship around the outbreak of COVID-19 second wave. There are seven of us, four boys and three girls, from the Mann Field Communities who won the scholarship awards, and I was happy to be able to go to the same school with my friends. All of us with financial difficulties are now able to pursue our educational goals because of MPRL E&P, and we are forever grateful to the company for giving us this opportunity.

This scholarship program covered all our expenses including tuition, dormitory, and meals, making it easy for us to complete the course with less stress. During the first year, we had to study subjects like Horticulture, Agronomy, Botany, English, Mathematics, Physics, Animal Husbandry, and so forth. We gained latest knowledge and experience about agriculture during the practical learning sessions. My social skills have also improved. After finishing the course, I plan to work in agriculture-related industry and share the new knowledge and skills with my peers at my home town and contribute to the development of the region."

Zaw Myo Aung

Ayuk Kyaung Village

GTHS (Magway)

"My name is Zaw Myo Aung from Ayuk Kyaung Village. I passed the Grade-10 exam in 2020, and after about two years of school break, in May 2022, I saw the announcement on the community noticeboard about MPRL E&P's scholarship program for young people to study at the Government Technical High School (GTHS - Magway). We learned about the scholarship program details from the Community Volunteers and CSR Staff. I aspire to be an engineer one day, but I had difficulties continuing my education due to the family's financial situation. I found out that this scholarship program supports local youths in 14 villages around Mann Field, who are having financial difficulties to continue with school. I took on this opportunity and applied for the scholarship. My friends, Ko Si Thu Maung from Aye Mya village and Ma Khin Hnin Aye from Lay Eain Tan Village are also studying at the GTHS (Magway) with the scholarship support from MPRL E&P.

During the first semester, we took classes like Myanmar, English, Mathematics, Physics, Chemistry, Basic Civil Drawing, plus some building materials and construction subjects. I had some difficulties in the beginning of the course, but now I'm doing fine. The scholarship covered my training fees, course books, teaching aids, dormitory, and monthly meal expenses. I would like to express my sincere thanks to MPRL E&P and all the responsible persons for helping me focus on my education without having to worry about financial issues during this three-year training period."

Kyaw Min Thu

Mei Bayt Kone Village

Ayeyarwaddy Training Center (Minbu)

"I am Kyaw Min Thu from Mei Bayt Kone Village. I studied at the University of Community Health (Magway) until 2020, I was a final year student at the university. But I was unable to continue my university due to personal difficulties. With the scholarship support of MPRL E&P's CSR Program, I completed the Nursing Assistant course at Ayeyarwaddy Training Center (Minbu) in April 2022 and received a completion certificate that enables me to earn a proper living.

I heard about the scholarship program through the village loud-speaker, and I went ahead and applied for it. To attend the Nursing Assistant course, I had to do written and oral interviews. The CSR Program provided educational support to five youths from Mann Field, including me. When I was studying at the university, I learned about health through theoretical teachings. Now, I have gained practical knowledge and experience. During the course, I learned about blood pressure measurement, how to draw an ECG, insert a catheter, care for stroke patients, handle and store clinical equipment, proper patient care methods, and home remedies. I also discovered many medical terms; I feel that my health knowledge has increased. After the training, I worked as a part-time instructor at Ayeyarwaddy Training School. Currently, I am working at Daw Toe Pharmacy and learning more about medicine. I hope to graduate as a Health Assistant (HA) and open a clinic and pharmacy one day because it is very much needed in the community. I would like to express my gratitude to MPRL E&P for supporting young people like us who have financial difficulties to continue learning. I hope that the company continues to support and uplift the youths in Mann Field."

"There is a former vocational trainee group who faces difficulty in continuing their small business due to a rise in raw material prices and transportation cost. Some others need to enhance packaging of their products to make them look more attractive and appealing to customers."

Focus Group Discussion Participant

10.6.4 Community Healthcare Program

Mobile Clinic Program was first introduced in September 2018 and made available for all communities in Mann Field. MPRL E&P's two Camp Doctors volunteered their time to run the clinic with a healthcare assistant and Community Volunteers. The objective of the program is to increase access to basic healthcare and health education for the medically under-served, which include the elderly, women and children in the communities. In July 2022, the CSR Program extended two more clinic sessions of Mobile Clinic Program at Nan U and Aye Mya Villages in the response to the community's request in healthcare service needs. It is currently running five clinic sessions per week in six centrally located villages around Mann Field: Kywe Cha, Kyar Kan, Lay Eain Tan, Let Pan Ta Pin, Nan U and Aye Mya Villages.

Progress Highlights

- Offered free healthcare and home visit services to Mann Field Communities under Mobile Clinic Program for five days per week.
- Contributed necessary support to Mobile Clinic Program and monitored the program progress daily.
- Provided free healthcare services to (4,867) community patients during (127) clinic sessions and home visits since its first opening on 21 February 2022.
- Informed Sayardaws in (14) Villages about Mobile Clinic Program, its opening dates, venues, home care visit and Community Volunteer's information support.
- Conducted an orientation session for Camp Doctors, who started providing community healthcare services in Mobile Clinic Program in June.
- Explored new Mobile Clinic areas to be opened in Aye Mya and Nan U Villages and discussed the matter with the respective Village Administrators, Village Development Committees and Volunteers in June.
- Opened two more clinic sessions at Nan U and Aye Mya Villages every other Wednesday starting from July 2022.
- Empowered Mann Field Communities with "Health Education Talks on Diabetes and Hypertension" in August and September.







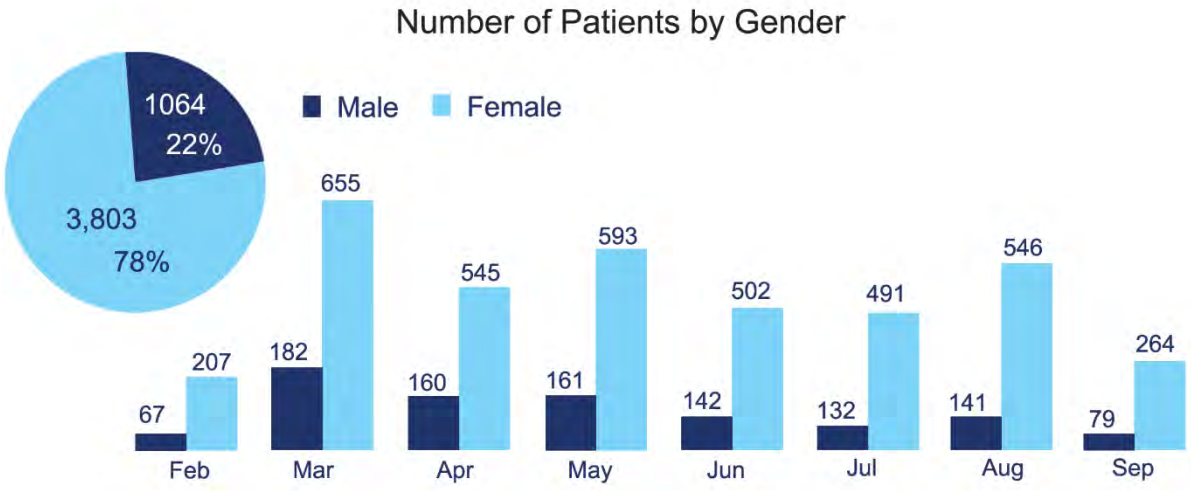

Figure 102: Mobile Clinic Program in Mann Field Communities

Figure 103: Home Healthcare Visit to Patients in Mobility Decline

Figure 104: Empowering Mann Field Communities with Health Education

Number of Patients (21 February – 16 September 2022)

Village	Session	Male	Female	Total
Kywe Cha	30	210	949	1159
Kyar Kan	30	282	831	1113
Lay Eain Tan	29	245	949	1194
Let Pan Ta Pin	29	252	881	1133
Aye Mya	5	51	110	161
Nan U/Auk Kyaung	4	24	83	107
Total	127	1,064	3,803	4,867



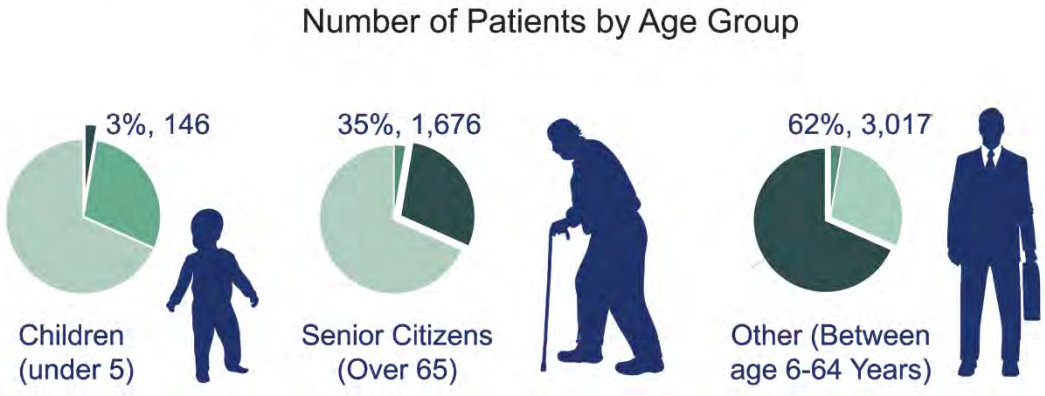


Figure 105: Statistics of Patients' Visit to Mobile Clinics around Mann Field

Case Study

Improving Access to Healthcare in Mann Field Communities

MPRL E&P's Mobile Clinic Program focuses on providing basic healthcare services and health education to Mann Field Communities, and is primarily catered towards the elderly population, women, and children. An initiative started in September 2018, we have four Mobile Clinics operating at Kywel Cha, Kyar Kan, Lay Eain Tan, and Let Pan Ta Pin Villages four days a week. One clinic session at these villages would receive about 25 to 40 patients per day, adding up to about 4,867 patient visits (up to September) when we resumed the program in February 2022.

In March 2022, MPRL E&P's Impact Assessment Survey was rolled out to analyze the healthcare needs and health conditions at Mann Field Communities. The CSR & Communications Department held Focus Group Discussions and Key Informant Interviews with respective key stakeholders to ensure that the current Mobile Clinic Program was still aligned with their priorities and that the high level of buy-in from the local community was still relevant. The feedback received proved high level of satisfaction from the beneficiaries concerning most aspects of the Mobile Clinic services. We also discovered the high demand for free and easily-accessible healthcare services, particularly in 'hard-to-reach' communities in Mann Field. Our CSR Team discussed practical recommendations during the meetings with the decision-makers to help keep communities and health workers safe, sustain essential healthcare services at the community level, and ensure an effective response to COVID-19. Because socio-economic and developmental factors contribute to significant barriers to health services delivery in remote areas resulting in poor health outcomes in inaccessible communities, it is only utilitarian and justifiable to expand our Mobile Clinic program to other communities around Mann Field.

During the field trip in June, the CSR Team made several location scouting with respective Village Administrators and Village Development Committees for new healthcare facilities and made necessary arrangements and preparations for its outreach program. Two more Mobile Clinic sessions are now available every other Wednesday at Aye Mya and Nan U or Auk Kyaung Villages since July 2022. Currently, five Mobile Clinic sessions are conducted a week, providing free-of-charge healthcare services to Mann Field Communities. To further help fill gaps in healthcare education, the CSR Team also made plans to have health talks on common heath issues in these communities with the collaboration and support of healthcare professionals.

In addition to these provisions, we have two Junior Site Doctors from MPRL E&P who recently joined the Mobile Clinic Program in June 2022. For instance, with support and collaboration of the Community Healthcare Assistant and Community Volunteers from 14 surrounding villages in Mann Field, Dr. Hlaing Min Htet Kyaw and Dr. Kyaw Ye Htut started providing healthcare education on common health problems. In August and September, a total of 302 community members joined 15 health talk sessions on diabetes and hypertension, the common health issues in Mann Field Communities. Teamwork, service, and commitment from all levels of healthcare workers and stakeholders are the driving force that keep us going despite the various challenges we encounter amidst the pandemic.

"The Mobile Clinic is very effective in treating patients due to its high-quality medicines and its compassionate and friendly doctor."

Key Informant Interviewee

10.6.5 Community-led Waste Management Program

MPRL E&P helped upgrade the cargo bike with a bigger waste collection vehicle to accommodate the growing number of participating villages in the program and corresponding high volumes of waste as the sustainability of the community-led waste management program rests with regular operations and community participation. Our aims are to raise awareness on the importance of proper waste management for a better environment and sustainable development, and to motivate all concerned to take collective actions on proper waste management.

Progress Highlights

- Conducted discussions for the improvement of waste collecting services in Mei Bayt Kone, Let Pan Taw and Kyar Kan Villages with the respective Village Administrators, Village Development Committee and Community Volunteers in April.
- Monitored the community-led waste collecting service in Mann Field Communities and conducted discussion with Volunteers and Service Provider monthly.
- Supported Trash Hero Minbu cleanups which conducted a total of (43) cleanup sessions with a total number of (776) Heroes and collected (1,250) kg of trash in the first six months.
- Provided necessary support in celebration of World Environment Day 2022, organized by Trash Hero Minbu. The celebration on 5 June 2022 included conducting cleanup activities, providing “Micro Plastics” knowledge sharing session, Q&A session and award session, and serving refreshment to Heroes.
- Conducted 11 sessions of knowledge sharing on Water, Sanitation and Hygiene (WASH) and 5R’s for (435) students at (6) schools in Mann Kyoe, Chin Taung, Let Pan Taw, Kyar Kan, Auk Kyaung and Let Pan Ta Pin Villages in August.

Water, Sanitation and Hygiene (WASH) and 5R’s Knowledge Sharing Sessions

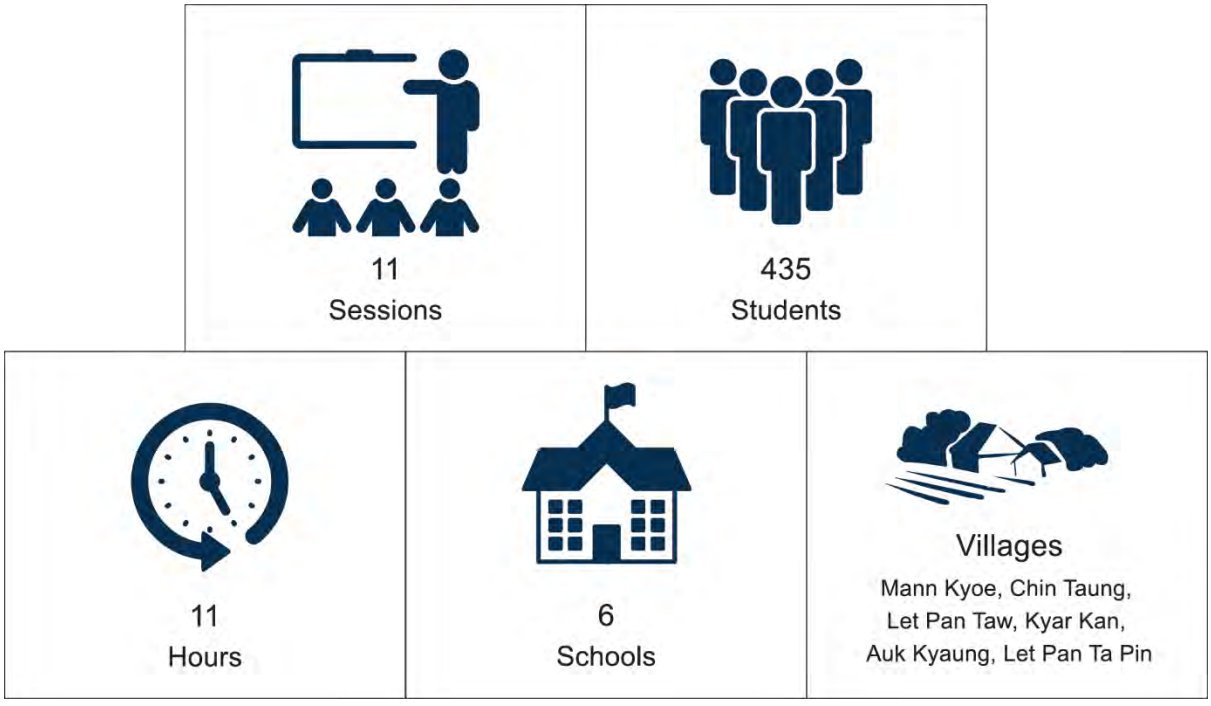


Figure 106: Regular Waste Collecting Service in Mann Field Communities

Figure 107: Regular Waste Collecting Service in Mann Field Communities

Figure 108: Organizing Trash Hero Minbu Cleanup Activities Monthly

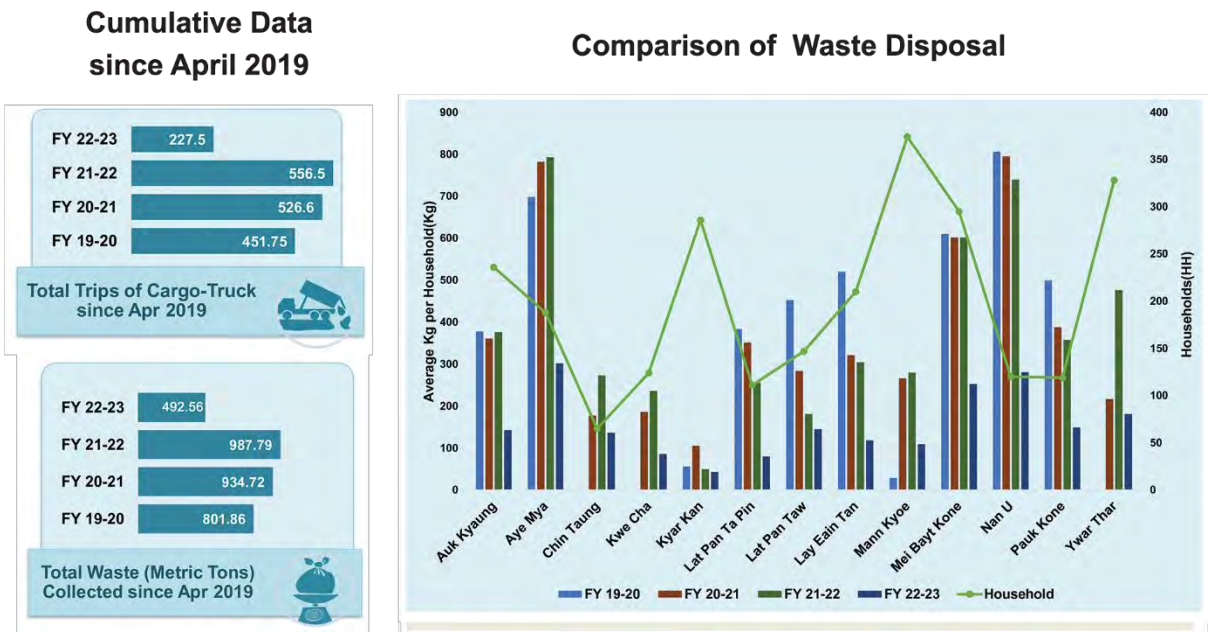


Figure 109: Comparison of Waste Disposal (Quarterly)

Figure 110: Knowledge Sharing on Water, Sanitation and Hygiene (WASH) and 5R's

"Our waste management system is even better than the one in Minbu Town because it collects and disposes waste on a regular basis at a tiny monthly fee and helps keep our homes and surroundings clean and reduce fire hazard in summer months. It is so beneficial that we are afraid that the system might not be sustainably maintained."

Focus Group Discussion Participant

10.6.6 Operational Grievance Mechanism (OGM)

We value our host communities and see disclosing information and providing platforms to promote two-way communications as important factors in partnership formation, trust building and maintaining a social license to operate. We have developed a multi-stakeholder approach in designing an Operation Grievance Mechanism (OGM) in Mann Field. This is the first mechanism in Myanmar that has been led by MPRL E&P, host communities and Myanmar Oil and Gas Enterprise (MOGE). The OGM completes the Mann Field Social Management Plan.

Progress Highlights

- Received six OGM cases in the first six months of FY 2022 – 20231 and closed all cases keeping all KPIs met. There are a total of (162) complaints since September 2014.
- Coordinated the Community and the Field Operations Team in installing electric pole at Well #64. Although it is not grievance cases raised by the Community, MPRL E&P cared the current needs and provided necessary supports in installing electric pole for the needs basis.

Addressed Grievance Cases

1) On 28 March 2022, U Kyaw Tint from Kyar Kan Village reported to remove four old concrete blocks that are on his farm. He mentioned the existence of concrete blocks was difficult to cultivate. CSR Field Coordinator reported this case to MPRL E&P Field Operations Team and the Team made an inspection and removed the concrete blocks on 31 March 2022. Now, the farmer is able to cultivate on his farm. CSR Field Team closed the case on that day.
2) On 2 April 2022, U Nyunt Win from Mei Bayt Kone Village reported an OGM case that the gas pipeline between Well #24 and Well #292 crossing his farm has caused difficulties in cultivation. He requested to inspect these difficulties and take action as necessary. CSR Field Coordinator informed MPRL E&P Field Operations Team and the Team inspected the pipelines on 3rd April 2022 and found out that the pipeline is still in use. The CSR Field Coordinator explained the complainant that the pipeline could not be removed as it is still in use. The complainant was satisfied with the feedback. The case was closed on that day.
3) On 22 May 2022, U Kyaw Min, a community volunteer from Makyee Chaung Village, reported that an oil pipeline (north of GOCS-4) that near his yard was leaking. He requested the company to inspect and repair it as necessary. CSR Field Coordinator reported the case to MPRL E&P Field Operations Team immediately. The Production Team made an inspection and repaired the pipeline and cleaned the spilled area on the same day. The complainant was satisfied with the process and the outcome. The case was closed on 23 May 2022.
4) On 25 May 2022, U Chit Htay from Ywar Thar village reported that the wooden utility pole located in his farmland (north of the Well No-507) is leaning and it makes difficult to cultivate. He requested to investigate and repair it as needed. CSR Field Coordinator reported the case to MPRL E&P Field Operation Team and then to the MOGE Electrical Department. The representatives from MOGE Electrical Department inspected the case and replaced the wooden utility pole with iron utility pole. The case was closed on 30 May 2022.
5) On 25 May 2022, U Min Zaw Oo from Kyar Kan Village reported an OGM case related to remove unused old oil pipelines that made him difficult to cultivate. He requested to inspect and remove the pipe if it was not used. CSR Field Coordinator reported the case to MPRL E&P Field Operations Team and the

Team inspected the case and removed the pipeline. The complainant was satisfied with the process and the outcome. The case was closed on 6 June 2022.

6) On 22 August 2022, U Kyaw Kyaw Oo from Auk Kyaung Village reported that there was an oil leakage in his farmland. He requested to inspect and repair it as necessary. CSR Filed Coordinator reported the case to MPRL E&P Field Operation Team. U Zaw Myo Htet, Production Team Coordinator from Mann Field Office and other respective employees inspected the case and cleaned the oil spilled area on 23 August 2022. The case was closed on 24 August 2022.

Figure 111: Coordinating in Electric Pole Installing at Well #64

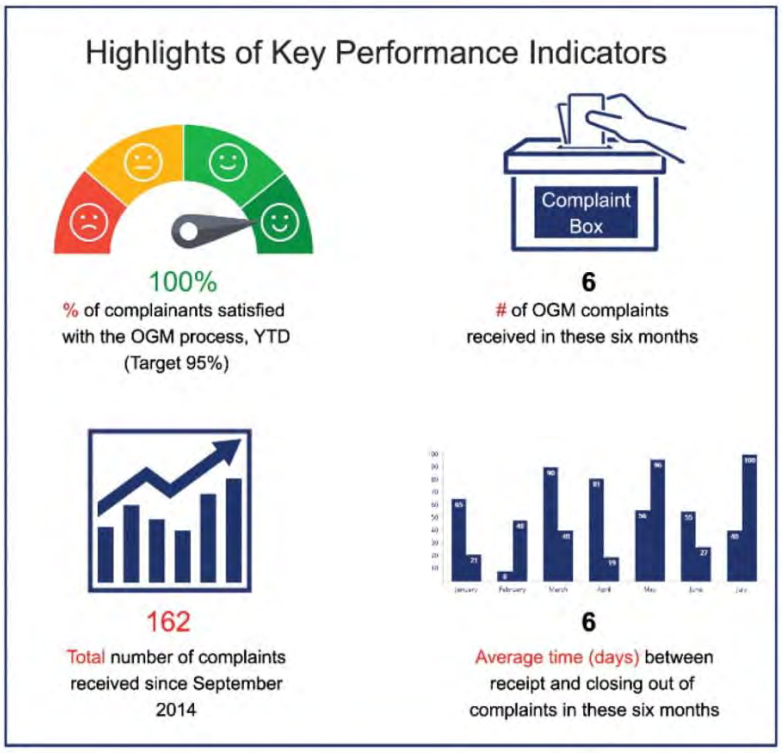


Figure 112: Key Performance Indicators of OGM

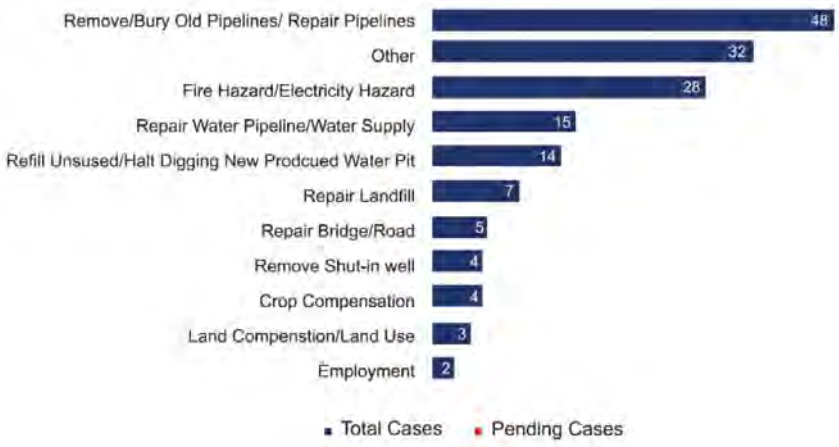


Figure 113: Received and Closed Cases, by quarter, 2014-to-date

Case Study

Testimony of Community Operational Grievance Mechanism

U Myo Win
Field Operations Manager
Field Operations Department

"Because Mann Field Operations is running 24/7, we expect some environmental and social impacts on the surrounding communities. Environmental impact cases rarely occur in Mann Field due to our company's careful operational performance following the environmental guidelines. If the community members are dissatisfied with such impacts and results in implementing our OGM process to solve the problem, Field Operations Team always ensures to collaborate with the respective stakeholders (CSR Field Team, Community Volunteers, Village Administrators, and MOGE) based on the reported cases. This kind of collaboration is very important because it is the most effective way of resolving the issues and satisfying the communities, and also, it brings out the teamwork spirit which is crucial for the OGM process. By having an OGM channel, issues get resolved faster and our operations have neither significant conflict nor delay. But we can even prevent unsafe conditions, which can bring electrical or fire hazard to our operations, due to the OGM case reported by the community. The OGM process serves as the bridge for the stakeholders and the organization in providing a better understanding of our field operations and how we find a resolution to satisfy the community's concerns. It promotes a strong relationship between the business organization and the surrounding communities."

U Thura Win

Senior Engineer

Field Operations Department

"In our OGM process, Field Operations Team is responsible for resolving OGM cases informed by the CSR Field Team. When a case occurs, the first step is to conduct a field study of the case and then meet with the CSR Field Team and the Community Volunteer and analyze the case. If the case is easily resolvable, we provide feedback with how and when it can be resolved, otherwise, we explain the reasons why we cannot take action as per the complainant's request. The feedback we receive from the community after solving the case or cases has been positive. Having a structured OGM process is vital for any organization; it promotes a healthy relationship and trust between community members and the company. Lastly, it is the most effective way to resolve issues and provide remedy to those affected in a peaceful way."

U Kyaw Min

Makyee Chaung Village

"Because I am both a Village Administrator and Community Volunteer, I know a lot about the MPRL E&P's OGM process and have good experience in sharing the OGM-related information with others. For example, if there is an oil pipeline leakage in Mann Field, the respective department will quickly repair the damaged pipeline, clean the oil spill on the ground and make soil or dirt replacements. There was a time when two pipelines crossing my farm caused difficulties in cultivation. I called the CSR Field Team and reported the case using the OGM procedure. I requested that the company remove those pipelines if they were not in use. CSR Field Coordinator informed Field Operations Team about this concern, and the Team inspected the reported case in a heartbeat. They explained to me that one of the pipelines was still in use and asked me whether it would be okay to remove the unused one. I was pleased with their response and the immediate action because it really helped me with my cultivation."

U Aye Min

Mann Kyoe Village

"I reported on oil leakage in my farm near well #175 by following MPRL E&P's OGM procedure. I informed our Community Volunteer about the case by asking her to request the respective representatives to inspect the site and fix it as needed. CSR Field Coordinator reported the case to Field Operations Team immediately. They made an inspection, cleaned the spilled area, and repaired the pipeline on the same day! I was grateful to see their immediate action after reporting the case via a phone call. Thanks to MPRL E&P and the CSR Team! This speedy action helped me and my family meet the crop production timeline and also, it reduced damage to nearby crops and soil in the surrounding area. I would like to make a suggestion here; it would be great if holes of these pipelines can be coated with concrete and tightened with screws for easier disassembling."

U Aye Thaung

Ywar Thar Village

"I found out about MPRL E&P's OGM process from the awareness sessions in our Village. I noticed the utility pole near well #33 was on the ground, which could cause an electrical hazard. I informed our Village Administrator who reported the case to the CSR Field Team. The CSR Field Coordinator immediately reported the case to the MPRL E&P's Field Operations Team and then to MOGE's Electrical Department. The representatives from the Electrical Department inspected the case and resolved the concern on the same day. Because of my reported case through the OGM, the entire community was safe from potential electrical hazards. Also, the new pole is of solid steel, not wood like the old ones we used to have, and therefore, it prevents potential risks or any future hazards in my village. I passed on this OGM information to my neighbors by using my case as an example. I wish MPRL E&P continue having this effective mechanism."

"We are aware that the PCC for Mann Field will expire by 2024 and we wish MPRL E&P can secure an extension so that the communities continue to benefit from its CSR projects."

Household Survey Participant

10.6.7 Stakeholder Engagement and Information Disclosure

Engaging with communities is an important part of our approach to managing human rights and providing access to remedy. Timely and regular engagement with our key stakeholders is a cornerstone in our CSR programs in Mann Field. We engage our stakeholders at field level, community level, local and regional levels to ensure a two-way communication channel exists.

Progress Highlights

- Facilitated in requesting MOGE's approval in order to reconnect water supply of Mann Creek at Pauk Kone Village in April.
- Communicated with the Head of Livestock Breeding and Veterinary Department (LBVD - Minbu) for receiving vaccines against seasonal diseases of animals in April.
- Met with the Headmaster of No.5 ITC (Magway) to follow up the training progress of community youths under the Educational Partnership Program in April.
- Distributed Insight! Newsletter (Issue - 30) and Doh Mann Myay Newsletter (Issue - 4) to the internal and external stakeholders around Mann Field in April.
- Organized a "Volunteer Recognition and Appreciation Event" to celebrate 14 community-based volunteers for their values and their actions in contributing time and energy for the benefit of other people in the community as a social responsibility in May.
- Conducted the 2nd Biannual CSR Progress Update and Review Meeting with Mann Field Communities at Auk Kyaung Pagoda. A total of 40 participants including the Village Administrators, Village Development Committees, and Community Volunteers from 14 surrounding villages attended the meeting in May.
- Held meetings with the Headmasters of Training Centers for discussion of Educational Partnership Program, meeting with farmers from Mann Kyoe and Makyee Chaung Villages for OGM case testimonials, meeting with Village Administrators (VAs), Village Development Committees (VDCs) and Volunteers for Mobile Clinic Program discussion, and meeting with the CSR Field Staff for CSR Work Program in May.
- Assembled (15) boxes of Doh Mann Myay Newsletter display stands at 14 Villages and Mann Field Office in May.
- Presented CSR progress updates in the 2nd Biannual Meeting of FY 2021 – 2022 with MOGE at Nay Pyi Taw in June. The meeting also covered the CSR's work performance, identified strengths and weaknesses in the implementation process and further offered constructive feedback, and paved a way to set goals for future performance.
- Led meeting with SAI (Pwint Phyu) Scholarship Trainees, meeting with SAI (Pwint Phyu) Headmaster, meeting with Yetagon Agricultural Service Provider, and meeting with Former Nurse Aide Trainees in June.
- Published Insight! Newsletter (Issue 31), Doh Mann Myay Newsletter (Issue 5), Impact Assessment Report and Community Grievance Mechanism Reports for 1st Quarter of FY 2022-2023 (English and Myanmar Versions) in June 2022.
- Distributed Insight! Newsletter (Issue 31), Doh Mann Myay Newsletter (Issue 5), Impact Assessment Report and Quarterly CSR Progress Report to the regional stakeholders in July.
- Presented CSR Initiatives to MOGE New Staff during their study tour to Mann Oil Field in August.

- Conducted discussions with community stakeholders for Community Infrastructure Development initiatives in August.
- Published Insight! Newsletter (Issue 32), Doh Mann Myay Newsletter (Issue 6) and Community Grievance Mechanism Reports for 2nd Quarter of FY 2022-2023 (English and Myanmar Versions) in September.

Figure 114: Meeting with Mann GM for Water Supply in Pauk Kone Village

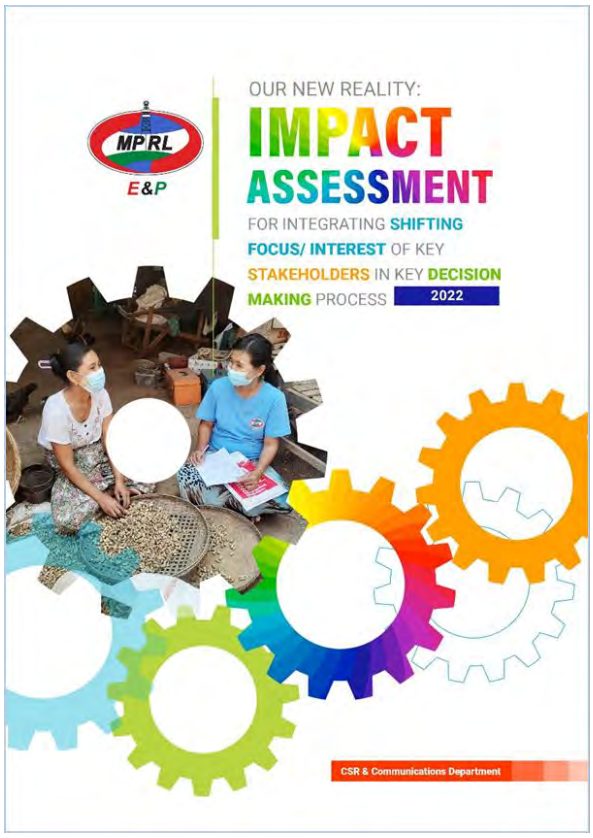
Figure 115: Organizing Volunteer Recognition and Appreciation Event

Figure 116: Conducting 2nd Biannual CSR Progress Update and Review Meeting of FY 2021 – 2022 with Mann Field Communities

Figure 117: Monthly Meeting with Community Volunteers

Figure 118: Distributing Doh Mann Myay Newsletter to the Stakeholders

Figure 119: Assembling Doh Mann Myay Newsletter Stands in Mann Field Communities



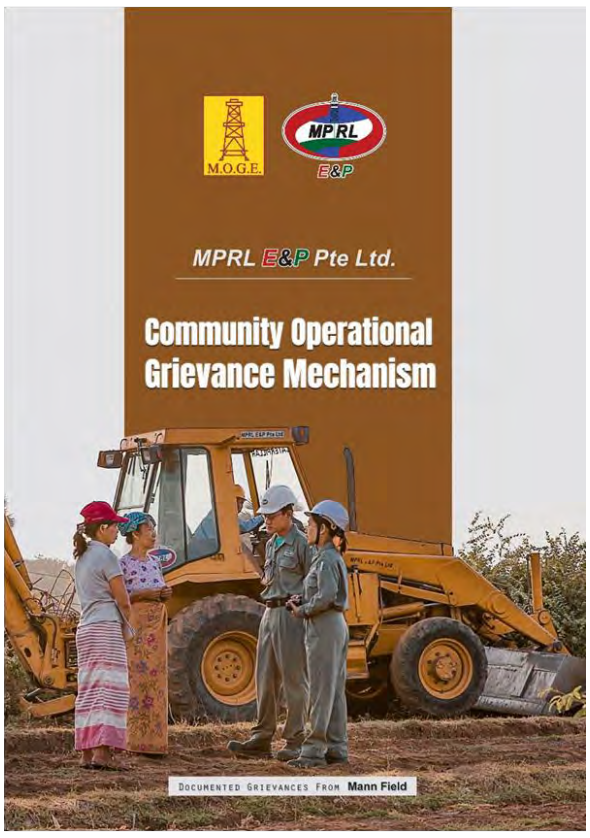


Figure 120: Publishing Insight! Newsletter (Issue 31), Doh Mann Myay Newsletter (Issue 5), Impact Assessment Report and Quarterly OGM Report

Case Study

Conducting Second Biannual CSR Progress Update and Review Meeting in Mann Field

Obtaining and maintaining a social license to operate is one of the key elements for MPRL E&P to be able to implement and operate our projects. Thus, we have the responsibility of obtaining a social license. We also know that community engagement is critical to achieving the social license, as communities are close to our project fields and can be directly affected by our operations. Therefore, we conduct effective stakeholder engagement through a two-way communication channel for long-term sustainable business success.

On 5 May 2022, MPRL E&P's CSR & Communications Department conducted the second Biannual CSR Progress Update and Review Meeting with Mann Field Communities at Auk Kyaung Pagoda. A total of 40 participants including the Village Administrators, Village Development Committees, and Community Volunteers from 14 surrounding villages attended the meeting.

During the discussion, the representatives from CSR & Communications Department updated the performance progress of CSR initiatives that were implemented for Mann Field Communities during the second biannual period (October to March) of the Fiscal Year 2021 – 2022. The meeting also covered the CSR's work performance, identified strengths and weaknesses in the implementation process and further offered constructive feedback, and paved a way to set goals for future performance.

Recognizing and Appreciating Community-based Volunteers

At MPRL E&P, we believe in volunteer recognition and appreciation because we know that our sustainable development goals for the communities depend on collaborations between the business and the stakeholders. Our long-term relationship with our community-based volunteers shows our strong corporate values and who we are as an organization.

Our volunteers are important to us and we are grateful for their active voice in our CSR initiatives and most importantly, for helping us make a difference. They play a crucial role by serving as a link between the communities and the organization through various efforts in making a positive impact in the community.

There are 14 villages in Mann Field where our business operates and we work with many community volunteers to help these surrounding neighborhoods achieve our CSR goals and missions. Their outstanding service-mindedness and dedication during the pandemic and recent sociopolitical events are highly recognized and appreciated. Our CSR Team recently conducted an assessment and discovered a few volunteers who went beyond the call of duty to mitigate the hardships during these difficult times. This performance assessment, which occurred at the end of March 2022, included self-assessments, 360-degree feedback among the volunteers themselves, and performance assessment surveys collected from respective Village Administrators. The top five volunteers were selected for their above and beyond efforts and services.

On 4 May 2022, MPRL E&P's CSR Program organized a "Volunteer Appreciation and Recognition Event" to celebrate 14 community-based volunteers for their values and their actions in contributing time and energy for the benefit of other people in the community. Previously, the reward programs consisted of group trips to well-known places around the country, however, this year, it was a day trip to Shwesettaw Elephant Camp. The special trip was fun and exciting for everyone.

The trip also covered the monetary reward program for all the volunteers where the top five volunteers were presented with additional rewards. The Volunteer Appreciation and Recognition Event at Shwesettaw Elephant Camp also enhanced team spirit through various social activities.

"Now that we are having an economic hardship, the Mobile Clinic serves as a place for us to rely entirely on for our healthcare needs without having to spend a penny. We witness how MPRL E&P has addressed community needs in good faith and its field staff are very community-minded too. That's why we want MPRL E&P to continue operating Mann Field."

Household Survey Participant

10.6.8 Corporate Philanthropy

At MPRL E&P, we believe that part of our corporate responsibility is to give back to our communities, and our philanthropic focus is designed to make a meaningful impact in the communities we serve. Our corporate philanthropic activities include donations and contributions to community works, employee volunteering, disaster relief program and any other business arrangements which aim to support a social cause.

Progress Highlights

- Contributed MMK 3,500,000 to MOGE's donation of a hearse vehicle to Parahita Association in June.
- Transferred the Company's donation of (120) copies of "Myanmar Energy Magnate: Biography of U Moe Myint" to Information and Public Relations of Department (IPRD - Magway Region) and (37) copies to libraries, monasteries, and schools in Mann Field Communities in June.
- Contributed MMK 860,000 for meal donation on Sabbath Day in Mann Field in August.

Figure 121: Contributing MMK 3,500,000 to Parahita Association for Hearse Vehicle Donation

Figure 122: Donating "Myanmar Energy Magnate: Biography of U Moe Myint" to IPRD (Magway) and the Mann Field Communities

Case Study

Donation as a Knowledge Transfer

A book donation ceremony for “Myanmar Energy Magnate: Biography of U Moe Myint” was held at the regional Information and Public Relations Department (Magway), Ministry of Information on 23 June 2022.

The representatives from the CSR and Communications Department of MPRL E&P handed over a total of 120 copies of the biography of U Moe Myint, the Founder and CEO of the MPRL E&P Group of Companies, to U Myo Zaw, the Director of IPRD (Magway). The donated books will be distributed to various libraries in the Magway Region covering many townships, communities, and universities.

Magway Region is important to MPRL E&P because it is the area where Mann Field project is located. Further, MPRL E&P has been actively involved with the development of local communities since the get-go. Books constitute tools for the sharing and updating of knowledge, in other words, books are essential for the building of knowledge-based communities, in the same way as the new technologies of information. MPRL E&P believes that through the provision of inspiring books as such, there will be an increasing demand for reading among the youth while developing a culture of reading, especially in underprivileged communities, and enriching the knowledge, creativity, and development of intellectual minds of these youth.

During the past five months of the publication of “Myanmar Energy Magnate: Biography of U Moe Myint”, MPRL E&P Group of Companies has donated over 500 books to libraries, schools, universities, monasteries, and key stakeholders around the GoCs' project areas across Myanmar. MPRL E&P believes in spreading the joy of reading one book at a time!

"I wish MPRL E&P continues to support us with many other socially beneficial activities."

Key Informant Interviewee

11. Conclusion

The fifth time submission of the Environmental Monitoring Report for the Mann Field EOR Project after receiving ECC in 2019 covers for the field activities and the self-environmental monitoring activities during six months from April 2022 to September 2022. During those days, we faced some opportunities and threats for business sustainability. We had to postpone third party environmental monitoring survey plan for COVID-19 pandemic and security concerns which was already informed prior to regional ECD.

However, based on permissible conditions, we performed monitoring environmental aspects of our business activities, corrective actions required to minimize adverse effects, self-environmental monitoring, CSR activities, HSE movements, numerous awareness sessions, etc. Especially, we conducted various awareness sessions for fostering a culture that empowers and rewards everyone to act in accordance with our Environmental policy. By adhering to our commitments in ECC, MPRL E&P is actively complying with all statements, implementing established plans to meet our goals, and striving to achieve continual improvement.

12. Annex

Annex – 1 Laboratory Results

Annex – 2 Equipment Calibration Certificate

Annex – 1
Laboratory Results

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-22-00572 | Date: August 17, 2022

Client Information

Client Name	:	MPRL E & P
Organization	:	-
Client ID	:	-
Registration Date & Time	:	11.8.2022
Contact	:	-
Testing Purpose	:	For Monitoring

Sample Information

Sample ID	:	8392
Sample Name	:	Sewage Discharge Treated Water
Sample Type / Source	:	Treated
Sampling Date & Time	:	10.8.2022 ; 15:15 PM
Sample Location	:	Pro- Filter Outlet Collecting Tank
Latitude	:	-
Longitude	:	-

Testing Results

This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.

This report shall not be reproduced except in full, without written approval of the laboratory

Sr.	Quality Parameters	Results	Units	Emission Standards	Remarks
1	pH[1]	7.2	S.U	6.0 – 9.0[d]	Normal
2	TSS[3]	5	mg/L	≤50 [d]	Normal
3	BOD_5 [6]	32	mg/L	≤ 50 [d]	Normal
4	COD[3]	65	mg/L	≤ 250 [d]	Normal
5	Total Phosphorous[3]	3	mg/L	≤2 [d]	Above the limit
6	Oil & Grease [9]	12	mg/L	≤ 10 [d]	Above the limit
7	Total Nitrogen[3]	32	mg/L	-	-

"ND" = Not Detected | "LOD" = Lower limit of detection | " - " = No Reference Standard

Tested by	Checked by	Approved by
Daw May Myat Khine Lab. Technician II Ecological Laboratory ALARM	Daw Lin Myat Myat Aung Lab. Technician I Ecological Laboratory ALARM	Dr. Aye Aye Win Laboratory In-Charge Ecological Laboratory (ALARM)

No.237,Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township,Yangon.
Tel: 09-407496078, Email: aelab.2022@gmail.com

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-22-00576 | Date: August 17, 2022

Client Information

Client Name	:	MPRL E & P
Organization	:	-
Client ID	:	-
Registration Date & Time	:	11.8.2022
Contact	:	-
Testing Purpose	:	For Monitoring

Sample Information

Sample ID	:	8396
Sample Name	:	Hydrotest Water
Sample Type / Source	:	Waste
Sampling Date & Time	:	10.8.2022 ; 15:15 PM
Sample Location	:	Warehouse (Tubo Section)
Latitude	:	-
Longitude	:	-

Testing Results

This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.

This report shall not be reproduced except in full, without written approval of the laboratory

Sr.	Quality Parameters	Results	Units	Emission Standards	Remarks
1	pH[1]	7.2	S.U	6.0 – 9.0[d]	Normal
2	TSS[3]	21	mg/L	≤50[d]	Normal
3	Chloride[3]	68	mg/L	-	-
4	BOD_5[6]	18	mg/L	≤ 50[d]	Normal
5	COD[3]	33	mg/L	≤ 250[d]	Normal
6	Arsenic[8]	0.005	mg/L	≤ 0.1[d]	Normal
7	Cadmium[7]	0.01	mg/L	≤ 0.1[d]	Normal
8	Copper[7]	0.1	mg/L	≤ 0.5[d]	Normal
9	Lead[7]	ND	mg/L	≤ 0.1[d]	LOD = 0.1 mg/L
10	Zinc[3]	< 0.02	mg/L	≤ 2[d]	Normal
11	Nickel[3]	< 0.2	mg/L	≤ 0.5[d]	Normal
12	Sulfide[3]	< 0.04	mg/L	≤ 1[d]	Normal
13	Phenol[3]	0.14	mg/L	≤ 0.5[d]	Normal
14	Chromium (Hexavalent)[3]	0.32	mg/L	≤ 0.1	Above the limit
15	Mercury	0.32	mg/L	≤ 0.01[d]	Above the limit

"ND" = Not Detected | "LOD" = Lower limit of detection | " - " = No Reference Standard

Tested by	Checked by	Approved by
Daw May Myat Khine Lab. Technician II Ecological Laboratory ALARM	Daw Lin Myat Myat Aung Lab. Technician I Ecological Laboratory ALARM	Dr. Aye Aye Win Laboratory In-Charge Ecological Laboratory (ALARM)

No.237,Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township,Yangon.
Tel: 09-407496078, Email: aelab.2022@gmail.com

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1. Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051

Report No. : GEM-LAB-202208132
Revision No. : 1
Report Date : 26 August, 2022
Application No. : 0064-C001

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description
Sample Name : Hydrotest Water Warehouse Tube Section
Sampling Date : 11 August, 2022
Sample No. : W-2208104
Sampling By : Customer
Waste Profile No. : -
Sample Received Date : 11 August, 2022

No.	Parameter	Method	Unit	Result	LOQ
1	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.005	0.005

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

Analysed By :

Ni Ni Aye Lwin
Manager

LAB
August 26,2022
GEM

Approved By :

Hideki Yomo August 26, 2022
Managing Director

ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း
Ecological Laboratory

စိမ်းလန်းအဓိမြေဖွံ့ဖြိုးတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

531-D, Marlar Myaing Yeik Thar Street, 8 Ward, Kamayut Township, Yangon. Telephone: +95 1 503301

စာအမှတ်/Reference Number: EL (M)-R / 720

နေ့စွဲ/Date: 18th August, 2022

ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ/Laboratory Analysis Report

နမူနာရာဇဝင် /Sample Profile

နမူနာအမည် /Sample Name	Domestic wastewater	နမူနာအမှတ် / Sample ID	720	
နေရာ (မြို့နယ်) Location (Township)	Downhole Workshop (Minnbu Township)	လတ္တီတွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Magway	လောင်ဂျီတွဒ် Longitude		
ပေးပို့သူအမည် /Sender Name	U Han Myo Aung	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) Sampling Time (Date, Time)	10.8.2022	3:10 PM
အဖွဲ့အစည်း /Organisation	MPRL E & P			
ဆက်သွယ်ရန် /Contact	09-5177819	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) Arriving Time (Date, Time)	11.8.2022	

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာသည် ပေးပို့သူမှပို့ဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အဖြေ Results	နည်းစဉ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	>1100	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)		Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total *E.coli* count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး	စစ်ဆေးပြီး	တာဝန်ခံ
Tested by	Checked by	Approved by
May Myat Nyein	May Zaw	Ni Tar Nwe
Research Assistant	Research Assistant	Research Scientist
ALARM	ALARM	ALARM

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-22-00571 | Date: August 17, 2022

Client Information

Client Name	:	MPRL E & P
Organization	:	-
Client ID	:	-
Registration Date & Time	:	11.8.2022
Contact	:	-
Testing Purpose	:	For Monitoring

Sample Information

Sample ID	:	8391
Sample Name	:	Domestic Wastewater
Sample Type / Source	:	Waste
Sampling Date & Time	:	10.8.2022 ; 15:10 PM
Sample Location	:	Downhole Workshop (Minnbu Township)
Latitude	:	-
Longitude	:	-

Testing Results

This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.

This report shall not be reproduced except in full, without written approval of the laboratory

Sr.	Quality Parameters	Results	Units	Emission Standards	Remarks
1	pH[1]	7.3	S.U	6.0 – 9.0[d]	Normal
2	Temperature[2]	27	°C	±3°[d]	-
3	TSS[3]	5	mg/L	≤50[d]	Normal
4	Ammonia[3]	6.3	mg/L	≤ 10[d]	Normal
5	BOD_5[6]	40	mg/L	≤ 50[d]	Normal
6	COD[3]	65	mg/L	≤ 250[d]	Normal
7	Total Chlorine[3]	< 0.02	mg/L	-	-
8	Total Phosphorous[3]	40	mg/L	≤2[d]	Above the limit
9	Arsenic[8]	0.005	mg/L	≤ 0.1[d]	Normal
10	Cadmium[7]	ND	mg/L	≤ 0.1[d]	LOD = 0.01 mg/L
11	Copper[7]	0.1	mg/L	≤ 0.5[d]	Normal
12	Iron[7]	0.3	mg/L	≤ 3.5[d]	Normal
13	Lead[7]	ND	mg/L	≤ 0.1[d]	LOD = 0.1 mg/L
14	Zinc[3]	< 0.02	mg/L	≤ 2[d]	Normal
15	Nickel[3]	< 0.2	mg/L	≤ 0.5[d]	Normal
16	Sulfide[3]	< 0.04	mg/L	≤ 1[d]	Normal
17	Phenol[3]	< 0.1	mg/L	≤ 0.5[d]	Normal
18	Fluoride[3]	0	mg/L	≤ 20[d]	Normal
19	Oil & Grease [9]	16	mg/L	≤ 10[d]	Above the limit
20	Chromium (Hexavalent)[3]	0.15	mg/L	≤ 0.1	Above the limit
21	Mercury	0.021	mg/L	≤ 0.01[d]	Above the limit

"ND" = Not Detected | "LOD" = Lower limit of detection | " - " = No Reference Standard

Tested by	Checked by	Approved by
Daw May Myat Khine Lab. Technician II Ecological Laboratory ALARM	Daw Lin Myat Myat Aung Lab. Technician I Ecological Laboratory ALARM	Dr. Aye Aye Win Laboratory In-Charge Ecological Laboratory (ALARM)

No.237,Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township,Yangon.
Tel: 09-407496078, Email: aelab.2022@gmail.com

DOWA

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1. Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051

Report No. : GEM-LAB-202208128
Revision No. : 1
Report Date : 26 August, 2022
Application No. : 0064-C001

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description
Sample Name : Domestic Waste (Downhole W/S) Sampling Date : 11 August, 2022
Sample No. : W-2208100 Sampling By : Customer
Waste Profile No. : - Sample Received Date : 11 August, 2022

No.	Parameter	Method	Unit	Result	LOQ
1	Cyanide	HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	0.1
2	Total Cyanide	Distillation Process:APHA 4500-CN- C. Total Cyanide after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	0.004	0.002
3	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.048	0.005
4	Arsenic	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.010
5	Copper	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.112	0.005
6	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.002
7	Cadmium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.005	0.005
8	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.100	0.005
9	Lead	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.005	0.005
10	Nickel	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.148	0.005
11	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.005	0.005

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

Analysed By :

Ni Ni Aye Lwin
Manager

LAB August 26, 2022 GEM

Approved By :

Hideki Yomo August 26, 2022
Managing Director

ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း
Ecological Laboratory

စိမ်းလန်းအဓိမြေဖွံ့ဖြိုးတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

531-D, Marlar Myaing Yeik Thar Street, 8 Ward, Kamayut Township, Yangon. Telephone: +95 1 503301

စာအမှတ်/Reference Number: EL (M)-R / 719

နေ့စွဲ/Date: 18th August, 2022

ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ/Laboratory Analysis Report

နမူနာရာဇဝင် /Sample Profile

နမူနာအမည် /Sample Name	Domestic Wastewater	နမူနာအမှတ် / Sample ID	719	
နေရာ (မြို့နယ်) Location (Township)	Mobile Workshop (Minnbu Township)	လတ္တီတွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Magway	လောင်ဂျီတွဒ် Longitude		
ပေးပို့သူအမည် /Sender Name	U Han Myo Aung	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) Sampling Time (Date, Time)	10.8.2022	3:00 PM
အဖွဲ့အစည်း /Organisation	MPRL E & P			
ဆက်သွယ်ရန် /Contact	09-5177819	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) Arriving Time (Date, Time)	11.8.2022	

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာသည် ပေးပို့သူမှပို့ဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အဖြေ Results	နည်းစဉ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	>1100	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)		Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total *E.coli* count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး Tested by	စစ်ဆေးပြီး Checked by	တာဝန်ခံ Approved by
May Myat Nyein Research Assistant ALARM	May Zaw Research Assistant ALARM	Ni Tar Nwe Research Scientist ALARM

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-22-00570 | Date: August 17, 2022

Client Information

Client Name	:	MPRL E & P
Organization	:	-
Client ID	:	-
Registration Date & Time	:	11.8.2022
Contact	:	-
Testing Purpose	:	For Monitoring

Sample Information

Sample ID	:	8390
Sample Name	:	Domestic Wastewater
Sample Type / Source	:	Waste
Sampling Date & Time	:	10.8.2022 ; 15:00 PM
Sample Location	:	Mobile Workshop (Minnbu Township)
Latitude	:	-
Longitude	:	-

Testing Results

This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.

This report shall not be reproduced except in full, without written approval of the laboratory

Sr.	Quality Parameters	Results	Units	Emission Standards	Remarks
1	pH[1]	7.4	S.U	6.0 – 9.0[d]	Normal
2	Temperature[2]	27	°C	±3*[d]	-
3	TSS[3]	3	mg/L	≤50[d]	Normal
4	Ammonia[3]	2.3	mg/L	≤ 10[d]	Normal
5	BOD_5[6]	18	mg/L	≤ 50[d]	Normal
6	COD[3]	36	mg/L	≤ 250[d]	Normal
7	Total Chlorine[3]	< 0.02	mg/L	-	-
8	Total Phosphorous[3]	20	mg/L	≤2[d]	Above the limit
9	Arsenic[8]	0.005	mg/L	≤ 0.1[d]	Normal
10	Cadmium[7]	ND	mg/L	≤ 0.1[d]	LOD = 0.01 mg/L
11	Copper[7]	0.1	mg/L	≤ 0.5[d]	Normal
12	Iron[7]	0.6	mg/L	≤ 3.5[d]	Normal
13	Lead[7]	0.1	mg/L	≤ 0.1[d]	Normal
14	Zinc[3]	< 0.02	mg/L	≤ 2[d]	Normal
15	Nickel[3]	< 0.2	mg/L	≤ 0.5[d]	Normal
16	Sulfide[3]	< 0.04	mg/L	≤ 1[d]	Normal
17	Phenol[3]	< 0.1	mg/L	≤ 0.5[d]	Normal
18	Fluoride[3]	0.02	mg/L	≤ 20[d]	Normal
19	Oil & Grease [9]	21	mg/L	≤ 10[d]	Above the limit
20	Chromium (Hexavalent)[3]	0.34	mg/L	≤ 0.1	Above the limit
21	Mercury	0.032	mg/L	≤ 0.01[d]	Above the limit

"ND" = Not Detected | "LOD" = Lower limit of detection | " - " = No Reference Standard

Tested by	Checked by	Approved by
Daw May Myat Khine Lab. Technician II Ecological Laboratory ALARM	Daw Lin Myat Myat Aung Lab. Technician I Ecological Laboratory ALARM	Dr. Aye Aye Win Laboratory In-Charge Ecological Laboratory (ALARM)

No.237,Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township,Yangon.
Tel: 09-407496078, Email: aelab.2022@gmail.com

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1. Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051

Report No. : GEM-LAB-202208127
Revision No. : 1
Report Date : 26 August, 2022
Application No. : 0064-C001

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description
Sample Name : Domestic Waste (Mobile Workshop) Sampling Date : 11 August, 2022
Sample No. : W-2208099 Sampling By : Customer
Waste Profile No. : - Sample Received Date : 11 August, 2022

No.	Parameter	Method	Unit	Result	LOQ
1	Cyanide	HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	0.1
2	Total Cyanide	Distillation Process:APHA 4500-CN- C. Total Cyanide after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	0.004	0.002
3	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.046	0.005
4	Arsenic	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.010
5	Copper	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.005	0.005
6	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.002
7	Cadmium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.005	0.005
8	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.104	0.005
9	Lead	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.005	0.005
10	Nickel	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.142	0.005
11	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.005	0.005

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

Analysed By :

Ni Ni Aye Lwin
Manager

LAB August 26, 2022 GEM

Approved By :

Hideki Yomo August 26, 2022
Managing Director

ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း
Ecological Laboratory

ဖိမ်းလန်းအဓိပ္ပြေဖွံ့ဖြိုးတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)
531-D, Marlar Myaing Yeik Thar Street, 8 Ward, Kamayut Township, Yangon. Telephone: +95 1 503301

စာအမှတ်/Reference Number: EL (M)-R / 724

နေ့စွဲ/Date: 18th August, 2022

ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ/Laboratory Analysis Report

နမူနာရာဇဝင် /Sample Profile

နမူနာအမည် /Sample Name	Purified Drinking Water	နမူနာအမှတ် / Sample ID	724	
နေရာ (မြို့နယ်) Location (Township)	RO Outlet PDWS (Base Camp)	လတ္တီတွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Magway	လောင်ဂျီတွဒ် Longitude		
ပေးပို့သူအမည် /Sender Name	U Han Myo Aung	နမူနာကောက်ယူချိန် (နေ့, နာရီ) Sampling Time (Date, Time)	10.8.2022	3:25 PM
အဖွဲ့အစည်း /Organisation	MPRL E & P			
ဆက်သွယ်ရန် /Contact	09-5177819	နမူနာရောက်ရှိချိန် (နေ့, နာရီ) Arriving Time (Date, Time)	11.8.2022	

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာသည် ပေးပို့သူမှဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အဖြေ Results	နည်းစဉ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	0	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)	0	Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total *E.coli* count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး	စစ်ဆေးပြီး	တာဝန်ခံ
Tested by	Checked by	Approved by
May Zaw	May Myat Nyein	Ni Tar Nwe
Research Assistant	Research Assistant	Research Scientist
ALARM	ALARM	ALARM

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-22-00575 Date: August 16, 2022

Client Information

Client Name	:	MPRL E & P
Organization	:	-
Client ID	:	-
Registration Date & Time	:	11.8.2022
Contact	:	-
Testing Purpose	:	Safe To Drink

Sample Information

Sample ID	:	8395
Sample Name	:	Purified Drinking Water
Sample Type / Source	:	Treated
Sampling Date & Time	:	10.8.2022 ; 15:25 PM
Sample Location	:	RO Outlet PDWS (Base Camp)
Latitude	:	-
Longitude	:	-

Testing Results

This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.

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Sr.	Quality Parameters	Results	Units	Drinking Standards	Remarks
1	pH[1]	8.2	S.U	6.5 – 8.5[c]	Normal
2	Colour[3]	12	HU	≤15 [c]	Normal
3	Turbidity[3]	< 5	FAU	≤5 [c]	Clear
4	TDS[4]	22	mg/L	≤1000 [c]	Normal
5	Hardness[3]	17	mg/L	≤500 [c]	Normal
6	Chloride[3]	42	mg/L	≤250 [c]	Normal
7	Arsenic[8]	0.005	mg/L	≤0.05[a]	Normal
8	Iron[7]	0.2	mg/L	≤1[c]	Normal
9	Lead[7]	ND	mg/L	≤0.01 [c]	LOD = 0.1 mg/L
10	Manganese[3]	0.2	mg/L	≤0.4 [c]	Normal
11	Sulfate[3]	4.9	mg/L	≤ 250 [c]	Normal

"ND" = Not Detected "LOD" = Lower limit of detection " - " = No Reference Standard

Tested by	Checked by	Approved by
Daw May Myat Khine Lab. Technician II Ecological Laboratory ALARM	Daw Lin Myat Myat Aung Lab. Technician I Ecological Laboratory ALARM	Dr. Aye Aye Win Laboratory In-Charge Ecological Laboratory (ALARM)

No.237,Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township,Yangon.
Tel: 09-407496078, Email: aelab.2022@gmail.com

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1. Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051

Report No. : GEM-LAB-202208131
Revision No. : 1
Report Date : 26 August, 2022
Application No. : 0064-C001

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description
Sample Name : Purified Drinkingwater (RO Outlet) Sampling Date : 11 August, 2022
Sample No. : W-2208103 Sampling By : Customer
Waste Profile No. : - Sample Received Date : 11 August, 2022

No.	Parameter	Method	Unit	Result	LOQ
1	Nitrate	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)	mg/l	≤0.067	0.067
2	Odor	APHA 2150 B (Threshold Odor Test)	mg/l	1	_

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

Analysed By :

Ni Ni Aye Lwin
Manager

LAB August 26, 2022 GEM

Approved By :

Hideki Yomo August 26, 2022
Managing Director

ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း
Ecological Laboratory
စိမ်းလန်းအဓိမြေဖွံ့ဖြိုးတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)
531-D, Marlar Myaing Yeik Thar Street, 8 Ward, Kamayut Township, Yangon. Telephone: +95 1 503301

စာအမှတ်/Reference Number: EL (M)-R / 722

ရက်စွဲ/Date: 18th August, 2022

ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ/Laboratory Analysis Report

နမူနာရာဇဝင် /Sample Profile

နမူနာအမည် /Sample Name	Ground Water Tube-Well (Ko Win Mg)	နမူနာအမှတ် / Sample ID	722	
နေရာ (မြို့နယ်) Location (Township)	Tube-Well (Ko Win Mg)	လတ္တီတွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Magway	လောင်ဂျီတွဒ် Longitude		
ပေးပို့သူအမည် /Sender Name	U Han Myo Aung	နမူနာကောက်ယူချိန် (နေ့၊ နာရီ) Sampling Time (Date, Time)	10.8.2022	2:45 PM
အဖွဲ့အစည်း /Organisation	MPRL E & P			
ဆက်သွယ်ရန် /Contact	09-5177819	နမူနာရောက်ရှိချိန် (နေ့၊ နာရီ) Arriving Time (Date, Time)	11.8.2022	

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာသည် ပေးပို့သူမှပို့ဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အဖြေ Results	နည်းစဉ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	>1100	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)	460	Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total *E.coli* count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး Tested by	စစ်ဆေးပြီး Checked by	တာဝန်ခံ Approved by
May Zaw	May Myat Nyein	Ni Tar Nwe
Research Assistant	Research Assistant	Research Scientist
ALARM	ALARM	ALARM

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-22-00573 | Date: August 16, 2022

Client Information

Client Name	:	MPRL E & P
Organization	:	-
Client ID	:	-
Registration Date & Time	:	11.8.2022
Contact	:	-
Testing Purpose	:	For Monitoring

Sample Information

Sample ID	:	8393
Sample Name	:	Ground Water/ Tube Well (Ko Win Maung)
Sample Type / Source	:	Ground
Sampling Date & Time	:	10.8.2022 ; 14:45 PM
Sample Location	:	Tube Well (Ko Win Maung)
Latitude	:	-
Longitude	:	-

Testing Results

This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.

This report shall not be reproduced except in full, without written approval of the laboratory

Sr.	Quality Parameters	Results	Units	Drinking Standards	Remarks
1	pH[1]	7.1	S.U	6.5 – 8.5[c]	Normal
2	Colour[3]	18	HU	≤15 [c]	Above the limit
3	Turbidity[3]	< 5	FAU	≤5 [c]	Clear
4	TDS[4]	1102	mg/L	≤1000 [c]	Above the limit
5	Hardness[3]	60	mg/L	≤500 [c]	Normal
6	Chloride[3]	67	mg/L	≤250 [c]	Normal
7	Arsenic[8]	0.005	mg/L	≤0.05[a]	Normal
8	Iron[7]	0.3	mg/L	≤1[c]	Normal
9	Lead[7]	ND	mg/L	≤0.01 [c]	LOD = 0.1 mg/L
10	Manganese[3]	0.8	mg/L	≤0.4 [c]	Above the limit
11	Sulfate[3]	< 2	mg/L	≤ 250 [c]	Normal

"ND" = Not Detected | "LOD" = Lower limit of detection | " - " = No Reference Standard

Tested by	Checked by	Approved by
Daw May Myat Khine Lab. Technician II Ecological Laboratory ALARM	Daw Lin Myat Myat Aung Lab. Technician I Ecological Laboratory ALARM	Dr. Aye Aye Win Laboratory In-Charge Ecological Laboratory (ALARM)

No.237,Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township,Yangon.
Tel: 09-407496078, Email: aelab.2022@gmail.com

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1. Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051

Report No. : GEM-LAB-202208129
Revision No. : 1
Report Date : 26 August, 2022
Application No. : 0064-C001

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description
Sample Name : Groundwater (Ko Win Maung) Sampling Date : 11 August, 2022
Sample No. : W-2208101 Sampling By : Customer
Waste Profile No. : - Sample Received Date : 11 August, 2022

No.	Parameter	Method	Unit	Result	LOQ
1	Nitrate	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)	mg/l	31.859	0.067
2	Odor	APHA 2150 B (Threshold Odor Test)	mg/l	1	-

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

Analysed By :

Ni Ni Aye Lwin
Manager

LAB
August 26, 2022
GEM

Approved By :

Hideki Yamo August 26, 2022
Managing Director

ပတ်ဝန်းကျင်ရေးရာဓာတ်ခွဲခန်း
Ecological Laboratory

စိမ်းလန်းအမိမြေဖွံ့ဖြိုးတိုးတက်ရေးအသင်း (Advancing Life and Regenerating Motherland, ALARM)

531-D, Marlar Myaing Yeik Thar Street, 8 Ward, Kamayut Township, Yangon. Telephone: +95 1 503301

စာအမှတ်/Reference Number: EL (M)-R / 723

နေ့စွဲ/Date: 18th August, 2022

ဓာတ်ခွဲစစ်ဆေးမှုအစီအရင်ခံစာ/Laboratory Analysis Report

နမူနာရာဇဝင် /Sample Profile

နမူနာအမည် /Sample Name	Ground Water	နမူနာအမှတ် / Sample ID	723	
နေရာ (မြို့နယ်) Location (Township)	Tube-Well (Ma Nyein)	လတ္တီတွဒ် Latitude		
နေရာ (တိုင်း/ပြည်နယ်) Location (Region/State)	Magway	လောင်ဂျီတွဒ် Longitude		
ပေးပို့သူအမည် /Sender Name	U Han Myo Aung	နမူနာကောက်ယူချိန် (နေ့, နာရီ) Sampling Time (Date, Time)	10.8.2022	2:40 PM
အဖွဲ့အစည်း /Organisation	MPRL E & P			
ဆက်သွယ်ရန် /Contact	09-5177819	နမူနာရောက်ရှိချိန် (နေ့, နာရီ) Arriving Time (Date, Time)	11.8.2022	

(This laboratory analysis report is based solely on the sample submitted by the customer)

(ဤဓာတ်ခွဲစစ်ဆေးမှုအစီရင်ခံစာသည် ပေးပို့သူမှပို့ဆောင်ခဲ့သည့်နမူနာကိုသာအခြေခံထားပါသည်။)

Analysis Results/စမ်းသပ်ချက်အဖြေ

စဉ် Sr.	အရည်အသွေးညွှန်းကိန်း Quality Parameter	ရလဒ် အဖြေ Results	နည်းစဉ် Method	စံသတ်မှတ်ချက် Drinking Standard	မှတ်ချက် Remarks
1	Total plate count (CFU/ml)		Total plate count method	0	
2	Total coliform count (MPN/100 ml) (Presumption test)	93	Most Probable Number method	0	
3	Total faecal coliform count (MPN/100ml) (Presumption test)	0	Most Probable Number method	0	
4	Total coliform count (CFU/ml) (Confirm test)		Eosin Methyl blue agar plate test	0	
5	Complete test for coliform bacteria		Gram staining test	-	
6	Total coliform count (CFU/ml)		3M Pate count method	0	
7	Total *E.coli* count (CFU/ml)		3M Pate count method	0	

Note: The target sample needs to test some additional tests to confirm total coliform and total faecal coliform.

စမ်းသပ်ပြီး Tested by	စစ်ဆေးပြီး Checked by	တာဝန်ခံ Approved by
May Zaw Research Assistant ALARM	May Myat Nyein Research Assistant ALARM	Ni Tar Nwe Research Scientist ALARM

ALARM Ecological Laboratory

Water Testing Result Report

Report Number: EL-WR-22-00574 | Date: August 16, 2022

Client Information

Client Name	:	MPRL E & P
Organization	:	-
Client ID	:	-
Registration Date & Time	:	11.8.2022
Contact	:	-
Testing Purpose	:	For Monitoring

Sample Information

Sample ID	:	8394
Sample Name	:	Ground Water/ Tube Well (Ma Nyein)
Sample Type / Source	:	Ground
Sampling Date & Time	:	10.8.2022 ; 14:40 PM
Sample Location	:	Tube Well (Ma Nyein)
Latitude	:	-
Longitude	:	-

Testing Results

This laboratory analysis report is based solely on the sample submitted by the client unless client took our sampling service.
This report shall not be reproduced except in full, without written approval of the laboratory

Sr.	Quality Parameters	Results	Units	Drinking Standards	Remarks
1	pH[1]	7.5	S.U	6.5 – 8.5[c]	Normal
2	Colour[3]	4	HU	≤15 [c]	Normal
3	Turbidity[3]	< 5	FAU	≤5 [c]	Clear
4	TDS[4]	410	mg/L	≤1000 [c]	Normal
5	Hardness[3]	95	mg/L	≤500 [c]	Normal
6	Chloride[3]	120	mg/L	≤250 [c]	Normal
7	Arsenic[8]	0.005	mg/L	≤0.05[a]	Normal
8	Iron[7]	0.3	mg/L	≤1[c]	Normal
9	Lead[7]	ND	mg/L	≤0.01 [c]	LOD = 0.1 mg/L
10	Manganese[3]	0.6	mg/L	≤0.4 [c]	Above the limit
11	Sulfate[3]	152	mg/L	≤ 250 [c]	Normal

"ND" = Not Detected | "LOD" = Lower limit of detection | " - " = No Reference Standard

Tested by	Checked by	Approved by
Daw May Myat Khine Lab. Technician II Ecological Laboratory ALARM	Daw Lin Myat Myat Aung Lab. Technician I Ecological Laboratory ALARM	Dr. Aye [illegible] Win Laboratory In-Charge Ecological Laboratory (ALARM)

No.237,Corner of Shu Khin Thar Street & 7 Street, (3) Block, South Oakkalapa Township,Yangon.
Tel: 09-407496078, Email: aelab.2022@gmail.com

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1. Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051

Report No. : GEM-LAB-202208130
Revision No. : 1
Report Date : 26 August, 2022
Application No. : 0064-C001

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description
Sample Name : Groundwater (Ko Nyein) Sampling Date : 11 August, 2022
Sample No. : W-2208102 Sampling By : Customer
Waste Profile No. : - Sample Received Date : 11 August, 2022

No.	Parameter	Method	Unit	Result	LOQ
1	Nitrate	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)	mg/l	10.200	0.067
2	Odor	APHA 2150 B (Threshold Odor Test)	mg/l	1	–

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

Analysed By :

Ni Ni Aye Lwin
Manager

LAB August 26, 2022 GEM

Approved By :

Hideki Yomo August 26, 2022
Managing Director

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1. Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051

Report No. : GEM-LAB-202208133
Revision No. : 1
Report Date : 26 August, 2022
Application No. : 0064-C002

Analysis Report

Client Name : MPRL E & P Pte Ltd.
Address : 623, Pyay Road , Vantage Tower, Kamayut.
Project Name : Mann Field
Sample Description

Sample Name : Produced Sand
Sample No. : S-2208001
Waste Profile No : -
Sampling Date : 11 August, 2022
Sampling By : Customer
Sample Received Date : 11 August, 2022

No.	Parameter	Method For Liquid Sample Preparation	Method of Measurement	Unit	Result	LOQ
1	Cadmium	Content test in soil pollution countermeasures Act (No.19 of the Ministry of Environment notification in Japan (2003)/EPA Method 3050 B (Acid Digestion of Sediments, Sludges, and Soils)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/kg	≤ 0.068	0.068
2	Zinc			mg/kg	44.642	0.068
3	Chromium			mg/kg	19.924	0.068
4	Nickel			mg/kg	38.862	0.068
5	Copper			mg/kg	20.808	0.068
6	Arsenic			mg/kg	0.986	0.34
7	Silver			mg/kg	≤ 0.068	0.068
8	Lead			mg/kg	103.156	0.068
9	Mercury			mg/kg	≤ 0.068	0.068

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition
EPA- The United States Environmental Protection Agency

Analysed By :

Ni Ni Aye Lwin
Manager

LAB August 26, 2022 GEM

Approved By :

Hideki Yomo August 26, 2022
Managing Director

Annex – 2

Equipment Calibration Certificate

Calibration Certificate

Instrument SN: 17091JZ-001
Calibration Date: 7/27/2022
Part Number: VTS-K1232110111
Job Number: 17091J
Setup Date: 9/19/2017
Setup Technician: MB
Created By: iNet
Battery: Dual-cell lithium-ion battery pack
Assigned User: MPRL E&P PTE LTD.

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
17090Q1049	CO	Carbon Monoxide	100.00	209.00%	Passed	0.00	35.00	70.00	35.00	200.00
20030CT081	H2S	Hydrogen Sulfide	25.00	87.20%	Passed	0.00	10.00	20.00	10.00	15.00
20030JL068	LEL	Pentane	25.00	172.00%	Passed	0.00	10.00	20.00	N/A	N/A
200236W340	O2	Oxygen	20.90	58.85%	Marginal	0.00	19.50	23.50	N/A	N/A

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
17090Q1049	CO	7/27/2022 10:35:21 AM (GMT+06:30)	242089BC47748	9/28/2022	Fresh Air	N/A
20030CT081	H2S	7/27/2022 10:34:52 AM (GMT+06:30)	242089BC47748	9/28/2022	Fresh Air	N/A
20030JL068	LEL	7/27/2022 10:35:53 AM (GMT+06:30)	242089BC47748	9/28/2022	Fresh Air	N/A
200236W340	O2	7/27/2022 10:33:37 AM (GMT+06:30)	Fresh Air	N/A	Fresh Air	N/A

; Remark: O2 Sensor life over 2years and span reserves in 50% Marginal. H2S sensor span reserves is nearly marginal.

Build through Excellence
Lead with Integrity

MPRL E&P Pte Ltd.

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