Republic of the Philippines
Department of Environment and Natural Resources
MINES AND GEOSCIENCES BUREAU
MIMAROPA Region
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ISO 9001:2015 CERTIFIED

MSDF-02 Rev02 12.17.2019

Certificate of Approval

AEPEP No. 2022-04-MIMAROPA

The Mine Rehabilitation Fund Committee – Technical Working Group (MRFC-TWG) having reviewed the Annual Environmental Protection and Enhancement Program (AEPEP) for CY 2022, hereby issues this **Certificate of Approval** to **Citinickel Mines and Development Corporation (CMDC)** for its **Toronto and Pulot Nickel Mining Projects** covered by **MPSA No. 229-2007-IVB** located in Brgy. San Isidro, Municipality of Narra and Brgys. Labog, Punang, and Pulot Interior, Municipality of Sofronio Española, Palawan, respectively, subject to the following conditions, in addition to the provisions stipulated under the Department of Environment and Natural Resources Administrative Order (DAO) No. 2010 – 21, Revised Implementing Rules and Regulations of Republic Act No. 7942, otherwise known as the "Philippine Mining Act of 1995":

1. This Certificate is valid only for the activities stipulated in the approved AEPEP CY 2022 (hereto attached as Annex A and made an integral part hereof);

2. CMDC shall allocate for its annual environment-related expenses a percentage based on the AEPEP that may approximate a minimum of three to five percent (3 – 5%) of its direct mining cost depending on the environmental/geologic condition, nature and scale of operations, and technology employed;

3. The budget allocation of this AEPEP amounts to Twenty – Nine Million, Seven Hundred Ninety - Three Thousand, Eight Hundred Pesos (**PHP 29,793,800.00**) or 5.64% of CMDC – Toronto Nickel Mining Project's estimated direct mining expenses (PHP 528,358,105.88) and Thirty – Three Million, Eight Hundred Seventy – Nine Thousand, Five Hundred Sixty Pesos (**PHP 33,879,560.00**) or 7.59% of CMDC – Pulot Nickel Mining Project's estimated direct mining costs (PHP 445,994,625.00) for 2022;

4. CMDC shall strictly conform to the policy of MGB on prompt submission of AEPEP, which is thirty (30) calendar days prior to the beginning of every calendar year;

5. To ensure and check the performance of and compliance with the approved AEPEP, the Multipartite Monitoring Team (MMT) shall monitor every quarter or more frequently, as may be deemed necessary, the activities stipulated in the AEPEP;

6. The expenses for such monitoring shall be chargeable against the Monitoring Trust Fund (MTF) of the Mine Rehabilitation Fund (MRF) as provided in Section 181 of DAO No. 2010 – 21;

7. CMDC shall submit to MGB MIMAROPA a quarterly report of its environmental expenses within ten (10) days after the end of every quarter using the prescribed format;

8. CMDC shall implement its approved comprehensive Care and Maintenance Program (CMP) in case of suspension/stoppage of its operations;

9. Additional conditions may be imposed to effectively implement the approved AEPEP based on the results of monitoring or environmental audit by the MGB Central Office and MGB MIMAROPA Region or the MMT;

10. The recommendation/s and directive/s or instruction/s of the MRFC and MMT members should be considered and put into effect by the proponent in the implementation phase of the subject AEPEP;

11. Transfer of ownership or assignment of the project carries with it the same conditions in this Certificate for which written notification shall be made by the company to the MGB MIMAROPA Region within fifteen (15) days from such transfer; and

12. That all other necessary permits (*i.e.* discharge permit, *etc.*) from all concerned government agencies must be secured in relation to project operation.

Non-compliance with the above conditions shall be sufficient ground for the suspension, cancellation, revocation or termination of this Certificate and/or be basis for the applicability of penalty prescribed in the Penal Provisions of R.A. 7942.

Issued this **14th day of January 2022** at Manila, Philippines.

EDWIN M. MOJARES, Ph.D.
OIC – Regional Director

Citinickel Mines
AND DEVELOPMENT CORPORATION
TORONTO & PULOT NICKEL MINING PROJECTS
Kilometer 108, Barangay Bato-bato, Narra, Palawan
Brgy. Punang, Sofronio Española, Palawan
CERTIFIED ISO 14001:2015 CRN 01 104 1633368

March 9, 2022

RECEIVED
Date : 3/14/22
Name/Signature : 10:09
Division/Section :
MINES AND GEOSCIENCES BUREAU - MIMAROPA REGION

DR. EDWIN M. MOJARES
OIC Regional Director
Mines and Geosciences Bureau MIMAROPA
Department of Environment and Natural Resources
7/F DENR Building
1515 Roxas Bld., Ermita, Manila

Subject : **2022 ANNUAL ENVIRONMENTAL PROTECTION AND ENHANCEMENT PROGRAM (AEPEP)**

Dear Director Mojares:

In response with your letter dated February 4, 2022, we are respectfully submitting, as attached herewith, the revised 2022 Annual Environmental Protection and Enhancement Program (AEPEP) for Citinickel Mines and Development Corporation (CMDC) -Toronto Nickel Mining Project (TNMP) & Pulot Nickel Mining Project (PNMP) under Mineral Production Sharing Agreement No.: 229 – 2007 – IV with respect to your comments and recommendations.

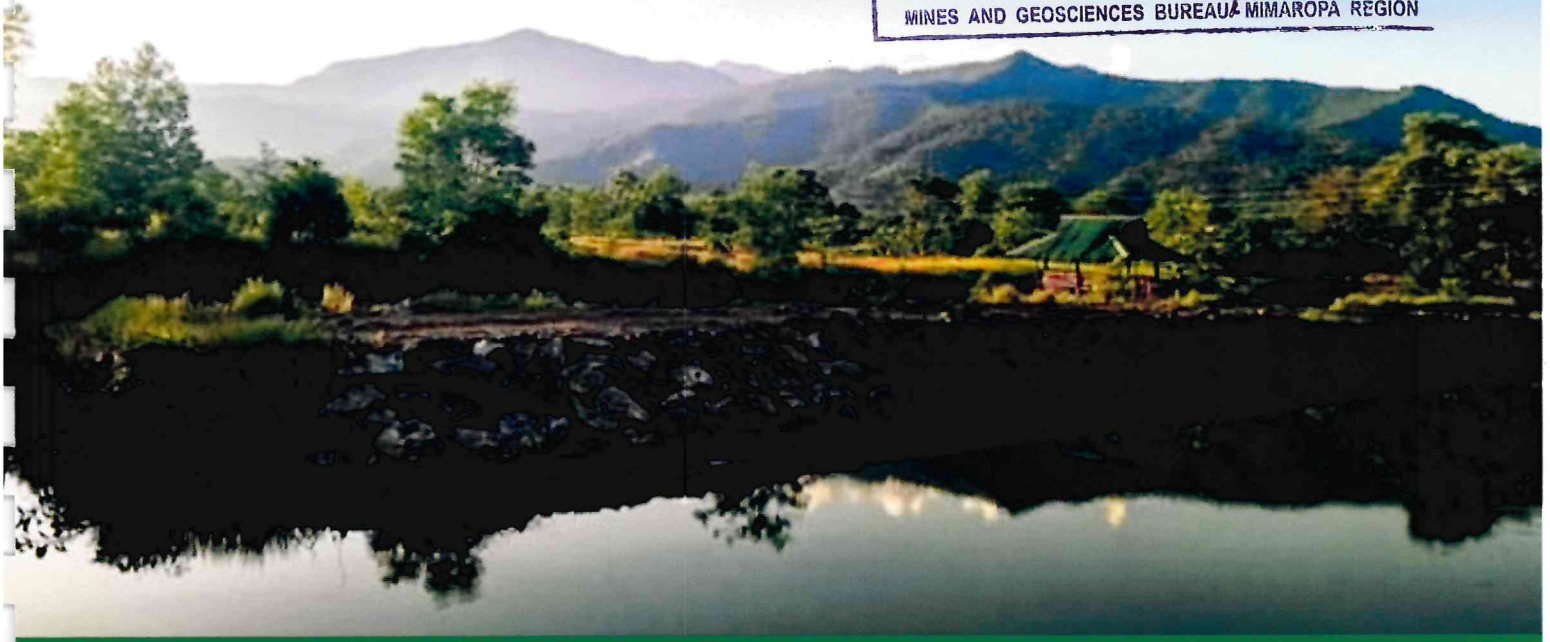
We hope that you find the documents in order.

Thank you and best regards.

Very truly yours,

ENGR. JAINAL M. UY, JR.
Resident Mine Manager

Citinickel Mines
AND DEVELOPMENT CORPORATION



2022

ENVIRONMENTAL PROTECTION AND ENHANCEMENT PROGRAM

CITINICKEL MINES AND DEVELOPMENT CORPORATION TORONTO AND PULOT NICKEL MINING PROJECTS MPSA NO. 229-2007-IV B

BGY. BATO-BATO, NARRA AND BGY. PUNANG, SOFRONIO ESPAÑOLA, PALAWAN

TABLE OF CONTENTS

1. CORPORATE DATA

Project Name:	**TORONTO NICKEL MINING PROJECT (TNMP)**
Company Name:	**CITINICKEL MINES AND DEVELOPMENT CORPORATION (CMDC)**
Office Address:	10th Floor ORE Central Building 9th Avenue Corner 31st Street Bonifacio Centre, Bonifacio Global City Fort Bonifacio, Taguig City, Metro Manila, 1630
Telephone Number:	(632) 889-1129 / 889-1130
Fax Mail Number:	(632) 888-5253
Email:	inquire@orientalpeninsula.com
Site Location:	Barangay Bato-bato (San Isidro), Narra, Palawan
Email:	cmdc.narra@gmail.com
Contact Person:	**FERDINAND M. PALLERA** President
Contact Person:	**JAINAL M. UY, JR** Resident Mine Manager

2. PROJECT DESCRIPTION

2.1. Project Details

The Citinickel Mines and Development Corporation's (CMDC) Toronto Nickel Mining Project (TNMP) is covered by the following permits:

Mining Tenement No.:	MPSA No. 229-2007-IVB
Date Approved:	January 3, 2007

Environmental Compliance Certificate No.:	ECC Reference No. 1006-0021
Production Capacity	2,000,000 DMT Nickel Ore per year

2.1.1. Contract Area

Table 1. Project Contract Area Coordinates

Parcel 1		
Corner	Latitude	Longitude
1	9°14'50.09"	118°15'44.01"
2	9°14'50.09"	118°14'51.59"
3	9°13'58.01"	118°14'51.59"
4	9°13'58.01"	118°15'17.80
5	9°14'24.05"	118°15'17.80"
6	9°14'24.05"	118°1 5'44.01"
Area = 192.0000 hectares		
Parcel 2		
1	9°13'40.97"	118°16'36.43"
2	9°13'40.97"	118°14'51.59"
3	9°12'48.89"	118°14'51.59"
4	9°12'48.89"	118°15'44.01"
5	9°12'22.85"	118°15'44.01
6	9°12'22.85"	118°16'10.22"
7	9°12'48.89"	118°16'10.22"
8	9°12'48.89"	118°16'36.43"
Area = 576.0000 hectares		
Total Area = 768 hectares		

2.1.2. Project Location

The Project is located in Barangay Bato-bato (San Isidro), Municipality of Narra, Palawan. It is centered at coordinates 9°14'50.09" to 9°12'48.89"N and 118°15'44.01" to 118°16'36.43"E. The project area is situated 150

kilometers south of Puerto Princesa, Palawan and 6 kilometers from the National Highway.

From Manila, the project site can be accessed through a direct one- hour flight to the capital city of Palawan, Puerto Princesa. Passengers also have the option to ride the commercial boat (e.g. 2Go) that reaches Puerto Princesa after a 24-hour journey.

When traveling from Puerto Princesa City via land trip, the project site can be accessed by a 2-hour land trip via the south road passing through the Municipality of Aborlan. Bus companies such as RORO Bus, Cherry Bus, and some commercial utility van services also ply the area.

The project is covered by MPSA No. 229-2007-IV-B which was approved by Department of Environment and Natural Resources (DENR) Secretary Angelo T. Reyes on January 3, 2007 with two parcels totaling 768 hectares.

Figure 1 shows the General Location Map of Citinickel Mines and Development Corporation – Toronto Nickel Mining Project (CMDC – TNMP). Larger scale of figure 1 is presented in Appendix I. Photos of land-uses in the land used map is presented in **Appendix VIII.**

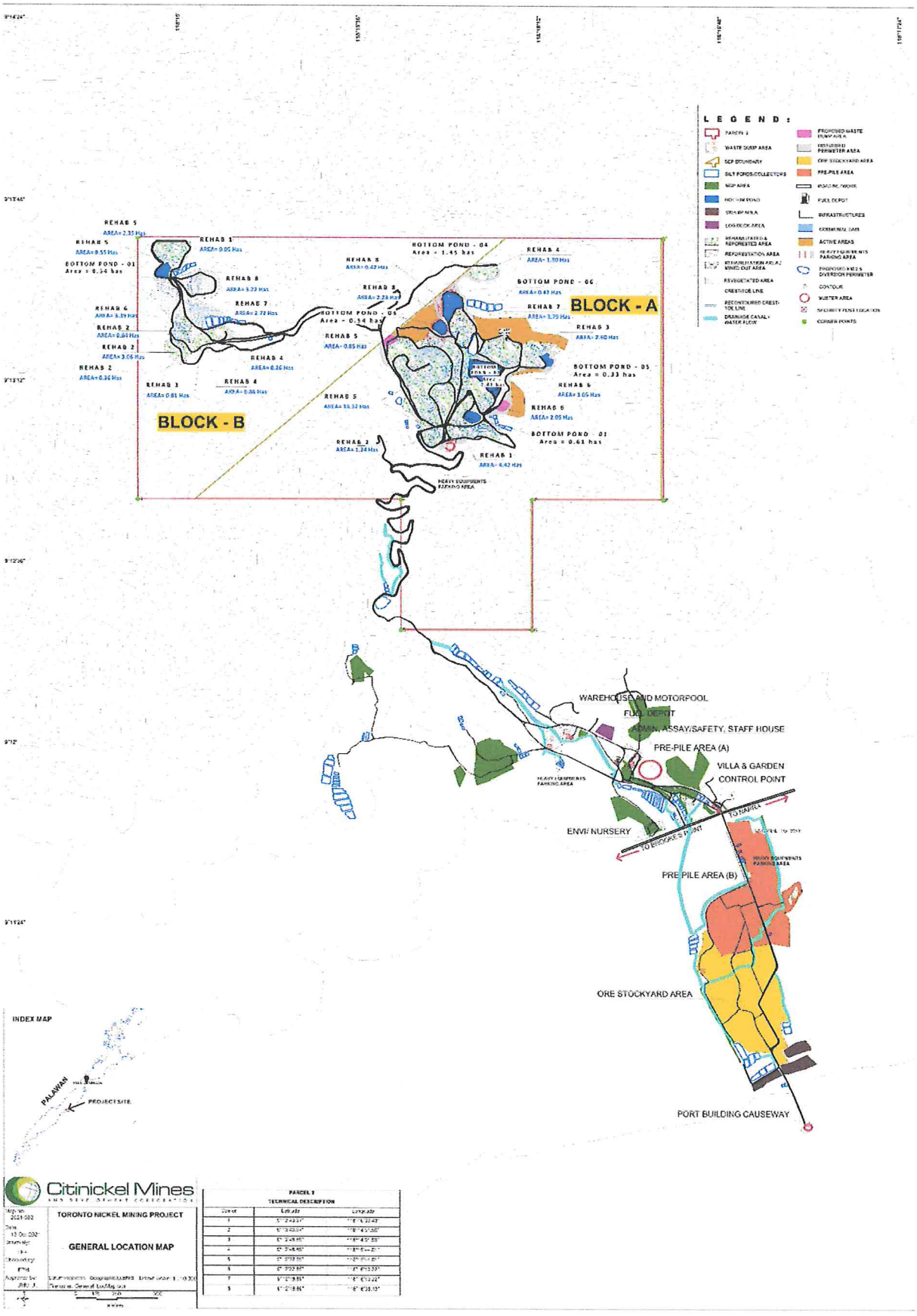


Figure 1. General Location Map

2.2. Estimated Capital Cost

The estimated initial capital expenditures and investment for the project both Narra and Española is Php 234,012,118.78. Breakdown and details of the aforementioned amount are shown in Table 2 below:

Table 2. Details of the Initial Capital Expenditures

Particulars	Cost (PHP)
Exploration Drilling	12,320,000.00
Land Acquisition	3,745,500.00
Mobilization/Demobilization	17,250,000.00
Land clearing and site preparation	5,609,297.50
Road Construction	6,339,375.00
Safety and health Management	244,090.00
Environmental cash fund	4,219,600.00
Environmental Remediation	21,493,383.00
Causeway Construction	4,600,000.00
Stockyard Development	6,265,200.00
Civil Works	16,657,750.00
General Services	3,300,000.00
Mechanical, Electrical and Laboratory Equipment	9,328,000.00
Office Equipment	2,092,200.00
Pre/Feasibility Studies	1,100,000.00
Permitting	3,080,000.00
EIS/ECC Acquisition	1,650,000.00
Occupation Fee	84,480.00
Working Capital	114,633,242.58
TOTAL	**234,012,118.78**

Ten percent (10%) of the aforesaid Initial Capital Expenditures was used by the Company in the construction and installation of the necessary environmental control facilities such as siltation pond, drainage canal, check dams, seedling nurseries and mine rehabilitation research facilities, purchase of water truck for dust prevention, etc. The allotted budget based on the 10% initial CAPEX is **23,401,211.878** Pesos.

2.3. Minerals (Type of Minerals Mined)

The minerals to be produced or mined in the project area is nickel ore with average grade of 1.40% Nickel and other associated metal and minerals such as cobalt and iron.

2.4. Mining Method

The project pertains to the mining of laterite composed of limonite and saprolite ores. Figure 2 shows the active mining area covered by Special Tree Cutting and Earth-balling Permit (STCEP) No. RII8-10-2020 in Block A, including the corresponding coordinates embedded in the picture;

Figure 2. Block A Block 3 active area

Moreover, limonite and saprolite mineral deposit requires surface mining method. The development scheme is as follows:

- Construction of access roads and/or modification of existing mine roads. Since there are already access roads that were developed from a previous small scale mining, road widening and reduction of grade or rerouting of some portions will be done. The road construction or improvement necessitated the utilization of bulldozers, grader, front-end loaders, compactor, excavator and hauling trucks (dump trucks).

- Clearing of the ore zone of vegetation. The ore zone planned to be mined is cleared of existing shrubs, bushes, trees and other vegetation.

- Stripping of the overburden. It consists of removal of topsoil, subsoil and/or waste rock and debris using hydraulic excavators or shovels. Removal of the overburden exposes the mineralized nickel ore which is mined by benching with excavators and shovels.

- Construction of benches and access ramps.

  Contour mining method will be used. It is one of the surface mining methods used in the Philippines. In this project, contour method usually has the following features:

  - 3-meter bench height
  - Multi-level mining that provides flexibility in handling various grades and tonnages
  - Mined-out areas can be used as waste dumps and bottom ponds.
  - Multiple mining areas can be programmed as the need arises.

  Areas will start from highest elevation progressing downwards to lower elevation. Earth-moving equipment like backhoes, excavators and loaders in combination with dump trucks will be utilized. All run-off mine ores (limonite

and saprolite) will be hauled passing to sampling stand heading to solar drying stockyards or Ore Stockyard areas in preparation for shipment.

Bench Parameter (Figure 3):

e = batter angle : <80°
a = pit-slope angle: <70°
n = bench height : 3m
c = berm width : 5m
Road width : 12m

Figure 3. Block A Rehab 7 benching

2.5. Ore Stockpiling

The ore is piled at pre-pile yard area according to the classification resulting from the segregation from the mine. Each pre-pile consists of 10 truckloads on which every truck shall be sampled for final reclassification. In this stage the ore is also subjected for sun drying to reduce its moisture content. Then, it shall be transferred to an ore stockyard.

The stockpile on ore stockyard area is ramp and cliff type of structure where additional materials will be pushed on the edge making the elevation higher on each dumping. This process enables the separation of fine ore (equal or below 300mm in diameter) from boulders (above 300mm in diameter). Identified boulders having low nickel content shall be considered as waste and will be used for utility works. Medium to high grade boulders will undergo a manual crushing and shall be stockpiled accordingly.

Stockpiled soil and other waste materials will also be susceptible to erosion during heavy rain which may contribute to the siltation. This might affect the quality of nearby water bodies especially the Sulu Sea. To address such, drainage canal was constructed within the perimeter of ore stockyard area which engineered to

allow run-offs to be directed to silt collector sumps and siltation ponds prior to discharge to the receiving water bodies thus mitigate the impact of siltation.

2.6. Shipping/Port Facility

Toronto Nickel Mining Project have its own shipping and port facilities with a minimum 300-meter-long by 16 meters' width rock-file causeway.

Ore in the existing ore stockyard that meet buyer's ore requirements/specifications will be hauled directly by dump trucks to port and will be loaded to Land Carrier Transport (LCT) with an average capacity of 1,260 WMT. Ore from the LCT, on the other hand, will be transported to International Vessel (buyer) with a minimum volume of 50,000 WMT capacity for direct delivery in foreign market such as China, Japan and Australia.

2.7. Estimated Production

Under the new amended Environmental Compliance Certificate (ECC) last June 6, 2012, the Company had been granted a permit to produce an annual capacity of 2,000,000 DMT of nickel ore (Please see attached amended ECC in Appendix VII). The computed overburden or waste stripping ratio is mostly 1:4.

2.8. Plant Process

CMDC has no provision yet for the processing of nickel ore. Nickel ore will be directly shipped to foreign market such as China, Japan and Australia.

2.9. Proposed Life of the Project

The Company's operation is barely eleven (11) years old since started development in the 4th Quarter of 2010. Based on the reported ore reserve and the annual projected production, TNMP shall be able to continue for another three

(3) years. Presently, the company is awaiting for the release of amended Strategic Environmental Plan (SEP) Clearance to lengthen the life of mine.

2.10. Mineral Reserves/Resources

See table 3 for the latest submitted Annual Mineral Resource/Reserve Inventory Report last January 31, 2021 for Toronto Nickel Mining Project.

Table 3. Toronto Nickel Ore Reserve

Resource Inventory		
Resource Classification	**WMT**	**Grade/Assay (Primary Mineral)**
Measured	5,165,164.90	**1.50 %**
Indicated	14,439,300.00	**1.50 %**
Inferred	19,232,123.00	**1.50 %**
Total/Average	**38,836,587.90**	**1.50 %**

2.11. Potential for Additional Reserves

Toronto Nickel Mining Project's mining claim is 768 hectares. Areas which are not still subject for drilling / detailed exploration is a potential source for additional ore reserves. Ongoing exploration works simultaneously with the conduct of mine operations will be the standard operating procedures in the mine development production activity.

2.12. Accessibility and Transportation

2.12.1. Road (Preference and Alternatives)

From Manila, the project site can be accessed through a direct one- hour flight to the capital city of Palawan, Puerto Princesa. Passengers also have the option to ride the commercial boat that reaches Puerto Princesa after a 24-hour journey (Figure 4).

When traveling from Puerto Princesa City via land trip, the project site can be accessed by a 2-hour land trip via the south road passing through the

Municipality of Aborlan. Bus companies such as RORO Bus, Cherry Bus, and some commercial utility van services also ply the area.

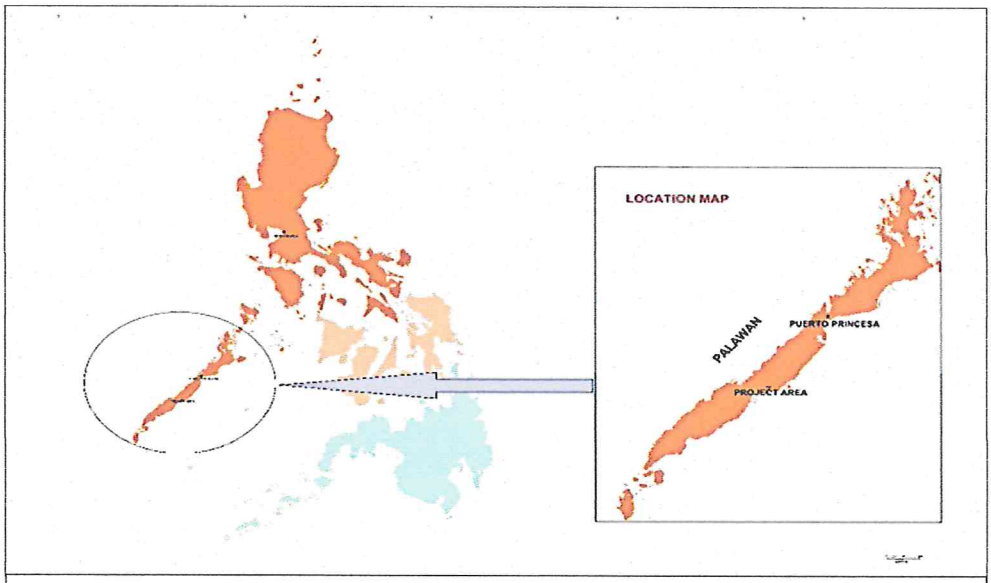


Figure 4. Location Map of Project Area

2.13. Land Used and Summary of Disturbed Areas

As mentioned, CMDC-TNMP's mining claim is 768 hectares with two (2) parcels. As of November 20, 2021, out of 768 hectares, 85.78 hectares is classified as disturbed areas while the remaining 682.22 hectares is undisturbed areas. Disturbed areas are categorized by the company in accordance with the definition specified at Section 4 of DAO 2018-19 otherwise known as *"Guidelines for Additional Environmental Measures for Operating Surface Metallic Mines."* Summary of Land-used within MPSA is presented in Table 4 while the summary of disturbed areas is reflected in Table 5.

Table 4. Land-Used of CMDC-TNMP's Mining Claim

Particulars	Area (Hectares)
1. Parcel 1	
1.1 Disturbed areas	0.00
1.2. Undisturbed areas	192.00
2. Parcel 2	
1.1 Disturbed areas	85.78
1.2. Undisturbed areas	490.22
TOTAL	**768.00**

Table 5. Summary of CMDC-TNMP's Disturbed Areas

Particulars	Block A	Block B	Total (has.)
1. Disturbed areas	**65.93**	**19.85**	**85.78**
1.1 Active Area	**11.77**	**0.00**	**11.77**
1.2 Idle/Gray Area	**2.97**	**0.00**	**2.97**
1.3 Rehabilitation Activities			
1.3.1 Rehabilitated & Reforested Area	36.44	7.13	**43.57**
1.3.2 Revegetated Area	1.05	11.14	**12.19**
1.3.3 For Reforestation Area	0.00	0.00	**0.00**
1.3.4 For Rehabilitation Area	4.30	0.00	**4.30**
1.3.5 For Temporary Revegetation Area	0.00	0.00	**0.00**
SUB-TOTAL	**41.79**	**18.27**	**60.06**
1.4 Ancillaries			
1.4.1 In-pit road	3.73	1.04	**4.77**
1.4.2 Siltation/Bottom Ponds	5.55	0.54	**6.09**
1.4.3 Bunk House and Parking Area	0.12	0.00	**0.12**
SUB-TOTAL	**9.40**	**1.58**	**10.98**

2.14. Utilities

2.14.1. Power Supply

The average daily power consumption of the project for year 2021 (January-September 2021) is around 1,586.83 kwh/day. Palawan Electric Cooperative (PALECO) provides daily electricity requirements of the office lightings, laboratory equipment's and pier facilities for dry docking maintenance and barge loading operations. The Company maintains generator sets powered by diesel engine which utilized when power interruption occurs as listed in table 6.

Table 6. List of Generator Sets at Toronto Nickel Mining Project

Fire Burning Equipment	Location
1. DENYO 45 KVA	Port
2. DENYO 45 KVA	New Motorpool
3. DENYO 45 KVA	CMDC Clubhouse/Villa
4. CUMMINS 125 KVA	Powerhouse (Admin)
5. CUMMINS 250 KVA	Powerhouse (Admin)
6. AIRMAN 100 KVA	New Motorpool (Spare Unit)
7. 50 KVA CUMMINS	Port (Spare Unit)
8. Doosan Ingersoll Rand 6 KVA	Minepit

2.14.2. Water Supply

The estimated daily water consumption of the project is around 30 cubic meter/day. Water is supply from a dug well and nearby spring. Water from dug well is being pump to a water tank for distribution to company employees' barracks and offices. On the other hand, water from nearby spring is collected to water tank (filtration box) for distribution to offices and other infrastructures within the company premises not covered by water from dug well. Water for road sprinkling activity is sourced-out from the siltation ponds and bottom ponds.

2.15. Mining Equipment

2.15.1. List of Mining Equipment

Table 7. List of Mining Equipment (as of November 27, 2021)

Item code	Description	Quantity
a.	Backhoe	25
b.	Bulldozer	2
c.	Road Grader	1
d.	Compactor	3
e.	Dump Truck	28
f.	Wheel Loader	4
g.	Water Truck	5
h.	Fuel Truck	2
i.	Trailer Truck	1
j	Boom Truck	2
k.	Service Elf	2
l.	Service Truck (Military)	2
m.	Service Vehicle (Jeep)	2
n.	Official Vehicle	9
o.	Ambulance	1
p.	Landing Craft Tank (LCT)	6
q.	Tug Boat	1
r.	Barge	1

Note: LCT, Tugboat and Barge are rental units

2.15.2. List of Fixed Equipment

Fixed equipment that was provided and installed in the project is seen below:

Table 8. List of Fixed Equipment

Item code	Description	Quantity
a.	Generator Set	7
b.	Tower Light	2
c.	Xray Fluorescence (XRF)	2
d.	Drying Oven	4
e.	Crusher	2
f.	Pulverizer	1
g.	Analytical Balance	1
h.	Top loading Balance	2

2.16. Workforce Information

2.16.1. Total Operational Workforce

A total of one hundred three (103) personnel are regularly employed for the operation. For camp security, a total of twenty-four (24) security guards were hired through a security agency. They work on two (2) shifts (7:00 am to 7:00 pm, and 7:00 pm to 7:00 am).

Mine Environmental Protection and Enhancement Office (MEPEO) is the one responsible for environmental-related programs. Mine Safety and Health Office which is responsible for implementing the safety rules and regulations and to oversee any unsafe act and unsafe condition in work place. Both offices are directly reporting to the Resident Mine Manager. Table of organization for the project is further elaborated in Appendix II.

2.16.2. Housing Option

Company officials (e.g. Managers, Senior and Junior Staff) are provided with staff house located within the property of the Company. Laborers who are from far places are provided with bunkhouse while those locally-hired reside in the host and neighboring barangays. Security personnel also reside in bunkhouse within the vicinity of the Company.

2.17. Development Schedule

2.17.1. Site Development and Production Start-Up

The project started its development in the 2nd quarter of year 2011. The approximate volume of production for the year 2011, 2012 and 2013 were 261,192 metric tons, 1,359,505.25 metric tons and 1,150,275.361 metric tons, respectively.

For the year 2022, the project will sustain its production to attain the target production of 2,000,000 Dry Metric Tons (DMT) as per reflected to the company's amended Environmental Compliance Certificate (ECC). Table 9 shows the Development and Production Gantt Chart.

Table 9. Site Development and Production Start-Up

Activities	Month												Remarks
	1	2	3	4	5	6	7	8	9	10	11	12	
1. Equipment Mobilization													Completed
2. Access Road Improvement/Widening													As necessary
3. Construction of Mine Facilities													
- Assay Laboratory													Completed
- Mine Office/Warehouse/ Mine Office													Completed
- Temporary Bunkhouse Structure													Completed
- Motor pool/Mechanical Shop													Completed
- Sample Preparation House													Completed
- Sampling House													Completed
4. Mine Environmental Structures													
- Ore Stockyards/Beneficiation													Completed
- Settling Ponds/Sumps													Completed
- Drainage Systems													As necessary
- Ore Stockyard Expansion													As necessary
- Barging Area/Causeway Maintenance													As necessary
5. Extraction of Minerals													
- Ore stripping													As necessary
- Ore Mining (Continuing)													As per
- Ore Stockpiling (Continuing)													As per schedule
6. Ore Shipment													As per schedule

Note: The above development and production activities were done during the initial stage of the development/production activities.

Legend:

- Completed during initial stage of development prior to mining operations.
- As the need arise. Regular maintenance usually conducted during dry season.
- Continuing activity based on the approved schedule of ore mining.
- Continuing activity based on the approved schedule of ore stockpiling
- As per schedule based on world market price.

3. SPECIFIC STRATEGY TO LIMIT AND CONTROL THE IMPACTS

3.1. Land Resources and Vegetation

Opening a mine particularly using stripping and bench mining method will necessitate clearing of vegetation to extract the nickel ore. The result of the development is a temporary land disturbance which will eventually be rehabilitated and reforested.

The specific disturbance and impact to the environment are as follows:

a. Land deformation and creation of barren surface that will be exposed to rainfall and heat of the sun;

b. Eventually, during rainy season, open space consisting of road cuts, mine benches/mine openings, will be disturbed and process of erosion and siltation will be active on this barren land surface;

c. Potential contamination of creeks and rivers with laterites; and

d. Potential exposure of dry land surface with loose soil particles to wind and heat producing dust and/or particulates which will be aggravated with the passage of fleet of haul trucks.

As required by the laws, the above identified land disturbances and impact will be fully addressed with appropriate environmental mitigating measures as mining of nickel advances.

3.1.1. Progressive Rehabilitation

3.1.1.1. Top Soil and Subsoil Management

The Company practices the progressive rehabilitation method. This involves the staged restoration of the mined-out areas during the exploitation and ore extraction phases. Mine wastes produced during the stripping and extractions are utilized for contouring and soil matting.

Figure 5. Contouring and Topsoil Matting in Block A Rehabilitation areas

On the other hand, recovered mine waste from desilting of silt control structures is temporary stored in waste dumping area (see coordinates in Appendix XI). Further, appropriate mitigating measures in waste dumping area such as regular maintenance of its perimeter canal will be continuously implemented.

Top soil has the highest concentration of organic matter and it is where most of the biological soil activities occur, hence, it is a protocol of the Company to utilize the top soil to return the productivity of the mined-out/disturbed areas. On the other hand, subsoil will be also utilized, since lower percentage of organic matter and humus is still available. Using of biodegradable wastes such as dried leaves and small twigs for enrichment of soil through the process of decomposition is also being practiced. As part of the progressive rehabilitation, road embankments and other land surface no longer needed for operation had been subjected for revegetation.

In continuous compliance with DAO 2018-19 otherwise known as *"Guidelines for Additional Environmental Measures for Operating Surface Metallic Mines"*, the Company will be considering the stripping activities for topsoil and subsoil collection for new potential mining areas application once approved, which shall be stockpiled in designated areas (50 -100 meters adjacent to potential mining areas) separately for revegetation and rehabilitation purposes; Provided, that if the said soil material is not utilized within six months, the same shall be covered by vegetation or any equivalent soil conservation measures such as covering of materials using coconet or whatever scientifically applicable to retain its properties and protect soil organisms.

Moreover, the Company is also committed to rehabilitate the denuded and non-mineralized areas outside mining claims adversely affected by human-induced activities such as uncontrolled forest extraction for timber and fuel wood production, forest fires, unplanned settlements and slash-and-burn. Those were included for the continuous support of the Company to the National Greening Program (NGP) of the Government.

3.1.1.2. **Progressive Rehabilitation Program**

From year 2012 to date, the Company has planted 43.57 hectares of mined-out areas wherein Agoho (*Casuarina equisetifolia)* is the dominant species planted. Endemic species such as Narra, Ipil, Batino, Kupang and Malabayabas, among others, were also incorporated. Introduction of grasses, creeping vines and native ornamental trees such as Palawan Cherry, Fire Tree and Alibangbang, among others, was started. Table 10 shows the summary of the mined-out rehabilitation accomplishment. The corresponding map of the mine rehabilitation areas is presented in Appendix III.

Table 10. Summary of Rehabilitation Accomplishment

Year	Area (Name)	Area (has.)	Species Planted
2012, 2019	Block A Rehabilitation 1	4.42	Narra, Agoho, Ipil, Moning, Duguan, Kansilay, Batino, Kawayan-Tinik, Ipil
2012	Block A Rehabilitation 2	1.24	Narra, Agoho, Ipil
2015, 2019, July 2020	Block A Rehabilitation 3	2.48	Agoho, Batino, Maladuhat, Malakatmon, Malapapaya, Kawayan-tinik
2015, 2016, 2017	Block A Rehabilitation 4	1.30	Agoho, Narra, Ipil, Batino
2016, 2017, 2019, 2020, January & September 2021	Block A Rehabilitation 5	18.38	Agoho, Apitong-Baboy, Apian, Batino, Bunot-bunot, Butterfly Tree, Ipil, Malabayabas, Maladuhat, Malapapaya, Moning, Narra, Nato, Palomaria, Sandana, Supa, Udling, Fruit Trees (Bayabas, Duhat, Sampalok)
2016, 2017, 2018	Block A Rehabilitation 6	2.05	Agoho, Narra, Ipil, Batino, Mosquito Tree, Udling, Palawan Cherry, Grass
2017, 2018	Block A Rehabilitation 7	4.35	Agoho, Batino, Maladuhat, Udling, Palawan Cherry, Fire Tree, Narra
2019	Block A Rehabilitation 8	2.22	Agoho, Batino, Kandis, Malapapaya, Mancono, Nato, Sandana, Udling, Kawayan-tinik
SUB-TOTAL		**35.95**	
2016	Block B Rehabilitation 1	0.05	Agoho, Narra, Grass
2017, 2018	Block B Rehabilitation 2	3.06	Agoho, Udling, Batino, Duguan
2017	Block B Rehabilitation 3	0.81	Agoho
2016	Block B Rehabilitation 4	0.86	*Acacia mangium*, Agoho, Narra
2016, 2020 (enrichment)	Block B Rehabilitation 5	2.35	*Acacia mangium*, Moning, Narra, Batino, Udling
SUB TOTAL:		**7.13**	
GRAND TOTAL		**43.57**	

Rehabilitation accomplishment as of November 20, 2021

Total Area Rehabilitated at Block A	=	36.44 hectares
Total Area Rehabilitated at Block B	=	7.13 hectares
Total Area Rehabilitated in Blocks A & B	=	**43.57 hectares**

Priorities for 2022 will primarily focus on the remaining target from 2021 AEPEP (Rehabilitation 7 Block A) and new areas in Block A Mine Rehabilitation area 5, 6 & 8. Additionally, previous year's Progressive Rehabilitation Program (PRP) areas will be consistently maintained. Schedule of activities is presented in Table 11 below and corresponding map in Appendix IV.

Table 11. Schedule of 2022 Progressive Rehabilitation Program

Area	Size, ha.	Contouring	Top Soil Matting	Planting	Number of seedlings	Species
Block A Rehab 7*	1.00	January-February	February-March	March	2,500	Agoho, Batino, Ipil, Malabayabas, Maladuhat, Narra, Palomaria, Sandana and other endemic species found in the adjacent forested area
	1.00			July	2,500	
Block A Rehab 8	0.46	March	March	July	1,150	
Block A Rehab 6	2.00	April-June	May-June	July-August	5,000	
	0.65	July-August	August	October	1,625	
Block A Rehab 5	0.89	October-November	November-December	December	2,225	
TOTAL	**6.00**				**15,000**	

**Remaining target from 2021 AEPEP*

Note: See Appendix V for Detailed Coordinates of Progressive Rehab

Endemic and native species found within the vicinity or untouched forest of the mine site will be the primary plant types to be continuously utilized in the rehabilitation of mined-out areas in order to restore the natural setting of the area prior to commencement of mining operation. Collection of wildlings and seeds of Mancono, Agoho, Batino, Malabayabas and Narra, among others, will continuously carried-out as part of the regular nursery operations of the Mine Environmental Protection and Enhancement Office (MEPEO) to make sure that these plants will be the main species for reforestation. The declared mined-out area will be continuously rehabilitated; enrichment planting will be conducted after the pioneer species are fully grown. After an interval of at least 1-3 years, the indigenous climax species will be introduced. Planting of introduced species will be discouraged.

Should it be necessary, site preparation such as re-contouring and top soil matting will be undertaken before the onset of the rainy season to prevent silt and sediment generation. Planting, with a spacing of two (2) meters by two (2) meters on previously-declared mined-out areas will be conducted during the rainy season as this can also help ensure high survival rate of newly transplanted seedlings.

3.1.1.3. Temporary Revegetation Program

Section 5.d. ii. of DAO 2018-19 states that *"Temporary revegetation or progressive rehabilitation shall be implemented immediately on disturbed areas exceeding the maximum disturbed area limit provided based on declared annual production."* The maximum combined allowable disturbed areas for Toronto and Pulot Nickel Mining Projects (T&PNMP)

Figure 6. Block A Rehabilitation 6 TRP

based on the mining annual production rate is 60 hectares. To conform with the above DAO, Toronto Nickel Mining Project (TNMP) declared excess disturbed areas covering 12.19 hectares located in Blocks A & B mined-out areas subject for Temporary Revegetation Program (TRP) by means of planting shrubs, vines, grasses, and alike. TRP areas were accomplished planting on July 2020. The summary of TRP accomplishment is reflected in Table 12 while its Technical Description is indicated in Appendix VI.

Table 12. Summary of Temporary Revegetation Program Accomplishment

Month/Year	Area (Name)	Area (has.)	Species Planted
June 2019, 2021 (enrichment)	Block A Rehabilitation 6 TRP	1.05	Malakatmon, Vines
June 2020	Block B Rehabilitation 2 TRP	1.0	Itch grass, Napier, Nut sedge, Pigeon Pea
June 2020	Block B Rehabilitation 4 TRP	0.26	Tikog grass
2015, 2016, 2017	Block B Rehabilitation 5 TRP	0.55	Itch grass, Nut sedge, Pigeon Pea, Railroad vine (Palang-palang)
January 2020, May-July 2020	Block B Rehabilitation 6 TRP	3.39	Cassava, Castor oil (Makasla), Humidicola, Napier grass, Rail road vine (palang-palang), Water spinach (kangkong)
January-June 2019, June-July 2020 (enrichment)	Block B Rehabilitation 7 TRP	2.72	Cassava, Castor oil (Makasla), Minunga, Napier grass, Rail road vine (palang-palang), Water spinach (kangkong)
April-June 2019, January-June 2020	Block B Rehabilitation 8 TRP	3.22	Bagtok (Bamboo), Castor oil (Makasla), Napier grass, Rail road vine (palang-palang), Water spinach (kangkong)
TOTAL		**12.19**	

For the calendar year 2022, the company will be regularly maintaining the established TRP areas. Activities such as regular patrolling and watering especially during dry season shall be conducted on established TRP areas.

3.1.2 National Greening Program Commitment

The Company enrolled to the National Greening Program (NGP) and committed to donate or plant seedlings equivalent to the total disturbed area of the project.

Figure 7. Seedlings donation to Narra Tourism Office and MENRO

CMDC has started the donations of different kinds of seedlings since the first quarter of Calendar Year 2011 to various government agencies/ offices, private sectors/ individuals, schools/ academes and nearby barangays. Aside from seedling donation, the Company is complying its commitment to the program by planting and maintaining trees in non-mining areas within the Company premises. Regular monitoring, protection and maintenance were carried-out to ensure high survival rate of the existing NGP areas.

The Company will continue to support the greening program of the DENR. Planting of trees within the Company premises will continue to be undertaken; planting of fruit bearing trees will be encouraged in lieu to the forest trees. Seedling donations will be extended nationwide, if possible, provided that the transportation will be shouldered by the second party.

3.1.3 Production of Large Planting Materials

Large planting materials will be continuously use in reforestation area and in mined-out rehabilitation area. Further, in line with the condition stipulated in STCEP to replace 100 trees in each tree to be cut/affected by mining operations, the company is committed to produce 382,000 assorted endemic seedlings by the end of December 2021. By year 2022, CMDC-TNMP will continue to conduct maintenance of seedlings stock in Nursery. Moreover, the company will produce 43,000 assorted seedlings and 1,500 assorted bamboo

species in compliance with the commitment to the Mines and Geosciences Bureau (MGB).

Figure 8. Out-planting area in Central Nursery

3.1.4 Nursery Operation and Maintenance

CMDC-TNMP established a permanent seedlings nursery located at the camp site with a capacity of 400,000-700,000 seedlings depending on the size of potting bags to be use. Satellite nursery, with a capacity of 10,000 wildlings, was also established in the elevated area of mine site for adaptation/acclimation purposes.

Figure 9. Central Forest Nursery

Figure 10. Satellite Nursery

For the past years, the seedlings produced were disposed either by tree planting within the tenement throughout the year or donation in compliance with the NGP. As of November 8, 2021, the company produced 154,971 assorted seedlings in Nursery. Table 13 shows the inventory of seedlings in the nursery as of November 8, 2021.

Table 13. Inventory of Seedlings as of November 8, 2021

At Central Forest Nursery			
Forest Trees		**Nursing Stage**	**Out-planting Stock**
1	Agoho	1,074	2,577
2	Akle	200	0
3	An-an	850	0
4	Bangkalaan	0	600
5	Baslayan	0	160
6	Batino	36,662	12,370
7	Bunog	13,373	0
8	Duguan	175	0
9	Ipil	1,484	2,094
10	Mala Avocado	25	0
11	Malabayabas	296	0
12	Maladuhat	0	900
13	Malapapaya	115	0
14	Moning	51,784	8,418
15	Mosquito Tree (Neem)	1,272	104
16	Narra	3,209	3,452
17	Palomaria	1,524	1,000
18	Sakot	1,680	0
19	Supa Tree	200	289
20	Udling	0	805
21	Wild Moning	570	0
TOTAL		**114,493**	**32,769**

Fruit Tree			
1	Aratiles	0	520
2	Cacao	0	395
3	Citrus (Camandarin)	0	36
4	Candes	50	0
5	Cashew	5	480
6	Coffee	3,842	0
7	Duhat	520	150
8	Guyabano	48	16
9	Langka	22	0
10	Lanzones	0	100
11	Rambutan	0	270
12	Sampalok	0	120
13	Santol	75	0
TOTAL		**4,562**	**2,087**
Ground Cover/Ornamental/Others			
1	Japanese Bamboo	46	123
2	African Palm	0	150
3	Apian	0	125
4	Golden Shower	70	150
5	Fire Tree	1,004	2,132
6	Palawan Cherry	22	234
7	Bangkal	0	2,000
TOTAL		**1,142**	**4,914**
SUB TOTAL		**109,070**	**39,770**
GRAND TOTAL		**159,967**	

As part of soil fertility enhancement, the Company has engaged in vermi-composting to augment the volume of fertilizers needed in the future. Carbonized and composted rice hull from the nearby rice mills are collected by the MEPEO and used as planting medium in nursery.

3.1.5 Annual Research Plan

For the year 2022, CMDC-TNMP will provide third-party research study on soil and water quality assessment of allegedly-affected farmlands in Brgy. Bato-bato (San Isidro), Narra in line with the proposal of Regional Investigation and Assessment Team (RIAT) chargeable to Development of Mining Technology and Geosciences. Also, the project will be conducting research entitled "Geotagging of Indigenous Mother Trees in Barangay Bato-bato, Narra, Palawan." This study will be completed on December 2022. Furthermore, the Introduction, Methodology and Gannt Chart of this study is reflected in Appendix XII.

3.2 Monitoring

The MEPEO will spearhead the monitoring of all rehabilitation and reforestation program of the Company. Third-party consultants will also be commissioned to provide a more detailed and comprehensive flora and fauna assessment covering the actual mine site and adjacent forest patches, if necessary. For the continuous in-house monitoring, the subjects will be, but not limited to, plant growth, and flora and fauna recolonization. Although these are the main emphases of the monitoring, other factors will also be considered as the activity progresses. At least three (3) personnel shall do the monitoring/assessment regularly with random time schedule and sample plots and plants. A quick overview of the monitoring activity is shown in Table 14:

Figure 10. In-house Flora Monitoring

Table 14. Monitoring of Restoration Development in Mined-out Areas

Subject	Number of Samples	Method	Frequency
Plant height	5 plants per plot (5 plots per rehab area)	• Physical measurement using meter stick • From base to the tip of the top-most leaf	Bi-Monthly
Plant size (diameter of main stem)	5 plants per plot (5 plots per rehab area)	• Physical measurement using caliper or tape measure • Part of the main stem will be marked to ensure that measurement will be taken only at the same spot	Bi-Monthly
Plant recolonization	5 plots per rehab area	• Visual inspection/ assessment • Comparison of the presence of introduced plants versus volunteer plants	Bi-Monthly
Fauna monitoring	5 plots per rehab area	• Visual inspection/ assessment	Bi-Monthly

3.3 Water Resources

There are Four (4) impact water resources, three (3) river systems and one (1) marine water. These are the following:

a. Balitien River (mine impact area)
b. Purok 7 Communal Dam (mine impact area)
c. Pinagduguan River (mine impact area)
d. Brgy. Bato - Bato Marine Coastal Areas (pier loading area)

3.3.2 Sediment Control

The Company has been continuously implementing siltation prevention measures such as sediment barriers and containment ponds at strategic places to avoid siltation of adjacent river systems, the Balitien, Purok 7 Communal dam, Pinagduguan River and coastal waters.

The siltation ponds are designed to contain all silted run-off mine water. This allows the silt to settle before discharging the clear effluent into nearby tributaries. The Company continues to improve these siltation prevention measures by adding more silt collector sumps whenever necessary and periodically desilting these to help maintain their holding capacities. Series of siltation ponds and siltation pond's compartments have constructed. These structures not only improved water retention within the ponds but also allowed desilting activities to be undertaken manageably at any time, even during rainy season (please see attached CMDC-TNMP Environmental Structures in **Appendix IX**).

Regular desilting and maintenance of siltation ponds, bottom ponds and silt collector sumps were thoroughly conducted as scheduled or necessary to attain its maximum serviceable usage and capacity.

The silt materials from siltation ponds were hauled and temporarily stockpiled to the designated waste dumping area for future utilization. Likewise, perimeter canal has also constructed in waste dumping area to prevent the spillage of silt to the nearby adjacent creeks/rivers.

Figure 12. Desilting of Silt Control Structures

As environmental control strategies, all avenues of run-off that may contaminate water ways are provided with drainage channels as control structures that will divert water to silt traps, sumps and eventually to silt ponds for containment. Control structures such as drainage systems and siltation ponds are intended to trap sediments, silts and reduce the velocity of runoff. Natural flow of stream/creek will be maintained.

The target schedule of desilting/maintenance of siltation control structures were reflected in the AEPEP matrix of activities including the cost of implementation hereof.

3.3.3 Slope Stabilization of Ore Stockyards (Active and Non-Active)

3.3.3.1 Low Grade Ore, Waste, and Top Soil

Stripped-off top layer of soil were recovered and used in rehabilitating the mined-out areas. Management of soil and low grade ores is included in the mine operation cost.

3.3.4 Buffer Zone Management

A 20-meter buffer zone shall be established inward from the Mining Tenement Boundary, and outward from the edges of the normal high waterline of rivers and streams that are within the Mining Tenement area. Extraction activities and

facilities shall not be allowed within the said buffer zone, except for necessary access roads and bridges. Likewise, to date, there is no existing facilities within the buffer zone required to be transferred, except access road. Please see distance of the company's Ore Stockyard area (OSY) and active mining areas from the buffer zones as reflected to the maps on **Appendix XII and XIII,** respectively, for reference.

3.3.5 Pier Stockyard and Temporary Stockyard

The company has no pier stockyard as temporary stockpile area for ore shipment. Presently, the pre-pile yard and ore stockyard has an area of 51.09 hectares enough to accommodate approximately 3 Million WMT of ore. The ore stockyard area has a distance of 281 meters from the coastline.

3.3.6 Road Maintenance

3.3.6.1 Haulage Road (Ore Stockyard)

Figure 13. Scraping of Hauling Road

It is necessary for the efficient transport of nickel ore and waste materials as well as in the environmental control and safety of trucks the proper maintenance of haul roads (mine area roads and main haul road). Mine area haul road includes the access from active mining areas to pre-stockpiled and final stockpile areas, waste dumpsite and topsoil dumping areas.

Haul road distances vary as nickel ore extraction advances and progressive rehabilitation is always on the top of the schedule of activity. With regards to the main haul road, year round maintenance

is to be conducted by backfilling, road grading/leveling, compaction and water sprinkling. The length of the main road that connects mine site and pier is approximately six (6) kilometers.

3.3.7 Maintenance and Monitoring Activities

Regular monitoring of environmental facilities (i.e. silt collector sumps, siltation ponds, bottom ponds and dikes, embankments, water levels, color, and discharge) are continuously implemented in a daily basis to ensure the efficiency of the structures to contain/retain the certain level of water in the siltation ponds and silt collector sumps. Replacement of gabions and geo-textile filter materials are also conducted regularly or as needed.

3.4 Ground Water

The existing mine operations do not use any toxic chemicals nor produce toxic materials such as tailings, acid drainage, among others. Hence, there is no chance of contaminating the ground water resources from the latter toxic substance.

Generated solid wastes are properly segregated, collected and disposed in a regular basis according to waste classification in compliance with RA 9003 (Ecological Solid Waste Management Act). Biodegradable waste is placed in compostable facility which utilize in Mine Rehabilitation areas; Recyclable waste is stored in Materials Recovery Facility (MRF); and Residual Waste is temporarily stored at the Residual Waste Containment Area (RCA) while awaiting to the completion of repair works of Municipal Sanitary Landfill. The Company also adheres strictly with the international standard stipulated in ISO 14001:2015 (Environmental Management System).

Moreover, the Company is also strictly complying with Republic Act (R.A.) 6969 otherwise known as *Toxic Substances and Hazardous and Nuclear Wastes Control Act* of the Philippines and its Implementing Rules and Regulations (IRR). All hazardous wastes are properly stored in the temporary hazardous waste storage facility of the Company and transported/treated by the 3rd Party DENR-Accredited transporter /treater of hazardous waste. Used oil and oil-contaminated drums are stored in a 10 x 10 m open storage area with concrete and impermeable flooring provided with a standard drainage. The lowest point of the flooring is provided with oil-water separator with series of compartment. Spilled oils are washed by water and flow towards the separator compartment. The oil-water separator operates simply by the concept of difference in specific gravity. In an oil-water mixture, water, being heavier, separates forming the lower layer while the oil floats over the water. The oil layer is decanted and stored in drums while the water flows through the drain pipe towards the drainage canal.

Figure 14. Temporary Hazardous Waste Storage Facility

The Company's diesel fuel requirements are being delivered in bulk by fuel tanker and transferred to the storage tanks through pumping method. The storage tank is lined with an impervious bund-wall to contain 110% of the total volume of the tank to confine oil spillage in case of tank breakages. Likewise, the storage tank area is provided with secondary containment and oil-water separator unit.

3.5 Noise

The sources of noise pollution may come from the following operations:

a. From use of heavy equipment during mining, loading and road maintenance operation; and,

b. Passage of hauling trucks along roads adjacent to host barangays and neighboring communities and residential areas.

3.5.2 Control Strategies

Noise pollution in the project area and vicinity is expected to be well within the standard limit set by the DENR and Department of Labor and Employment (DOLE). However, as a means to further control the noise coming from the mining operation due to utilization of heavy equipment and during hauling of nickel ore from the mine site to pier, the following measures to control or limit noise within DENR Standard is being implemented:

a. Instead of using explosives in breaking hard rock portion of the mine area, hydraulic rock breakers are utilized, thereby reducing the generation of noise from explosion of explosives;

b. Series of humps along the haulage road have been constructed to force the Company and contractor's vehicles to slow down, thereby reducing noise level. Whenever necessary, silencers and mufflers are installed in machines generating uncontrollable noise levels;

c. The project site is located far away from the communities. Thus, construction of sound barriers is not necessary. However, a portion of traversed haulage road is exposed, where haulers of beneficiated ore to the ore stockyard regularly traveled during dry season. The Company

planted different kind of giant endemic species such as Agoho, Narra, among others, along the side of road network to act as sound barriers;

d. Regular maintenance, check-up and replacement of mufflers of Company vehicles and contract haulers of nickel ore were performed as scheduled to minimized the noise generation;

e. All drivers are regularly instructed during the safety talk that truck speed shall be limited to 10-20 kph when travelling within populated areas or national highway;

f. In-house noise monitoring using hand held or portable digital noise meter were regularly performed by Mine Safety and Health Department to check the level of noise in the affected areas; and,

g. Provision of ear muffs or earplugs to heavy equipment operator, whenever necessary.

3.6 Air Quality

In nickel mining and hauling operation, dust generation is the main identified impact due to very fine lateritic soil particles produced as a result of soil excavation, transportation and stockpiling. However, since the main sources are already known, its control and prevention will be one of the activities in this program. Hence, it is a mandatory requirement to have the technical information through sampling of air to determine which areas of operation is expected to exceed the DENR standard for air quality so that appropriate mitigation will be implemented.

Parameters that are necessary to be monitored is the Total Suspended Particulate (TSP) and/or Particulate Matter (PM-10) pursuant to RA 8749 otherwise known as "*Philippine Clean Air Act*" and its Implementing Rules and Regulations (IRR).

3.6.2 Control Strategies

3.6.2.1 Dust Suppression Strategies

During dry season and any time of the day when dust emission are noted, regular road water sprinkling are conducted to minimize the dust emission. The total length of the road being sprayed with water is approximately 7 kilometers starting from the pier up to the mine haul road at the ore stockyard. The number of water trucks to be used is five (5) units.

Figure 15. Road sprinkling activity

There will be no specific hours of water sprinkling. It will be the policy of the Company to continuously conduct water sprinkling as often as necessary which starts at 6 AM up to 7 PM. Other control measures being implemented are the following:

a. Maintaining a speed limit to 10 kph and a maximum of 20 kph;

b. Constructing road humps across the haulage road to somehow reduce the speed of hauling trucks and other vehicles;

c. Planting of trees, which act as dust curtain, along sides of the haulage road and perimeter of Ore Stockyard area;

d. Proper maintenance of haulage road through the use of road grader and road roller/compactor, bringing the road to a near paved-road status;

e. Using minimum drop height during ore loading to minimize fugitive dusts;

f. Stabilizing and re-vegetating mined areas; and

g. Planting of fast-growing trees, which act as wind breakers/dust curtain, around the open storage areas to prevent fugitive dust emission by wind action.

3.6.2.2 Smoke Emission Strategies

Citinickel ensure that all equipment and vehicles entering the company premises conforms to the provisions stipulated in R.A. 8749 (Philippine Clean Air Act of 1999) and it's implementing rules and regulations.

3.7 Social Issues

Social issues such as those that are raised by Non-Government Organization's (NGO's) and anti-mining groups will be addressed by the Company. Continuous Information and Education Communication (IEC) Campaign about the programs of CMDC on environmental protection, operations, social responsibility and Social Development and Management Program (SDMP) including the progressive rehabilitation strategies to address the issues and concerns of the rice farmers.

CMDC will maintain the line of communication open and transparent to the Local Government Unit (LGU), local residents, NGO's and government agencies concerned to be able to respond promptly on future issues that may be raised by anti- mining groups. It will also use the tri-media information drive to counter the misinformation and dis-information campaign of the local NGO's and educates people on the responsible mining and the truth about nickel mining operations and its temporary impact to the surrounding environment and how the Company successfully implements the mitigation measures.

For around ten (9) years now, the mining operation of CMDC has played a central role in the development not only on the impact barangays but also in the Municipality of Narra as a whole. It is the multiplier effect in which the communities are able to develop through active local economic activities.

Aside from these, the industry has helped in carrying out priority developmental projects in the local and national levels through regular imbursement of mining revenues. The investment of the mineral wealth through full compliance and implementation of the Social Development and Management Program (SDMP) gives the local stakeholders direct access on benefits and local developmental funds. Among of these projects are the following:

A. Implementation of the Annual Social Development and Management Program (SDMP):

SDMP Phase 2
Period Covered : January 1, 2017 – December 30, 2021
No. of beneficiary : 1 Barangay

A.1. Infrastructure:

Access to facilities for education, health, cultural activities, and farm to market accessibility was increased and improved. These projects included:

- Construction of following establishments:
  - BNC/Barangay Health Worker (BHW) Office
  - Barangay Tanod Outpost
  - Chapels
- Concreting of barangay roads
- Concreting of People's Organization Building
- Road Maintenance
- Renovation of Senior Citizen Building

A.2. Social:

The company provided opportunities in improving delivery of services to the community by capacitating key workers, continuous quest for sustainable micro-enterprise projects, and initiating related activities. These projects help creating more opportunities for constituents such as:

- Socio-cultural, Education, and sports activities/events
- Social Affair programs and other activities
- Equipment fo r BDAT/Barangay Disaster Risk and Reduction Management Office (BDRRMO)
- Provision of service vehicle (mini elf) for the host community

A.3. Sanitation & Health:

The company supported the improvement of basic health services within the partner communities resounding to adjoining municipality by providing:

- Medical Supplies
- Water System
- Medical Assistance (Operation Tuli)
- Comfort Room
- Provision of birthing home facility and equipments needed
- Nutrition Month Celebration
- Medical Transport (ambulance) for the employee and community use
- Blood donation to the Philippine Red Cross Palawan Chapter for utilization of local hospitals

A.4. Livelihood:

In order to elevate the skills and gain additional knowledge of the farmers, fisherman and small cooperatives have given priority to improve and enhance their lives thru the following programs:

- Farmers Field School (FFS)
- Farm Inputs (Spray Can)
- Livelihood training
- Capitalization for livelihood Project (Vermicomposting facility)
- RIC Livelihood Program
- Provision of Tractor and Farm Implements to CMFI
- Farm to Market Roads

A.5. Corporate Social Responsibility (CSR):

The Company is supportive to various activities for the community, as part of CSR, the Company are diligently providing the following:

- Financial assistance to the following:
  - Municipality of Narra's official entry, Barangay Bato-Bato *"Tribu Bitianon"*, for the Baragatan Festival Street Dancing Competition
  - Arong/Payaw owners
- Sponsorship to the following activity:
  - Annual Palay Festival
  - Catholic Bishop's Conference of the Philippines
  - Basic Ecclesial Comminuty Session
  - Palawan Runners Club
  - Yearly Provincial Meet
- Donations:
  - Sample bags, Used Tires
  - Diesel (Philippine National Police Higway Patrol Group)
  - Logistics Support to Local Government Unit (LGU) of Narra
  - Fire wood for Atheletic Event Competition

A.6. Education:

The Company has prioritized the scholarship provision for Indigenous People (IP) given the situation that they are the less fortunate grassroots of the

community. Thru scholarship grant these people would improve and follow the natural way of living:

- Scholarship Programs
- Para-teacher Program
- Provision of uniform and equipment for Drum and Lyre of Bato - Bato Elementary School
- Playground/play apparatus for San Isidro Elementary School Day Care one and two Computer center for San Isidro Elementary School

3.8 Emergency Response Brigade (ERB) and Fire Brigade Organization (FBO)

In the event of environment disaster brought about by heavy downpour and flooding, fire and hazardous waste spill, and breaching of siltation control structures, the Emergency Response Brigade (ERB) and Fire Brigade Organization (FBO) organized by the Company shall automatically respond to such eventualities (Please see **Appendix X** for Emergency Response Brigade and Fire Brigade Organization).

3.9 Conservation Values

Although overburden stripping is necessary, not all areas shall be affected immediately. A large part of area shall be left untouched. This will give time to gather and propagate local species of flora and for the fauna to migrate to adjacent forested areas. Nursery for seedlings production shall be established and reforestation shall be carried out as mined-out area is declared. Local species shall be propagated while natural distribution of the different forest population shall be imitated in the reforestation efforts.

3.9.2 Nature Issues

In typical mining operations, the aquatic and terrestrial ecosystems are the first to be affected. Existing vegetation, wildlife and aquatic ecosystem are also displaced. These cannot be ruled out since it is necessary to have earth moving to carry out the mining activity.

Animals special shall be made recover and migrate to unaffected areas. Hunting/poaching shall be prohibited and enforced as art of the company's environmental commitments.

3.9.3 Control Strategies

As soon as an area is reforested during decommissioning phase, the company will advocate that it will be declared as a private wildlife and forest reservation area of the company. Facilities like silt traps shall be utilized as water impounding to irrigate reforested areas.

3.9.4 Visual Aesthetics

3.9.4.1 Acceptable Levels of Impact

Overburden stripping shall alter the existing site aesthetics as some point. Scenery of secondary forest growth will be stripped off at the mines sites.

3.9.4.2 Control Strategies

Progressive rehabilitation and revegetation shall be carried as the mining activities proceed. Reforested areas shall be declared as a private wildlife reservation and forest reservation in the future.

3.10 Heritage and Cultural Value

3.10.2 Acceptable Levels of Impact

There is no historical site that may be affected by the operation. Cultural traditions will be respected and considered in formulation of corporation policies, plans, and programs if applicable.

3.10.3 Control Strategies

No control measures are needed as no cultural values may be lost or changed, as majority of the influx of workers shall be coming from nearby barangays. Religious and social activities of the host communities shall be vigorously supported like fiestas and church celebration.

Table 15. Foreseen Environmental Impacts, Mitigating Measures and Estimated Cost (Summary)

Activity	Affected Resources/Areas	Foreseen Impacts	Mitigating Measures	Estimated Budget (Php x 1000)
1. Additional Access road Construction	Air and Water Quality	Increase particulate matter and siltation generation.	Regular road water sprinkling and maintenance of silt control structures.	7,926
2. Mining Operation	Air Quality	Increase emission from vehicles and equipment. Particulate matter from mining operation (dust generation).	Regular check-up and strictly follow the Preventive Maintenance Schedule (PMS) of vehicles and equipment, Tree and grass planting for carbon sequestration Regular road water sprinkling. Air quality monitoring.	993 (costing of Road watering is included to activity no. 1)
	Water Quality	Erosion and sedimentation of silt control structures and waterways. Oil contamination from vehicles and equipment. Generation of solid waste and wastewater.	Regular maintenance of silt control structures, construction of additional drainage canals, silt ponds and silt collector sumps. Regular maintenance of vehicles and equipment. Strictly implement proper solid waste management and treatment of wastewater. Regular Water Quality Monitoring.	1,318 (costing for maintenance of silt control structures in included in activity no. 1)
	Noise	Disturbance of nearby communities. Disturbance of wildlife species.	Limit operations during working hours. Possible use of silencers and enclosures. In-house noise monitoring.	12 (for in-house noise monitoring only. Other activities is under ASHP)
	Terrain and Landscape	Excavation of mine area; construction of waste rock and ore stockpile; removal of vegetation.	Standard benching and contouring Implement Progressive Rehabilitation Program	13,944
	Socio Economic Issues	Disturbance of Community/Poor Level of Acceptance from the Community	Employment of local residents. Conduct regular IEC Campaign drive. Implementation of SDMP.	Refer to SDMP Budget
3. Reclamation and Closure	Air Quality	Dust Generation	Revegetation of disturbed areas, road sprinkling, road maintenance.	Included in activity no. 1
	Water Quality	Siltation	Continuous water quality monitoring, maintenance of silt control structures.	Included in activity no. 2 under air quality
	Terrain and Landscape	Waste ore stockpile	Areas affected should be re-graded and revegetated with local plants species and vegetation.	614
	Wildlife	Removal of Habitat	Implementation of revegetation program, plant native species.	Included in Terrain and Landscape

4 APPROACH AND STRATEGY FOR MONITORING

4.1 Monitoring

4.1.2 Significant Impact to be Monitored

All identified environmental pollution/degradation that include the following shall be monitored:

a. Deforestation/devegetation
b. Land disturbances
c. Soil erosion
d. Siltation
e. Water quality degradation
f. Air quality degradation
g. Adverse socio-economic impacts, if any

Regular in-house air and water quality monitoring as well as the in-house noise level monitoring shall be done and brought this to the third party laboratory for analyses, as necessary. The results shall be included to the Quarterly Self-Monitoring Report and Semi-annual Compliance Monitoring Report for submission to DENR – Environmental Management Bureau (EMB). Moreover, if necessary, the results must be presented to the scheduled validation activities of the Multi-Partite Monitoring Team (MMT) and Mine Rehabilitation Fund Committee (MRFC).

4.2 Sources of Impact

4.2.2 Mining Activities/Infrastructures

i. Parameters to be monitored

The impact water bodies are the Balitien, Purok 7 Communal dam and Pinagduguan River. Marine water at Causeway and Balitien river delta are also part of monitoring areas. Parameters to be monitored are pH, Temperature, Heavy Metals (Arsenic, Cadmium, Lead, Manganese, Nickel), Total Suspended Solids (TSS) & Oil and Grease (for discharge points only).

ii. Purpose of Monitoring

Main concern to be monitored is the water quality and condition of adjacent river systems and marine water near the causeway that might be impacted by the mining activities.

iii. Monitoring Methods

Monthly water quality monitoring shall be conducted by the company and quarterly by MMT. Sampling methods to be adopted is in accordance with the prescribed method of sampling by the DENR – EMB.

Erosion control measures and silt control structures shall be inspected regularly especially during rainy season to check silt accumulation at the silt traps and other areas of concerns.

iv. Monitoring Frequency

Water Quality	-	Monthly
Stability/Environmental Integrity	-	Daily
Deforestation area/planted trees	-	Weekly

4.2.3 Noise

i. Parameters to be Monitored

The noise level, expressed in decibel (dB), of various equipment of the mine operation or point sources of noise at the pre-determined noise monitoring stations will be monitored.

ii. Purpose of Monitoring

To determine noise level emanated from the mine operation especially during hauling from minesite to pier site if noise level is within the DENR standard.

iii. Monitoring Methods

To determine the noise level around mine industrial premises, sampling stations were established. A hand held noise level meter will be used to give instantaneous display readings. The sampling activities shall be done quarterly by MMT or monthly by the Company.

iv. Monitoring Frequency

Noise sampling will be done monthly or often as possible as required by MMT.

4.2.4 Air Quality

Air quality is usually described in terms of the concentration levels of the various types of air pollutants over a certain area at any given time.

i. Parameters to be Monitored

Based on the nature of the mine operation, the only air pollutants parameters to be considered is the Total Suspended Particulates (TSP). However, the Company is open for any recommended air quality paramaters to be included in the monitoring (e.g. Particulate Matter 10).

ii. Purpose of Monitoring

To determine the quality of air around mine industrial site premises and nearby residential areas.

iii. Monitoring Methods

Total Suspended Particulates (TSP) are collected using air filters and High Volume Air Sampler, set-up at pre-determined air sampling stations within and outside the company premises.

iv. Monitoring Frequency

Ambient air quality monitoring will be done monthly and quarterly by MMT.

4.2.5 Social Issues

i. Parameters to be Monitored

Parameters to be monitored include the perception of the residents, rice farmers and neighboring communities regarding the project implementation. Monitoring shall likewise include the effectivity of the environmental mitigation measures and community development programs/projects provided by the Company through Social Development and Management Program (SDMP).

ii. Purpose of Monitoring

To monitor public perception and acceptability of the project from the affected people and the effect of the program on the SDMP so that the Company could assess if there is a need for further improvements of the environmental and social activity implementation.

iii. Monitoring Methods

Social meetings, coordination with the community leaders, NGO's and LGU's.

iv. Monitoring Locations

Host and neighboring communities.

v. Monitoring Frequency

The Company's Community Relations (COMREL) is tasked to monitor frequently the issues and concerns being raised by the communities, civil societies and government regulatory agencies.

The summary of monitoring plan/matrix showing the sources of impacts and their corresponding parameters to be monitored, monitoring frequency, monitoring method and purpose of monitoring is reflected in Table 16.

4.2.6 Conservation Values

The activities under conservation values will focus on vegetation and wildlife. Monitoring will require the recording of vegetation and annual inventory of revegetation and rehabilitation results to measure and validate the effectiveness of the program and the survival rate of plant species used in the revegetation program. Monitoring parameters will include survival rate, growth rate, density and propagation. It will be done periodically, throughout the mine life and after closure.

Further, maintenance of coastal area adjacent to causeway such as quarterly coastal clean-up drives will be conducted.

Table 16. Summary of Environmental Impact Monitoring

Sources of Impact	Parameters	Purpose of Monitoring	Monitoring Method	Monitoring Locations	Monitoring Frequency
Mining Operations/Social Issues/Heritage and Cultural Values	Air Quality: TSP or PM-10	To determine the level of particulate matter (TSP or PM-10)	Air Sampling using DENR-EMB Calibrated Equipment	Pre-determined Air Sampling Stations of the Company	Monthly or as necessary
	Water Quality Ambient: pH, Arsenic, Cadmium, Lead, Manganese, Nickel, Total Suspended Solids (TSS) Effluent: pH, Arsenic, Cadmium, Lead, Manganese, Nickel, Total Suspended Solids (TSS), Oil and Grease, Hexavalent Chromium	To determine the quality of water parameters mandated by the Government	Water Sampling	Pre-determine Water Sampling Stations of the Company	Monthly or as necessary
	Noise Quality	To determine the level of decibel (dB)	Noise Sampling	Pre-determine Noise Sampling Stations of the Company	Monthly or as necessary
	Flora and Fauna Biodiversity	To determine the flora and fauna biodiversity in Mine Rehabilitation areas	Acceptable method for biodiversity assessment	Blocks A & B Rehabilitation areas	Periodically or as necessary
	Heritage and Cultural Values and Social Issues	To get feedback on the public perception and acceptability of the project to the affected communities	Site validation/assessment	Residents of the immediate and neighboring communities	Periodically or as necessary

5. TOTAL COST OF AEPEP

For year 2022, the total budget for the various environmental protection and enhancement projects/activities is around **Php 29,793,800.00.** This will be used to sustain priority projects that include mined-out areas rehabilitation and restoration, seedlings production, construction and maintenance of silt control structures, dust control, air and water quality monitoring, environmental research and other environment-related activities and programs. Thus, the Company would be willing to spend more than what was approved in the above-mentioned program just to satisfy the needs of its environmental projects and comply with every applicable laws and regulations. The summary and the matrix for the quarterly implementation of these projects/activities are presented in Table 18.

5.1 Reporting

The Company's AEPEP activities' accomplishment will be reported to the Multi-Partite Monitoring (MMT) on a quarterly basis. The accomplishment reports will be submitted by the MMT to the Mine Rehabilitation Fund Committee (MRFC) for scrutiny and further recommendations to improve CMDC-TNMP's environmental mitigation activities.

In case of violations, CMDC is responsible to report to the MRFC its compliance to the MMT findings and recommendations. Report will be submitted after the MMT's quarterly monitoring as reflected below:

Table 17. Report Submission Details

Aspect	MMT Reporting	Company Reporting
Water Quality	Quarterly	Quarterly
Air Quality	Quarterly	Quarterly
Noise Level	Quarterly	Monthly/Quarterly

Table 18. 2022 Annual Environmental Protection and Enhancement Program (AEPEP) Summary of Budget Allocation

ENVIRONMENTAL PROTECTION AND ENHANCEMENT ACTIVITIES		Php x 1,000
1.	**LAND RESOURCES**	
	1.1 Tree Planting Operation and Maintenance	15,588
	1.1.1. Progressive Rehabilitation (under MFP)/Land	13,944
	1.1.2. Mining Forest Program (MFP) Plantation w/n Tenement 1	874
	1.1.3. Bamboo Plantation	10
	1.1.4. National Greening Program (NGP) maintenance	614
	1.1.5. Temporary Revegetation Program	96
	1.2 Nursery Operations	1860
	1.2.1. Maintenance of Nurseries	1,700
	1.2.2. Seedlings production	
	1.2.3. Bamboo cuttings/culms production	
	1.2.4. Vermicomposting project	70
	1.2.5. Horticulture project	90
	SUB-TOTAL	**17,398**
2.	**WATER RESOURCES AND QUALITY**	
	2.1 Siltation Control Projects	3,826
	2.1.1. Monitoring/Maintenance/construction of Silt ponds/Bottom ponds, Silt Collector sumps, etc.	3,176
	2.1.2. Mine Drainage System construction/maintenance	650
	2.2 Water Sampling and Monitoring	548
	2.2.1. Surface/ground water sampling and third party DENR-accredited laboratory analysis	520
	2.2.2. Calibration and Maintenance of Water Quality Monitoring Equipment	28
	2.3 Solid and Hazardous Waste Storage/Disposal	770
	2.3.1. Hazardous waste management	320
	2.3.1. Solid waste management	450
	SUB-TOTAL	**5,144**
3.	**AIR QUALITY**	
	3.1. Air Quality Monitoring	100
	3.2. Calibration and maintenance of air quality monitoring	19
	3.3. Road sprinkling/maintenance	4,100
	SUB-TOTAL	**4,219**
4.	**NOISE AND VIBRATION**	
	4.1 Ambient Noise Monitoring	12
5.	**CONSERVATION VALUES**	
	5.1 Wildlife (Biodervisity) and Watershed Protection	97.8
	5.2 Assistance to Regulatory Bodies	60
	SUB-TOTAL	**157.8**
6.	**ENVIRONMENTAL RESEARCH**	
	5.1. Preparation and implementation of research proposal	80

	5.2. In-house flora and fauna assessment	60
	SUB-TOTAL	**140**
7.	**OTHERS**	
	7.1 Information, Education and Communication (IEC) and Third Party Monitoring	2,510
	7.1.1. MMT validation and air & water sampling activities	1,800
	7.1.2. MRFC meeting	480
	7.1.3. IEC Campaign	80
	7.1.4. Training and seminars	130
	7.1.5. Annual DENR-EMB validation	20
	7.2 Other Activities/Projects/Programs	213
	7.2.1. ISO 14001:2015 (Environmental Management System)	73
	7.2.2. Adopt-a-river program (River and coastal clean-up)	80
	7.2.3. Farmland monitoring	60
	SUB-TOTAL	**2,723**
	GRAND TOTAL	**29,793.80**

Total Environmental-Related Costs = 29,793,800.00

Estimated Direct Mining Cost* = 528,358,105.88

Percentage of Total Environmental-Related Cost to the Direct Mining Cost = 5.64%

* *Estimated direct mining cost until December 2021 based on average unit cost of 7.5 dollar/tons of ore produced and average unit cost of 2.5 dollar/tons of ore shipped (Partial and unofficial).*

Table 19. 2022 Annual Environmental Protection and Enhancement Program (AEPEP) Matrix for Toronto Nickel Mining Project of CMDC

2022 AEPEP Activities		Unit of Work Measure (UWM) / Unit Cost ('000)	Annual Physical / Financial Target	Quarterly Physical / Financial Target (Unit Cost – '000) 1stQ	2ndQ	3rdQ	4thQ	REMARKS	Location	Indicator
1.0 LAND RESOURCES										
1.1	**Tree Planting Operation and Maintenance**									
1.1.1	Progressive Rehabilitation (under Mining Forest Program)/Land Preparation	Area prepared for mine rehabilitation (hectares)	**6.00**	2.46	2.00	0.65	0.89	Areas subject for land preparations are the following: Remaining 2.0 hectares from 2021 AEPEP target (Block A Rehab 7), and Block A Rehabilitation 5, 6 & 8.	Block A Mined-out Areas	Stable benching/ engineered slope, hectarage of prepared area for planting
		2,324.00	**13,944.00**	5,717.04	4,648.00	1,510.60	2,068.36			
1.1.2	Mining Forest Program (MFP) Plantation within Tenement 1	Area planted in new mined-out area (hectares)	**6.00**	1.00	0.00	3.46	1.54	Areas subject for land preparations are the following: Remaining 2.0 hectares from 2021 AEPEP target (Block A Rehab 7), and Block A Rehabilitation 5, 6 & 8.	Block A Mined-out Areas	Number of trees planted/area hectarage
		No. of seedlings planted	**15,000**	2,500	0	8,650	3,850			
		0.02	**240.00**	40.00	0.00	135.00	65.00			
		No. of seedlings for enrichment planting in Mine Rehabilitation area (old areas)	**8,825**	625	0	3,700	4,500	Areas for enrichment planting are the following: Block A Rehab 5, 6 & 7; Block B Rehab 2, 3, 4 & 5	Blocks A & B Mined-out Areas	Number of trees planted/area hectarage
		0.03	**270.00**	20.00	0.00	115.00	135.00			

		Area maintained (hectares)	9.66	2.33	2.33	3.35	1.65	Areas subject for maintenance are the newly-planted seedlings in Block A Rehab 5, 6, 7 & 8. Less maintenance works on the 3Q & 4Q 2022 due to the onset of rainy season	Block A Mined-out Areas	Well-maintained trees in Mined-out areas.
		*	**364.00**	110.00	110.00	94.00	50.00			
1.1.3	Bamboo Plantation	Area planted in mined-out area (hectares)	**0.20**	0.00	0.00	0.20	0.00	Bamboo plantation within the perimeter of mined-out areas	Block A Mined-out Areas	Number of Bamboo cuttings/culms planted/area hectarage
		No. of Bamboo cuttings/culms planted	**500.00**	0	0	500	0			
		0.02	**10.00**	0.00	0.00	10.00	0.00			
1.1.4	National Greening Program (NGP) Maintenance	No. of NGP areas maintained	**19**	6	5	5	3	Maintenance of in-house NGP areas (Clearing, watering, application of fertilizer, replanting). Less maintenance works during rainy season	Identified NGP areas (Limbaga, Sotito, Water System, Barmie (Balitien), Ignacio, CMDC Park, Ore Stockyard Area, Admin)	Well-maintained NGP sites
		*	**600.00**	300.00	150.00	100.00	50.00			
		No. of seedlings of High Value Crops for enrichment planting	**400**	200	0	0	200	Enrichment planting in NGP Limbaga	NGP Limbaga	No. of seedlings of High Value Crops planted
		0.035	**14.00**	7.00	0.00	0.00	7.00			
1.1.5	Temporary Revegetation Program (TRP)	No. of established TRP areas maintained	**5**	5	5	5	5	Maintenance of Block B Rehabilitation 2, 5, 6, 7 & 8 TRP areas.	Blocks A & B Mined-out Rehabilitation areas	Well-maintained TRP areas

		19.2	**96.00**	24.00	24.00	24.00	24.00			
1.2 Nursery Operations										
1.2.1	Maintenance of Nurseries	No. of Nurseries maintained	**2**	2	2	2	2	Maintenance of produced seedlings in Central Forest and Satellite Nurseries.	Central and Satellite Nurseries	Continuous seedlings production and maintenance
1.2.2	Seedlings production	No. of seedlings produced	**43,000**	40,000	1,000	1,000	1,000	Seedlings production in Central Forest and Satellite Nurseries	Central and Satellite Nurseries	
1.2.3	Bamboo cuttings/culms production	No. of Bamboo cuttings/culms produced	**1,500**	750	250	250	250	Produce assorted Bamboo seedlings	Central Nursery	
		*	**1,700.00**	800.00	300.00	300.00	300.00	Costing for item nos. 1.2.1, 1.2.2 & 1.2.3	Central and Satellite Nurseries	
1.2.4	Vermicomposting	Volume of harvested vermicast, kgs.	**2,400.00**	600	600	600	600	Vermicomposting facility in Central Forest Nursery	Central Nursery	Production of vermicast
		0.029	**70.00**	17.50	17.50	17.50	17.50			
1.2.5	Horticulture Project	Volume production of yield in kilograms	**400.00**	50.00	100.00	200.00	50.00	Assorted crops planted in Central Forest Nursery.	Central Nursery	Production of yield
		0.225	**90.00**	15.00	25.00	35.00	15.00			
2.0 WATER RESOURCES AND QUALITY										
2.1	**Siltation Control Projects**									
2.1.1	Monitoring/Maintenance/ Construction	No. of silt control structures constructed	**1**	0	1	0	0	Construction of additional three (3) compartments in New	New Communal	Well-maintained silt

	of Siltation Ponds/Bottom Ponds, Silt Collector Sumps, etc.	1,076.00	**1,076.00**	0.00	1,076.00	0.00	0.00	Communal Dam Silt Pond with the capacity of 7,581 cubic meters.	Dam Silt Pond	control structures
		No. of functional silt control structures maintained	**23**	6	7	5	5	Maintenance of silt control structures. Unit cost varies depending on the capacity of dilt control structures to be maintained and frequency of maintenance works.	Minepit to Ore Stockyard Area	Well-maintained silt control structures
		*	**2,100.00**	500.00	800.00	400.00	400.00			
2.1.2	Mine Drainage System Construction/ Maintenance	No. of mine drainage system maintained	**5**	5	5	5	5	Maintenance of mine drainage system from minepit to causeway. Unit cost varies depending on the length of mine drainage canal for maintenance.	Minepit to Causeway	Well-maintained mine drainage system.
		Length of mine drainage system maintained (km)	**8.0317**	8.0317	8.0317	8.0317	8.0317			
		*	**650.00**	150.00	200.00	150.00	150.00			
2.2 Water Sampling and Monitoring										
2.2.1	Surface/Groundwater sampling and Third Party DENR-accredited laboratory analysis	No. of in-house water sampling conducted per month	**8**	2	2	2	2	Twice a quarter; the third to be conducted by the Multi-Partite Monitoring team (MMT).	Pre-determined water sampling station (adjacent river system, causeway)	Within the DENR standard based on DAO No. 2016-08
		65.00	**520.00**	130.00	120.00	130.00	140.00			
		No. of sampling stations	**48.00**	12	11	12	13	Pieryard Siltation Pond (effluent) has no discharge during summer season. Balitien Silttion Pond (efluent) has discharge during heavy rains only.		

		No. of parameters analysed	**8**	8	8	8	8	Arsenic, Cadmium, Lead, Manganese, Nickel, TSS, Oil & Grease (effluent only), Hexavalent Chromium (effluent only)		
2.2.2	Calibration and Maintenance of Water Quality Monitoring Equipment	No. of maintained water quality monitoring equipment	**2**	2	2	2	2	Annual calibration and regular maintenance of water quality monitoring equipment. One (1) unit is subject for calibration in March 2022 while the other 1 unit is on November 2022.	Mine site	Within the DENR standard based on DAO 2016-08
		14	**28.00**	10.00	4.00	4.00	10.00			
2.3 Solid and Hazardous Waste Storage/Disposal										
2.3.1	Hazardous Waste Management	No. of hazardous waste management activities	**48**	12	12	12	12	Regular maintenance of Temporary Hazardous generated is based on 2021 data.	Temporary Hazardous Waste Facility (THWF)	Well-maintained THWF
		Volume of hazardous wastes generated (MT)	**42.07**	10.52	10.52	10.52	10.52			
		0.83	**40**	10.00	10.00	10.00	10.00			
		No. of hauling of hazardous wastes	**1**	1	0	0	0	Hauling of the following hazardous wastes by 3rd Party DENR-accredited hauler: Used Oil, Oil-contaminated materials, Contaminated Containers & Used Batteries.		
		280.00	**280.00**	280.00	0.00	0.00	0.00			

2.3.2	Solid Waste Management (SWM)	No. of solid waste management activities	**12**	3	3	3	3	Collection of solid waste around minesite, maintenance of MRF and other SMW-related activities. Volume of generated solid wastes is based on 2021 data.	Installed color-coded trash bins within the company premises, MRF, composting area, RCA	Proper management of solid waste
		33.33	**400.00**	100.00	100.00	100.00	100.00			
		Volume of solid wastes generated (kgs.)	**6,976.42**	1,966.00	2,086.15	1,480.87	1,443.40			
		No. of Materials Recovery Facility (MRF) for repair	**1**	0	0	1	0	To accomplish repair works of MRF	Materials Recovery Facility (MRF)	
		50	**50.00**	0.00	0.00	50.00	0.00			
3.0 AIR QUALITY										
3.1 Air Quality Monitoring										
3.1.1	Monthly in-house air monitoring	No. of in-house air sampling activity conducted per month	**8**	2	2	2	2	Twice a quarter; the third to be conducted by the Multi-Partite Monitoring team (MMT).	Pre-determined air sampling stations	Within the standard parameter and compliance with RA 8749
		2	**100.00**	25.00	25.00	25.00	25.00			
		no. of sampling stations	**8**	8	8	8	8			
		no. of parameter/s analysed	**1**	1	1	1	1	Total Suspended Particulate (TSP)		
3.2 Calibration and Maintenance of Air Quality Monitoring Equipment										
3.2.1	Maintenance of Air Quality Monitoring Equipment	No. of maintained Air Quality Monitoring Equipment	**2**	2	2	2	2	Annual calibration and regular maintenance of TSP and PM10 air quality monitoring equipment (AQME).	Mine site	Within the standard parameter and compliance with RA 8749

		9.5	**19.00**	2.00	2.00	7.50	7.50	TSP AQME will subject to calibration on July 2022 while PM10 AQME will be calibrate on November 2022		
3.3 Road Sprinkling/Maintenance										
3.2.2	Maintenance of Haul Roads	No. of haul road area maintained	**3**	3	3	3	3	Road sprinkling maintenance in the following mine haul road areas: Minepit to Motorpool (10.263 km), Motorpool to OSY (3.639 km), OSY to Causeway (3.488 km).	Mine roads (Mine pit, Ore Stockyard, Causeway, haul roads)	Within the standard parameter and compliance with RA 8749
		*	**4,100.00**	1,000.00	1,650.00	800.00	650.00			
		Distance of haul roads maintained, km	**17.39**	17.39	17.39	17.39	17.39			
		No. of trips of Water Lorries	**5,492**	1,339	2,210	1,072	871	No. of trips is based on the existing 11 units of Water Lorries (In-house and Contracted) with capacity ranges from 4,000 L to 16,000 L.		
4.0 NOISE AND VIBRATION										
4.1 Ambient Noise Monitoring										
4.1.1	Monthly In-house Noise monitoring	no. of noise monitoring	**8**	2	2	2	2	Twice a quarter; the third to be conducted by the Multi-Partite Monitoring team (MMT).	Same as the pre-determined air sampling stations	Within the standard parameter and compliance with RA 8749
		1.50	**12.00**	3.00	3.00	3.00	3.00			
		no. of monitoring stations	**8**	8	8	8	8			
5.0 CONSERVATION VALUES										
5.1 Wildlife (Biodiversity) and Watershed Protection										
5.1.1	Maintenance of Wildlife (Biodiversity) and	No. of MPSA monitored	**4**	1	1	1	1	Assist during the patrolling of BLGU and CENRO within MPSA. Include	Within the MPSA	Well-maintained and protected

	Watershed Areas	*	**97.80**	67.80	10.00	10.00	10.00	monthly validation of STCEP areas by CENRO Quezon on 1st Quarter 2022.		watershed and wildlife
5.2 Assistance to Regulatory Bodies										
5.2.1	Assistance to patrolling works in the adjacent forested areas with regulatory bodies	No. of assisted patrolling works conducted by regulatory bodies	**4**	1	1	1	1	Assist during the patrolling of BLGU, CENRO and other regulatory bodies within and adjacent to MPSA area.	Within and adjacent the MPSA area	
		15.00	**60.00**	15.00	15.00	15.00	15.00			
6.0 ENVIRONMENTAL RESEARCH										
6.1 Preparation and implementation of research proposal										
6.1.1	Implementation of research proposal	No. of progress reports prepared	**4**	1	1	1	1	One (1) research study in Brgy. Bato-bato, Narra, Palawan	Host community (Brgy. Bato-bato, Narra, Palawan)	Submission of research proposal
		20.00	**80.00**	20.00	20.00	20.00	20.00			
6.2 In-house flora and fauna assessment										
6.2.1	In-house flora and fauna assessment	No. of mine rehabilitated areas studied/monitored	**2**	2	2	2	2	Quarterly monitoring of growth performance of planted trees and record fauna sightings in Blocks A and B Rehab areas.	Blocks A & B Mine Rehabilitation areas	Reporting and submission of monitoring result
		7.50	**60.00**	15.00	15.00	15.00	15.00			
7.0 OTHERS										
7.1 Information, Education, and Communication (IEC) and Third Party Monitoring										
7.1.1	Multi-Partite Monitoring Team (MMT) Validation and Air &	No. of MMT validation and sampling activities conducted	**4**	1	1	1	1	Participate during MMT validation and sampling activities. Parameters for water samples (see item no.	Mine site, pre-determined air and water	Regular reporting of monitoring result and compliance

	Water Sampling Activities	450	**1,800.00**	450.00	450.00	450.00	450.00	2.2.1); parameter for air sampling is Particulate Matter 10 or PM10.	sampling stations	with government rules and regulations
7.1.2	Mine Rehabilitation Fund Committee (MRFC) Meeting	No. of MRFC meetings attended	**4**	1	1	1	1	Attend Quarterly MRFC meeting	Palawan/Manila	Regular reporting of monitoring result and compliance with government rules and regulations
		120	**480.00**	120.00	120.00	120.00	120.00			
7.1.3	Information, Education and Communication (IEC) Campaign	No. of IEC campaign conducted to employees and host community	**8**	2	2	2	2	Conduct IEC campaign to host community during SDMP and other relevant activities, and IEC to employees.	Mine site (employees), Host Community	Well-informed community regarding CMDC mining operation
		10	**80.00**	20.00	20.00	20.00	20.00			
7.1.4	Trainings and Seminars	No. of Trainings/Seminars attended	**8**	2	2	2	2	Participate/attend to Environmental-related trainings/seminars. PMSEA on 4th Quarter 2022.	Palawan/Manila	Training certificate
		*	**130.00**	20.00	20.00	40.00	50.00			
7.1.5	Annual EMB Validation	No. validation conducted	**1**	0	0	0	1	Annual validation of EMB-Palawan	Mine site	Status of compliance to ECC conditions
		20	**20.00**	0.00	0.00	0.00	20.00			
7.2 Other Activities/Projects/Programs										
7.2.1	ISO 14001:2015 (Environmental Management System)	No. of ISO certificate maintained	**1**	1	1	1	1	Update permits, ISO internal and external audits. 3rd Party Audit on 2nd Quarter 2022	CMDC-TNMP	Maintenance of ISO certification
		*	**73.00**	13.00	30.00	15.00	15.00			

7.2.2	Adopt-a-River Program (River and Coastal Clean-up)	No. of coastal/river clean-up initiated and/or participated	**4**	1	1	1	1	Coastal area of host community and other identified water bodies by EMB	Brgy. Bato-bato Coastal area, other identified adopt-a-creek/river program of EMB	Well-maintained estero and coastal areas
		20	**80.00**	20.00	20.00	20.00	20.00			
7.2.3	Farmland Monitoring	No. of monitoring conducted	**4**	1	1	1	1	Farmland monitoring to allegedly-affected farmlands in host community.	Host community	Area/ hectarage of validated farmlands
		15	**60.00**	15.00	15.00	15.00	15.00			
GRAND TOTAL			**29,793.80**	**10,036.34**	**9,999.50**	**4,760.60**	**4,997.36**			

* - *No unit cost. Justification is indicated to remarks.*

- *Financial target*

6. NAME AND SIGNATURE OF PERSONS PREPARING THE AEPEP

MONICA A. ALASKA
Pollution Control Officer

PCO Certificate of Accreditation No.	:	2021-R4B-03305
Date Issued	:	March 11, 2021
Expiry Date	:	March 10, 2024

FROILAN P. MORTA
MEPEO

Passport No.	:	P2318998A
Date Issued	:	March 16, 2017
Place Issued	:	DFA Puerto Princesa City

PAMELA P. MIGUEL
Administrative Manager

Unified Multi-Purpose ID No.	:	CRN-0111-9427084-2
Place Issued	:	SSS Puerto Princesa City

JAINAL M. UY, JR.
Resident Mine Manager

PRC Registration No.	:	0002410
Date Issued	:	August 19, 2021
Place Issued	:	PRC Puerto Princesa City

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Technical Description of 2022 Target Mine Rehabilitation

TNMP TARGET REHAB AREA FOR YEAR 2022 (0.89 has)		
POINT	**LATITUDE**	**LONGITUDE**
1	9°13'21.3168"	118°15'48.5460"
2	9°13'21.0792"	118°15'48.9348"
3	9°13'21.0036"	118°15'49.9788"
4	9°13'21.1008"	118°15'50.7204"
5	9°13'21.1980"	118°15'51.2568"
6	9°13'21.0684"	118°15'52.2360"
7	9°13'21.0144"	118°15'53.2584"
8	9°13'20.7480"	118°15'54.0288"
9	9°13'20.1468"	118°15'54.8244"
10	9°13'19.9272"	118°15'55.0800"
11	9°13'19.5096"	118°15'55.5876"
12	9°13'19.4196"	118°15'55.7568"
13	9°13'19.3008"	118°15'55.7712"
14	9°13'18.8796"	118°15'56.2824"
15	9°13'18.9696"	118°15'55.7892"
16	9°13'18.9732"	118°15'55.6164"
17	9°13'19.2792"	118°15'54.4104"
18	9°13'19.4880"	118°15'53.8092"
19	9°13'19.6896"	118°15'53.2800"
20	9°13'19.9164"	118°15'52.6572"
21	9°13'20.1180"	118°15'52.1820"
22	9°13'20.2368"	118°15'51.5880"
23	9°13'20.2980"	118°15'51.1020"
24	9°13'20.3736"	118°15'50.7384"
25	9°13'20.4096"	118°15'50.1588"
26	9°13'20.2836"	118°15'49.8600"
27	9°13'19.9092"	118°15'49.3452"
28	9°13'19.5024"	118°15'49.2876"
29	9°13'19.3260"	118°15'48.7368"
30	9°13'19.3260"	118°15'48.5604"
31	9°13'19.4880"	118°15'48.0024"
32	9°13'20.3232"	118°15'46.8792"

TNMP TARGET REHAB AREA FOR YEAR 2022 (2.65 has)		
POINT	LATITUDE	LONGITUDE
1	9°13'12.5616"	118°16'6.0672"
2	9°13'12.2232"	118°16'6.4992"
3	9°13'11.6112"	118°16'7.3344"
4	9°13'10.7220"	118°16'8.2344"
5	9°13'9.8724"	118°16'7.9824"
6	9°13'9.2028"	118°16'7.7772"
7	9°13'8.9976"	118°16'8.3100"
8	9°13'8.0400"	118°16'8.3496"
9	9°13'7.1256"	118°16'8.2452"
10	9°13'6.3480"	118°16'8.4036"
11	9°13'5.8080"	118°16'8.3388"
12	9°13'5.0196"	118°16'7.5756"
13	9°13'4.6488"	118°16'7.3452"
14	9°13'4.7676"	118°16'6.1428"
15	9°13'5.0268"	118°16'5.4732"
16	9°13'5.2788"	118°16'5.3220"
17	9°13'5.9736"	118°16'5.1672"
18	9°13'6.0312"	118°16'4.8432"
19	9°13'5.7972"	118°16'2.3340"
20	9°13'5.3904"	118°16'0.9624"
21	9°13'5.8332"	118°16'0.6672"
22	9°13'6.2508"	118°16'1.6680"
23	9°13'7.2012"	118°16'2.9892"
24	9°13'7.5180"	118°16'3.4284"
25	9°13'7.8168"	118°16'3.7596"
26	9°13'10.1568"	118°16'4.9044"
27	9°13'10.3116"	118°16'5.0232"
28	9°13'10.6212"	118°16'5.4372"
29	9°13'10.9380"	118°16'5.6064"
30	9°13'11.5608"	118°16'5.5416"
31	9°13'12.7884"	118°16'5.6712"
32	9°13'12.5400"	118°16'5.8944"

TNMP TARGET REHAB AREA FOR YEAR 2022 (0.46 has)		
POINT	**LATITUDE**	**LONGITUDE**
1	9°13'27.1452"	118°15'56.3364"
2	9°13'26.6052"	118°15'56.448"
3	9°13'25.7700"	118°15'57.1032"
4	9°13'25.0284"	118°15'57.6396"
5	9°13'24.0132"	118°15'58.5144"
6	9°13'23.5704"	118°15'58.7952"
7	9°13'22.9080"	118°15'59.0832"
8	9°13'24.9564"	118°15'56.6964"
9	9°13'24.9672"	118°15'56.5812"
10	9°13'25.3452"	118°15'56.6316"
11	9°13'25.5108"	118°15'56.4084"
12	9°13'25.6440"	118°15'55.9080"
13	9°13'25.6296"	118°15'55.2996"
14	9°13'25.3956"	118°15'54.8064"
15	9°13'25.0752"	118°15'54.4068"
16	9°13'24.7080"	118°15'54.144"
17	9°13'24.5856"	118°15'54.0432"
18	9°13'24.7008"	118°15'53.9964"
19	9°13'25.6584"	118°15'54.5040"
20	9°13'26.6520"	118°15'54.9648"
21	9°13'26.9940"	118°15'55.2744"

APPENDIX VI
Technical Description of Temporary Revegetated Areas

BLOCK-A / REHAB-6 (1.05 has)					
POINT	LATITUDE	LONGITUDE	POINT	LATITUDE	LONGITUDE
1	9.220834	118.268033	23	9.219633	118.268154
2	9.220810	118.268092	24	9.219554	118.268049
3	9.220873	118.268439	25	9.219496	118.267998
4	9.220928	118.268642	26	9.218868	118.267672
5	9.220987	118.268792	27	9.218783	118.267587
6	9.220951	118.268813	28	9.218610	118.267212
7	9.220890	118.268763	29	9.218378	118.266873
8	9.220781	118.268654	30	9.218550	118.267018
9	9.220740	118.268597	31	9.218642	118.267195
10	9.220555	118.268212	32	9.218745	118.267262
11	9.220472	118.268109	33	9.218851	118.267356
12	9.220419	118.268076	34	9.218916	118.267398
13	9.220361	118.268044	35	9.219083	118.267471
14	9.220308	118.268031	36	9.219253	118.267530
15	9.220234	118.268018	37	9.219538	118.267699
16	9.220131	118.268018	38	9.219687	118.267762
17	9.220084	118.268025	39	9.219847	118.267758
18	9.219996	118.268066	40	9.220141	118.267691
19	9.219866	118.268166	41	9.220286	118.267689
20	9.219820	118.268204	42	9.220423	118.267723
21	9.219745	118.268213	43	9.220534	118.267789
22	9.219686	118.268199	44	9.220770	118.267959

BLOCK-B / REHAB-2 (0.36 has)					
POINT	LATITUDE	LONGITUDE	POINT	LATITUDE	LONGITUDE
1	9.222018	118.249173	20	9.222008	118.251239
2	9.221914	118.249190	21	9.222067	118.251363
3	9.221876	118.249215	22	9.222113	118.251531
4	9.221656	118.249413	23	9.222141	118.251688
5	9.221414	118.249591	24	9.222147	118.251748
6	9.221347	118.249676	25	9.222173	118.251898
7	9.221376	118.249713	26	9.222123	118.251771
8	9.221359	118.249826	27	9.222034	118.251493
9	9.221282	118.249972	28	9.221929	118.251207
10	9.221099	118.250022	29	9.221707	118.250912
11	9.221115	118.250064	30	9.221578	118.250573
12	9.221003	118.250160	31	9.221324	118.250364
13	9.221065	118.250190	32	9.221167	118.250335
14	9.221455	118.250288	33	9.220945	118.250208
15	9.221637	118.250611	34	9.221070	118.249906
16	9.221684	118.250653	35	9.221425	118.249460
17	9.221689	118.250775	36	9.221696	118.249231
18	9.221780	118.250974	37	9.221948	118.249129
19	9.221911	118.251109			

BLOCK-B / REHAB-2 (0.64 has)					
POINT	LATITUDE	LONGITUDE	POINT	LATITUDE	LONGITUDE
1	9.223344	118.250584	13	9.221769	118.250887
2	9.223074	118.250866	14	9.221716	118.250768
3	9.222776	118.251326	15	9.221715	118.250660
4	9.222703	118.251205	16	9.221777	118.250578
5	9.222698	118.251117	17	9.221878	118.250507
6	9.222674	118.251023	18	9.222344	118.250543
7	9.222617	118.250887	19	9.222407	118.250499
8	9.222496	118.250780	20	9.222517	118.250447
9	9.222206	118.250685	21	9.222673	118.250412
10	9.222063	118.250676	22	9.222723	118.250417
11	9.221931	118.250758	23	9.223161	118.250655
12	9.221797	118.250866			

BLOCK-B / REHAB-4 (0.26 has)					
POINT	LATITUDE	LONGITUDE	POINT	LATITUDE	LONGITUDE
1	9.223017	118.251021	19	9.222484	118.252548
2	9.222922	118.251280	20	9.222460	118.252655
3	9.222913	118.251466	21	9.222432	118.252686
4	9.222957	118.251642	22	9.222470	118.252837
5	9.222989	118.251735	23	9.222616	118.252893
6	9.222975	118.251833	24	9.222728	118.252815
7	9.223129	118.252475	25	9.222764	118.252855
8	9.223024	118.252688	26	9.222834	118.252853
9	9.222911	118.252876	27	9.222921	118.252739
10	9.222737	118.252954	28	9.222933	118.252595
11	9.222568	118.252954	29	9.223041	118.252492
12	9.222430	118.252865	30	9.223056	118.252357
13	9.222378	118.252686	31	9.223012	118.252116
14	9.222352	118.252439	32	9.222906	118.251796
15	9.222287	118.252173	33	9.222782	118.251534
16	9.222377	118.252412	34	9.222710	118.251472
17	9.222430	118.252491	35	9.222806	118.251343
18	9.222481	118.252528			

BLOCK-B / REHAB-5 (0.55 has)					
POINT	LATITUDE	LONGITUDE	POINT	LATITUDE	LONGITUDE
1	9.227861	118.250329	40	9.227196	118.250312
2	9.227860	118.250407	41	9.227421	118.250455
3	9.227847	118.250372	42	9.226669	118.249284
4	9.227815	118.250385	43	9.226335	118.249514
5	9.227513	118.250610	44	9.226071	118.249388
6	9.227468	118.250575	45	9.225832	118.249366
7	9.227521	118.250565	46	9.225900	118.248720
8	9.227797	118.250386	47	9.225985	118.248673
9	9.227774	118.250357	48	9.226046	118.248666
10	9.227615	118.250464	49	9.226206	118.248719
11	9.227454	118.250544	50	9.226501	118.249029
12	9.227385	118.250531	51	9.226986	118.250381
13	9.227226	118.250414	52	9.226368	118.250061
14	9.227083	118.250251	53	9.226263	118.249926
15	9.226739	118.250089	54	9.226154	118.249607
16	9.226503	118.250004	55	9.225888	118.249562
17	9.226398	118.249932	56	9.225820	118.249500
18	9.226336	118.249864	57	9.225947	118.249529
19	9.226295	118.249691	58	9.226097	118.249535
20	9.226232	118.249539	59	9.226159	118.249555
21	9.226167	118.249484	60	9.226211	118.249613
22	9.226071	118.249496	61	9.226247	118.249715
23	9.225972	118.249463	62	9.226290	118.249891
24	9.225917	118.249462	63	9.226369	118.249991
25	9.225814	118.249426	64	9.226608	118.250088
26	9.225870	118.248732	65	9.226741	118.250143
27	9.225913	118.248669	66	9.227062	118.250286
28	9.226056	118.248635	67	9.227173	118.250419
29	9.226243	118.248726	68	9.226655	118.248949
30	9.226584	118.249092	69	9.226646	118.249019
31	9.226680	118.249096	70	9.226584	118.249020
32	9.226708	118.248991	71	9.226329	118.248745
33	9.226716	118.248999	72	9.226140	118.248610
34	9.226755	118.248977	73	9.226051	118.248589
35	9.226789	118.249077	74	9.225970	118.248592
36	9.226924	118.249260	75	9.225893	118.248533

37	9.226373	118.249740		76	9.226229	118.248612
38	9.226540	118.249961		77	9.226314	118.248663
39	9.226899	118.250068		78	9.226463	118.248793

BLOCK-B / REHAB-6 (3.39 has)						
POINT	**LATITUDE**	**LONGITUDE**		**POINT**	**LATITUDE**	**LONGITUDE**
1	9.225883	118.248638		18	9.223560	118.249432
2	9.225840	118.248728		19	9.223722	118.249357
3	9.225770	118.249347		20	9.223863	118.249244
4	9.225766	118.249443		21	9.224050	118.249050
5	9.225683	118.249629		22	9.224251	118.248944
6	9.225345	118.249885		23	9.224407	118.248929
7	9.225164	118.249981		24	9.224534	118.248974
8	9.224981	118.250030		25	9.224638	118.248763
9	9.224904	118.250069		26	9.224675	118.248462
10	9.223665	118.250285		27	9.225025	118.248372
11	9.223617	118.250248		28	9.225159	118.248470
12	9.223686	118.250039		29	9.225174	118.248655
13	9.223650	118.249942		30	9.225088	118.248836
14	9.223502	118.249734		31	9.225479	118.248691
15	9.223262	118.249662		32	9.225617	118.248616
16	9.223301	118.249534		33	9.225893	118.248533
17	9.223400	118.249518		34	9.225970	118.248592

BLOCK-B / REHAB-7 (2.72 has)					
POINT	LATITUDE	LONGITUDE	POINT	LATITUDE	LONGITUDE
1	9.225736	118.249698	16	9.223005	118.251628
2	9.225339	118.250137	17	9.222950	118.251456
3	9.225158	118.250276	18	9.222960	118.251285
4	9.224879	118.250432	19	9.223089	118.250931
5	9.224751	118.250607	20	9.223106	118.250887
6	9.224640	118.250810	21	9.223132	118.250856
7	9.224365	118.251538	22	9.223337	118.250661
8	9.224002	118.252225	23	9.223673	118.250338
9	9.223727	118.252552	24	9.224241	118.250223
10	9.223713	118.252101	25	9.224516	118.250173
11	9.223681	118.251569	26	9.224686	118.250155
12	9.223588	118.251393	27	9.224844	118.250160
13	9.223284	118.251271	28	9.225202	118.250054
14	9.223050	118.251250	29	9.225351	118.249975
15	9.223018	118.251541	30	9.225623	118.249773

BLOCK-B / REHAB-8 (3.22 has)					
POINT	LATITUDE	LONGITUDE	POINT	LATITUDE	LONGITUDE
1	9.225876	118.249762	31	9.225852	118.250422
2	9.226037	118.250470	32	9.225793	118.250190
3	9.226323	118.250980	33	9.225770	118.250106
4	9.226237	118.251305	34	9.225777	118.249973
5	9.226195	118.251472	35	9.225843	118.249742
6	9.226135	118.251841	36	9.225820	118.249500
7	9.225940	118.251996	37	9.225888	118.249562
8	9.225722	118.252209	38	9.225791	118.249730
9	9.225448	118.252225	39	9.225735	118.249972
10	9.225133	118.252151	40	9.225732	118.250093
11	9.224745	118.251906	41	9.225814	118.250427
12	9.224640	118.250810	42	9.225881	118.250650
13	9.224751	118.250607	43	9.226088	118.251091
14	9.224797	118.250778	44	9.226075	118.251176
15	9.224888	118.250924	45	9.226018	118.251293
16	9.224869	118.251207	46	9.225960	118.251401
17	9.224978	118.251779	47	9.225847	118.251735
18	9.225121	118.251933	48	9.225770	118.251845
19	9.225294	118.252003	49	9.225632	118.251926
20	9.225652	118.251983	50	9.225308	118.251952
21	9.225791	118.251886	51	9.225115	118.251877
22	9.225877	118.251753	52	9.225022	118.251761
23	9.225947	118.251547	53	9.224913	118.251201
24	9.225978	118.251436	54	9.224924	118.250927
25	9.226049	118.251305	55	9.224828	118.250711
26	9.226105	118.251187	56	9.224826	118.250618
27	9.226118	118.251069	57	9.224910	118.250532
28	9.226042	118.250924	58	9.224983	118.250449
29	9.225968	118.250772	59	9.225066	118.250389
30	9.225908	118.250634	60	9.225364	118.250179

APPENDIX VII

Republic of the Philippines
Department of Environment and Natural Resources
ENVIRONMENTAL MANAGEMENT BUREAU
DENR Compound, Visayas Avenue, Diliman, Quezon City 1116
Telephone Nos.: 927-15-17, 928-20-96
Email : emb@emb.gov.ph
Visit us at http://www.emb.gov.ph

JUN 0 6 2012

ECC Reference No. 1006-0021

MR. FERDINAND M. PALLERA
President
Citinickel Mines and Development Corporation
81 Sen. Gil Puyat Ave., Bgy.Palanan
Makati City

Subject: **Amendment of Environmental Compliance Certificate (ECC Ref. No. 1006-0021) for the Toronto Nickel Mining Project of Citinickel Mines and Development Corporation (CMDC)**

Dear Mr. Pallera:

This refers to your request and the submitted revised Environmental Management Plan (EMP) for the above subject project located in San Isidro, Narra, Palawan with ECC issued on September 09, 2010.

Based on the project description, that request is to increase the current mining annual production rate of 1,200,000 dry metric tons (DMT) of nickel ore utilizing the overburden /cut off grade ore which were previously classified as low grade or no commercial value. Likewise, you committed through the revised EMP to implement the following:

1. Comprehensive Annual Environmental Protection and Enhancement Program (AEPEP) to address the impact of the proposed increase in mineral production;
2. Delimit the working areas within the mineral production sharing agreement (MPSA) area of seven hundred sixty eight (768) hectares;
3. Protect and preserve the natural drainage;
4. Comprehensive reforestation and re-vegetation program (in response to the call of government for mass reforestation);
5. Proper disposal of mine wastes (i.e. backfilling, etc);
6. Provision of additional silt ponds and silt dams on top of the existing seventy three (73) silt dams and ponds;
7. Proper solid wastes disposal programs (establishment of materials recovery facility, composting, etc.);
8. Mine rehabilitation program/back filling of stripped overburden from stockpiles in the mined out areas) or restoration of the original vegetative cover;
9. Mine safety and health plans not only for the workers but also including the nearby communities;

10. Dust control activities (water sprinkling of roads, etc.) and proper maintenance of all heavy equipment and machineries;
11. Prevent unnecessary disturbance which may result to noise during operations such as:
    a) Schedule specific time of working hours (predictability) ;
    b) Training for the drivers and operators of equipment and machineries;
    c) Use of noise pollution control devices on identified noise sources.
12. Provide and ensure personal safety of the workers (masks, first aid training course to employees, etc.);
13. Comprehensive social development program including an information and education campaign within the company and nearby affected communities.

In view of the above and the submitted compliance reports on ECC condition nos. **2** on the implementation of IEC program, **5** on the establishment of GHG program, **6** on the conformance to environmental laws, **7** on the conformance to Philippine Mining Act, the request to increase the mining production is hereby granted. Hence, the ECC Project Description, specifically the portion on production is hereby amended and shall now be stated as: ***"The project with an annual mine production of 2,000,000 Dry Metric Tons of nickel ore ..."***.

Please be advised that all conditions of the ECC including the revised EMP, condition numbers 1 and 3 of EMB's letter dated April 20, 2012 and recommendations of the Mines and Geosciences Bureau on the geologic study in relation to the proposed expansion of mine production rate utilizing the overburden low grade ore shall be complied with prior to project's implementation.

Very truly yours,

BY AUTHORITY OF THE SECRETARY:

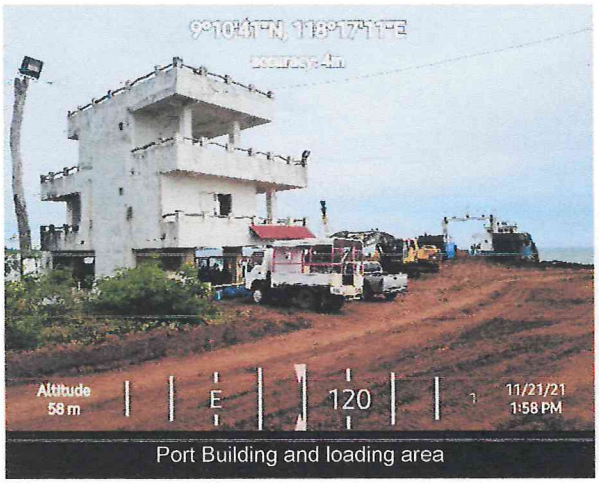
ATTY. JUAN MIGUEL T. CUNA
OIC-Director

Republic of the Philippines
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

SENR032796

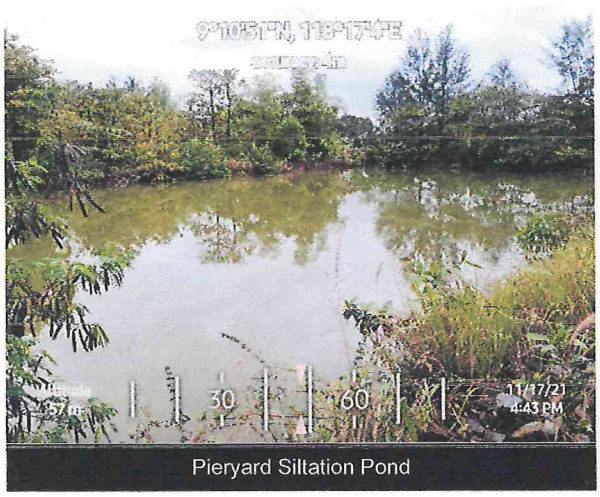
Amount Paid: PhP 1,200.00
Official Receipt No. 6186876
Date: 6/6/2012

APPENDIX VIII
PHOTOS WITH GPS COORDINATES OF LAND-USED IN LAND USE MAP OF CMDC-TORONTO NICKEL MINING PROJECT



Port Building and loading area

Sampling Stand Causeway

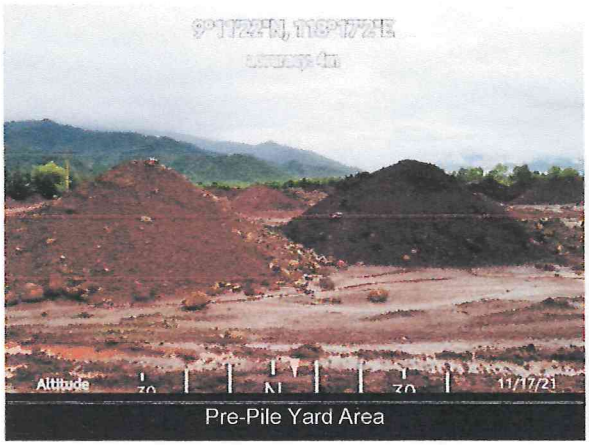


Pieryard Siltation Pond

Pieryard Siltation Pond Discharge Point

Ore Stockyard Area

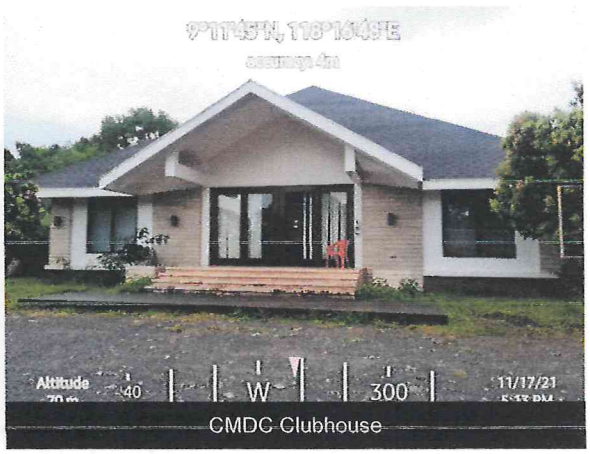
Sampling Stand Transferring



Pre-Pile Yard Area

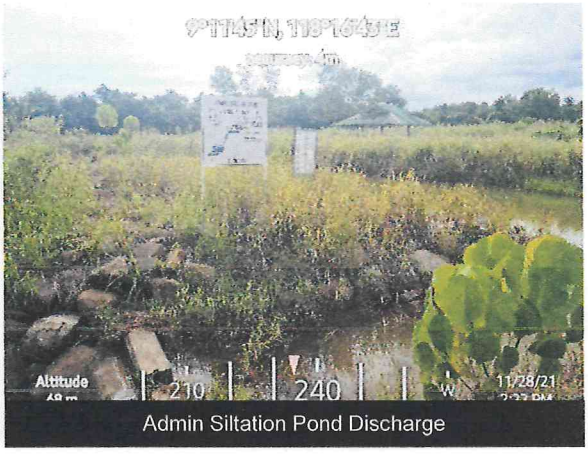
Control Point

Deep Well

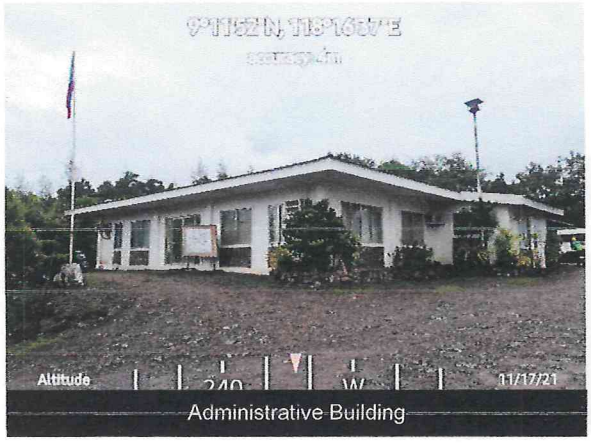


CMDC Clubhouse

Admin Siltation Pond



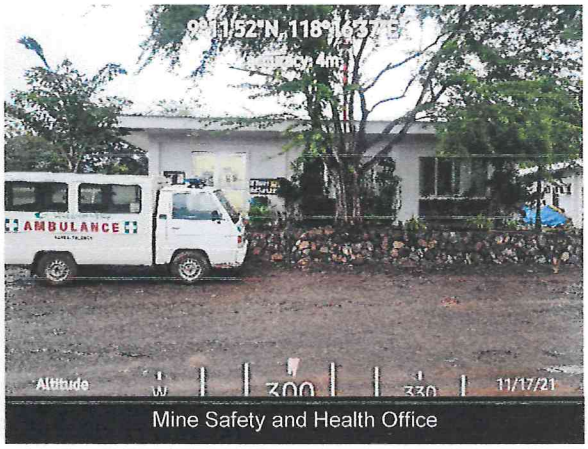
Admin Siltation Pond Discharge



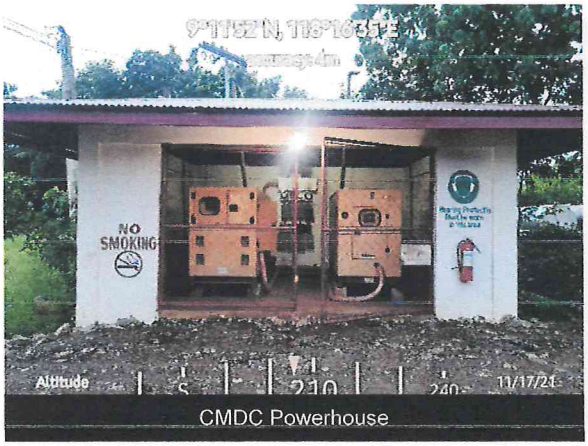
Administrative Building

Assay Laboratory

Sample Preparation Area



Mine Safety and Health Office

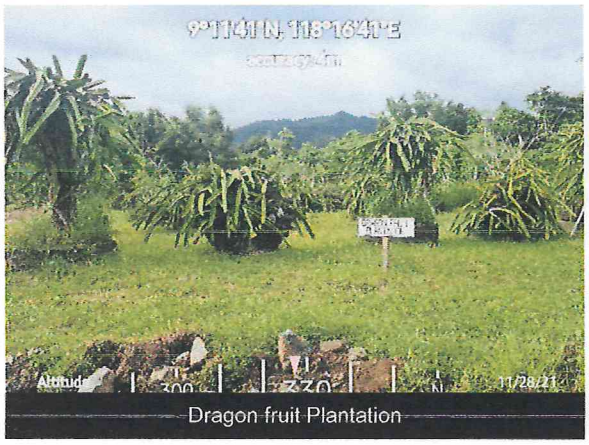


CMDC Powerhouse

Fuel depot

Central Forest Nursery (Nursing stage area)

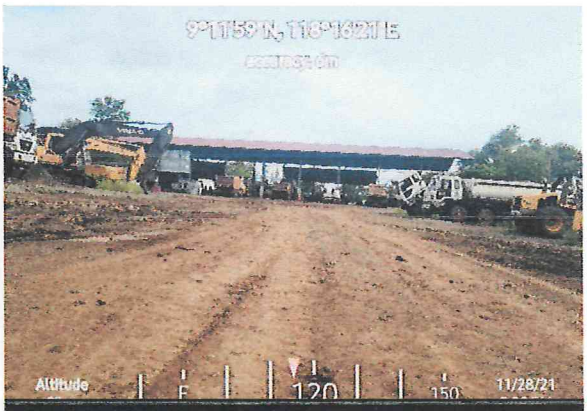
Central Forest Nursery (Out-planting stage area)



Dragon fruit Plantation

Parking area


Materials Recovery Facility (MRF)


CMDC New Motorpool area


Temporary Hazardous Waste Facility and Oli Depot


NGP Limbaga

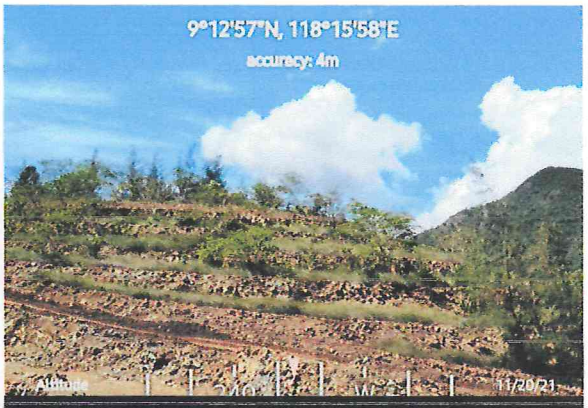

Balitien Siltation Pond Series


Old Communal Dam Siltation Pond Series

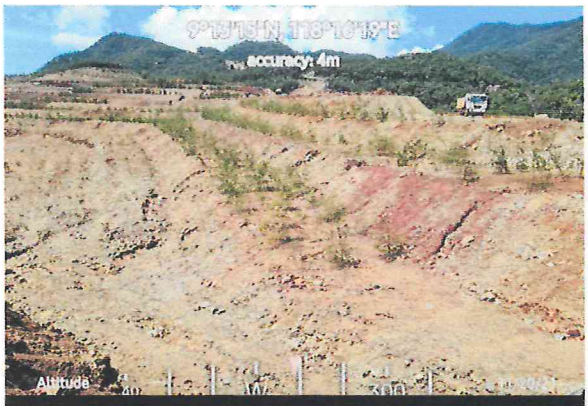

Block A Block 3 Active Area


Block A Block 1 Active Area

Block A Rehabilitation area 1

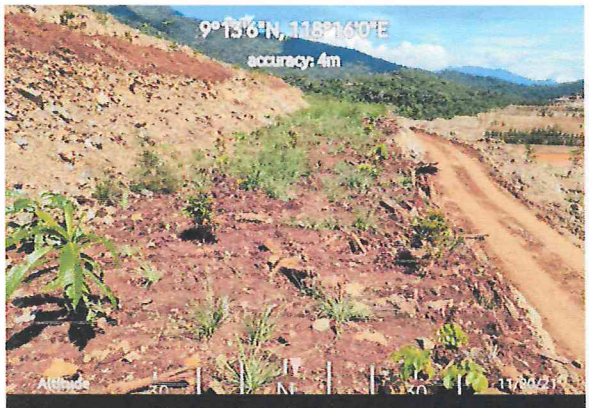


Block A Rehabilitation area 2



Block A Rehabilitation area 3

Block A Rehabilitation area 5



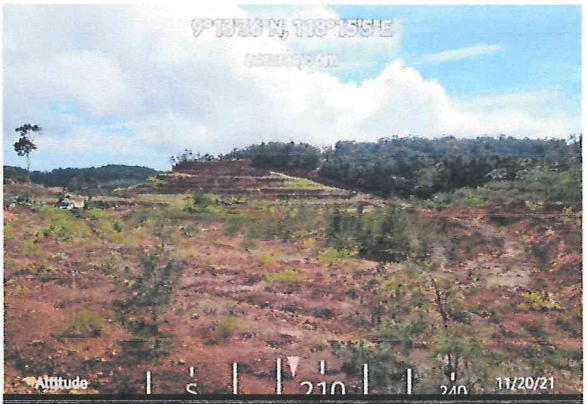
Block A Rehabilitation area 5


Block A Rehabilitation area 7

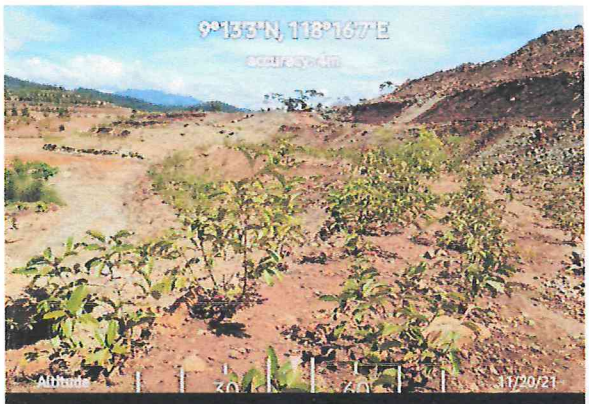
Block A Rehabilitation area 8

Block B Rehabilitation area 1

Block B Rehabilitation area 4



Block B Rehabilitation area 5



Block A Rehabilitation area 6 (TRP)

Block B Rehabilitation area 2 (TRP)

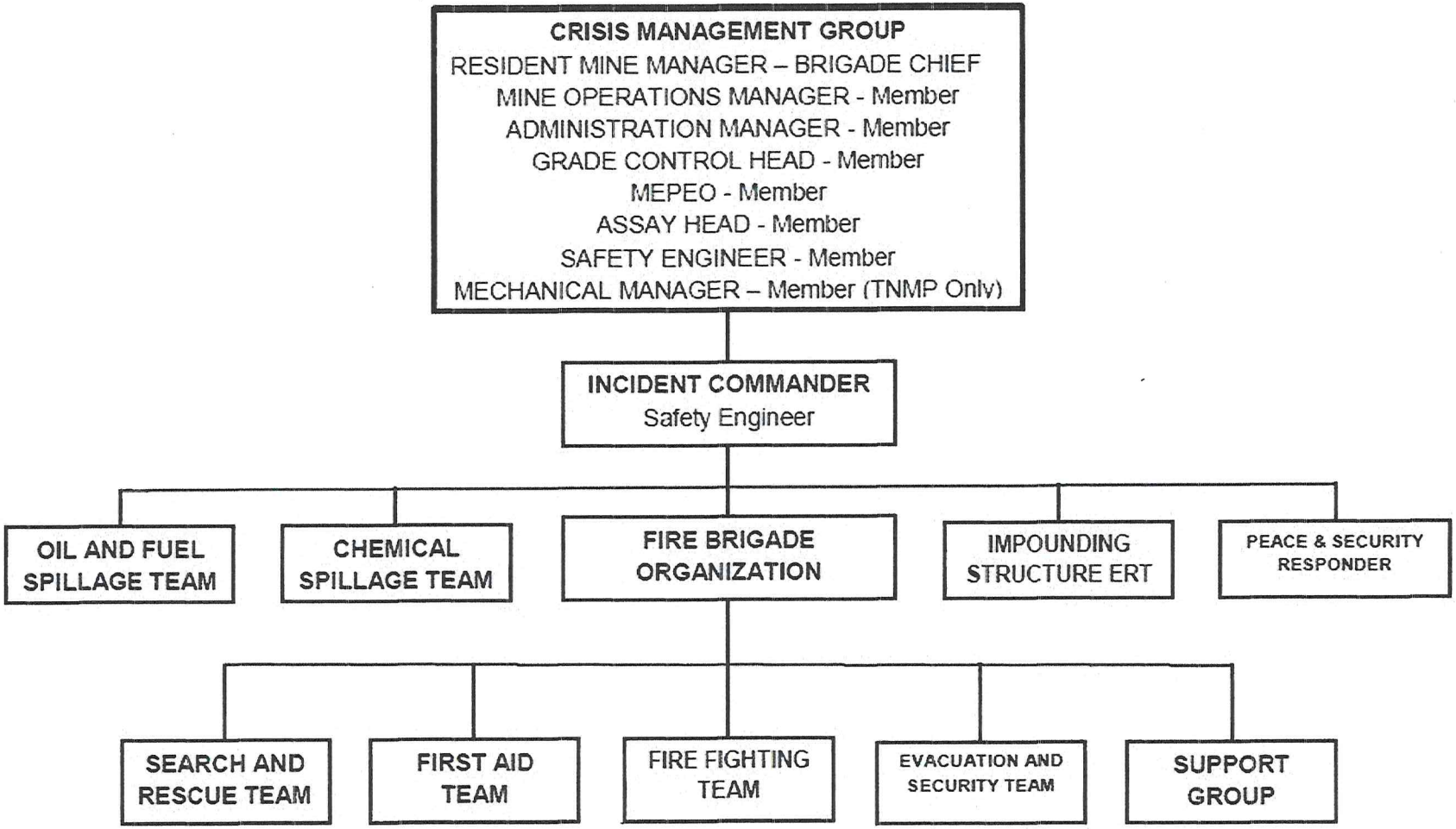
Block B Rehabilitation area 6 (TRP)

Block B Rehabilitation area 6 (TRP)

Block B Rehabilitation area 7 (TRP)

Block B Rehabilitation area 8 (TRP)

APPENDIX X
EMERGENCY RESPONSE BRIGADE AND FIRE BRIGADE ORGANIZATION



APPENDIX XI

Detailed Coordinates of Mine Waste Area or Waste Dump

WASTE DUMP AREA (1.41 has)		
POINT	LATITUDE	LONGITUDE
1	9°11'28.2300"	118°17'0.6108"
2	9°11'30.2964"	118°16'59.898"
3	9°11'30.7968"	118°16'59.8548"
4	9°11'31.1856"	118°17'0.5964"
5	9°11'31.4556"	118°17'1.0896"
6	9°11'31.9524"	118°17'1.6800"
7	9°11'32.4888"	118°17'2.2344"
8	9°11'32.6616"	118°17'2.4720"
9	9°11'32.7480"	118°17'2.7060"
10	9°11'32.7624"	118°17'2.8716"
11	9°11'33.0252"	118°17'3.3432"
12	9°11'32.9892"	118°17'3.6024"
13	9°11'31.8408"	118°17'3.9084"
14	9°11'31.4880"	118°17'3.9768"
15	9°11'31.2756"	118°17'4.0128"
16	9°11'31.1172"	118°17'4.0164"
17	9°11'30.9588"	118°17'4.0272"
18	9°11'30.7248"	118°17'3.9948"
19	9°11'30.2496"	118°17'3.6924"
20	9°11'29.6628"	118°17'3.2028"
21	9°11'29.0544"	118°17'3.0336"
22	9°11'27.9024"	118°17'2.3172"
23	9°11'27.2148"	118°17'1.7844"
24	9°11'26.4084"	118°17'0.4956"
25	9°11'26.6208"	118°17'0.5244"
26	9°11'27.8628"	118°17'0.5964"
27	9°11'28.0212"	118°17'0.6216"

APPENDIX XII

GEOTAGGING OF INDIGENOUS MOTHER TREES IN BARANGAY BATO-BATO, NARRA, PHILIPPINES

Introduction:

The quality of seedlings has a significant impact on tree survival, growth performance, rotation length, and amount and quality of timber produced. As a result, quality planting materials are now being used in tree farming, reforestation, agroforestry, and even in mine rehabilitations in the Philippines. According to several studies, such as Milan and Margraf (1994), planting indigenous trees improves biological diversity. However, Roshetko and Verbist (2000) pointed out that in the Philippines, the process of locating native tree germplasm is disorganized. In the Philippine forests, there is a scarcity of data on the distribution and phenology of these valuable indigenous species. Further, even the Department of Environment and Natural Resources (DENR) and other government entities do not maintain records of the position and distribution of mother trees of premium natural species (Harrison et al. 2008). This has a downfall effect on the seedling producers because they are unable to diversify their seedling outputs due to the lack of understanding about the distribution and phenology of mother trees, which has led to the usage of wildlings, which frequently results in seedlings of poor physical quality (Gregorio 2006). Local information about where to find superior germplasm exists, but it has not been compiled and published, thus it is not readily available to stakeholders. Hence, this study will be conducted to document the distribution of mother trees of native timber species in Brgy. Bato-bato, Narra, Palawan, evaluate their phenotypic characteristics, and understand their phenology.

Methodologies:

Identification. Tree species will be identified using picto-guides and with the help of local guides. Species name and family name will then be determined using Revised Lexicon of Philippine Trees developed by Justo p. Rojo. Conservation status of the species will be determine using DAO 2017-11 "Updated National List of Threatened Philippine Plants and their Categories."

Location and Distribution. Locations of potential mother trees will be coming from the local guides that have information on where these potential mother trees are located.

Phenotypic Characteristics. Physical quality of candidate indigenous trees will be evaluated using the criteria and parameters set by DENR Administrative Order (DAO) 2010-11. These parameters include (a) diameter measurement of 28 cm; (b) merchantable height of 3 m; (c) stem straightness; (d) stem forking; (e) branch angle; (f) stem circularity; (g) tree health; (h) branch thickness; and (i) branch persistence.

Table 1: Criteria and parameters of DENR to assess the physical quality of the mother trees

Criterion	Parameter
Stem growth	Total height (m) Diameter at breast height (cm)
Stem form	Stem straightness Forking Circularity of the stem
Health	Tree health
Branching characteristics	Branch angle Branch thickness Branch persistence

Source: DENR DAO 2010-11

Table 2: Selection criteria for potential Mother trees and their corresponding ratings

Criteria	Rating Scales			
	6	5	4-3	2-1
Stem Straightness Stem Forking	Perfectly Straight Forking above 6m	Slight bending Forking between 6m and 3m	Bending Forking below 3m	Over bending Multi – Stem forking
Branching angle	Branches forming 90°	Branches forming 90° and 75°	Branches forming 75° and 60°	Branches forming 60° and 45°
Stem Circularity	Stem is round	Not Perfectly Rounds	Oblong Shape	No Shape
Tree Health	Green-lush Vigorous crown	Intermediate	Thin yellow Crown	
Branch Thickness	Thin branches relative to tree size		Intermediate	Thick coarse branches relative to tree size
Branch Persistence	Dry Branches shed relatively fast after canopy closure			Dry branches remain on the stem for several years after canopy closure.

Source: DENR DAO 2010-11 (1- very unacceptable; 2 - unacceptable;3 - relatively acceptable; 4- fair; 5 - good; and 6 - highly acceptable).

The ratings for each parameter will be totaled together, and an overall score for each tree will be calculated using the mean score of each tree. The overall assessment will be described on a scale of 1 to 6, with 1 being very unacceptable, 2 being unacceptable, 3 being generally acceptable, 4 being fair, 5 being good, and 6 as highly acceptable.

Phenology. Personal interviews with local guides will be conducted to gather information regarding the phenological characteristics (flowering and fruiting stage) of identified mother trees.

Geotagging. An android phone with installed GeoCam and Global Positioning System (GPS) will be utilized to determine the coordinates, altitude, date and time reflected in the photo of candidate mother trees. Geotagged photos will be then overlayed in the ArcGIS software or any available software in order to generate a map and upload it to google earth.

REFERENCES:

DENR Administrative Order No. 2010-11, (2010). Revised Regulations Governing Forest Tree Seed and Seedling Production, Collection and Disposition.

Gregorio, (2006). Improving the effectiveness of the forest nursery industry in Leyte Province, the Philippines, PhD thesis, The University of Queensland, Gatton.

Harrison, SR, Gregorio, NO, Herbohn, JL and Dargusch, P., (2008). 'Designing and implementing best management practice in smallholder forestry nurseries', in Tropical Forestry Change in the Changing World, Proceedings from the FORTROP II International Conference, 17–20 November 2008, Bangkok, Thailand.

Milan, P and Margraf, J., (1994) 'Rainforestation farming: an alternative to conventional concepts', Annals of Tropical Research, vol. 16, no. 4, pp. 17–27.

Roshetko, J, Verbist, B., (2000). Tree Domestication, lecture notes in support of training course on Agroforestry for Improved Land-use and Livelihood Systems in Southeast Asia, ICRAF, Bogor.

Citinickel Mines
AND DEVELOPMENT CORPORATION
TORONTO NICKEL MINING PROJECT
K.M. 108, Brgy. Bato-bato (San Isidro), Narra, Palawan

Management System ISO 14001:2015

2022 SCHEDULE OF ACTIVITIES:

Activities	Month											
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Preparation of research proposal												
Presentation of research proposal to the management												
Crafting of strategies in the conduct of the research												
Data collection												
Finalization												
Presentation of findings												
Submission of final output												

Legend:

Plan:

Actual:

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Table of Contents

1.0 CORPORATE DATA

1.1	Project Name:	**PULOT NICKEL MINING PROJECT**
1.2	Company Name:	**CITINICKEL MINES AND DEVELOPMENT CORPORATION (CMDC)**
1.3	Office Address:	10th Floor ORE Central Building 9th Avenue Corner 31st Street Bonifacio Global City Metro Manila
1.4	Telephone No.:	(632) 889-1129/ 889-1130
1.5	Facsimile No.:	(632) 888-5253
1.6	Site Location:	Sofronio Española, Palawan
1.7	Contact Person:	**FERDINAND M. PALLERA** President

2.0 PROJECT DESCRIPTION

2.1 Project Details

The Citinickel Mines and Development Corporation's (CMDC) Pulot Nickel Mining Project is covered by the following permits:

MPSA No. 229-2007-IVB with an area of 1,408 hectares
Mine ECC Ref. Code No. 0707-016-2140
Allowable Production: 2.0M DMT per year
Causeway ECC No. ECC-R4B-0803-073-2140

2.1.1 Project Location, Access/Transportation Details

The Project is located in Barangay Labog, Punang and Pulot Interior Municipality of Sofronio Española, Palawan bounded by the following coordinates as per approved MPSA area:

Corner	Latitude	Longitude
1	9° 6'30.05"	117°58'18.21"
2	9° 6'30.05"	117°56'59.62"
3	9°4"19.85"	117°56'59.62"
4	9°4'19.85"	117°56'33.42"
5	9°3'27.27"	117°56'33.42"
6	9°3'27.27"	117°57'52.01"
7	9°3'53.81"	117°57'52.01"
8	9°3'53.01"	117°58'18.21"

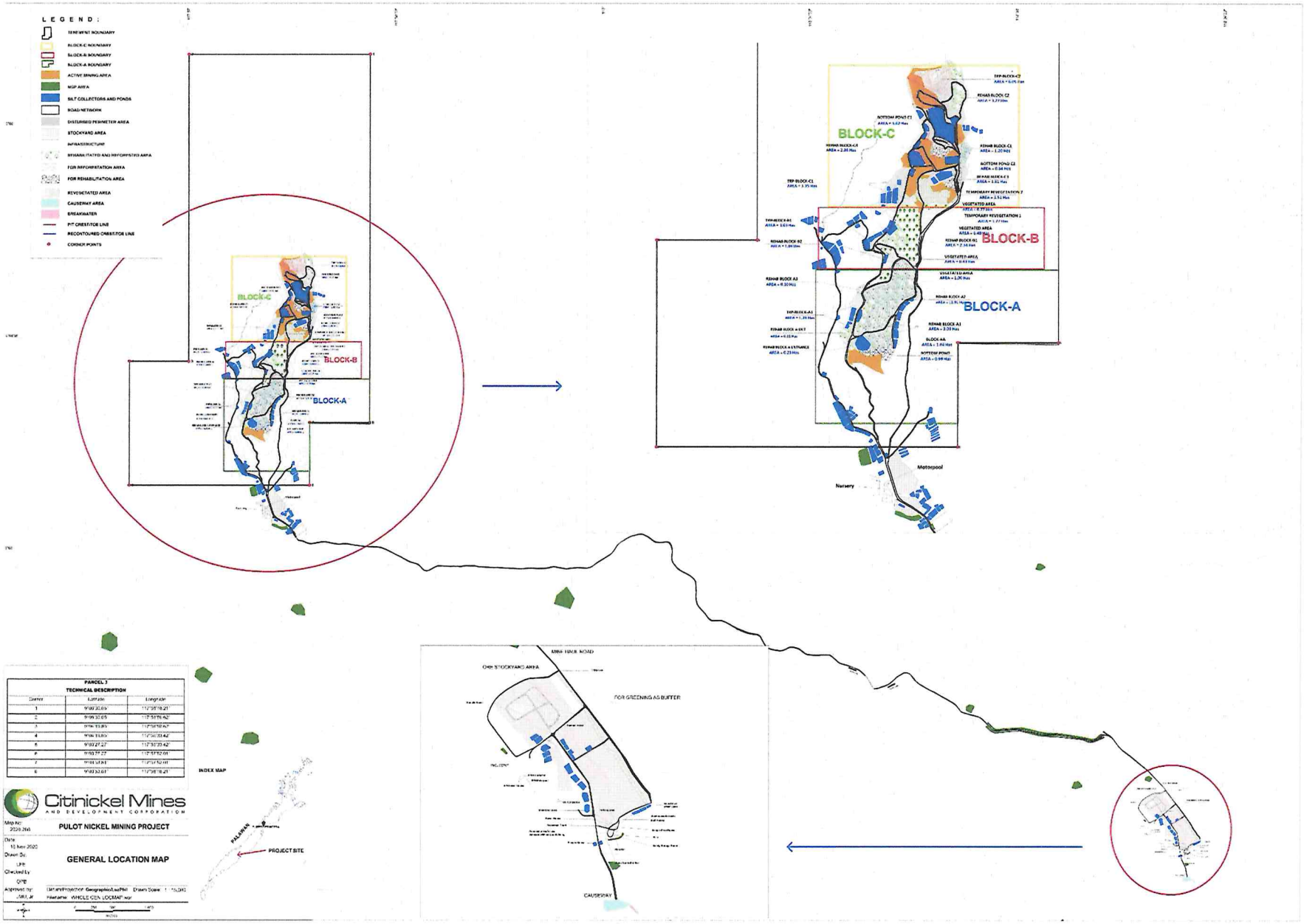
The project area is situated 154 kilometers south of Puerto Princesa, Palawan, and eighteen kilometers from the National Highway.

From Manila, the project site can be accessed through a direct one-hour flight to the capital city of Palawan, Puerto Princesa. Passengers also have the option to ride the commercial boat that reaches Puerto Princesa after a 24-hour journey.

When traveling from Puerto Princesa City via a land trip, the project site can be accessed by a 3-hour land trip via the south road passing through the Municipalities of Aborlan and Narra. Bus companies such as RORO Bus, Cherry Bus, and some commercial utility van services also ply the area.

The project covers 1,408 hectares of Mineral Production Sharing Agreement (MPSA-229-2007-IVB) which was approved by DENR Secretary Angelo T. Reyes on January 3, 2007.

The Project location and MPSA area of Sofronio Española Operation are shown in **Figure 1**



PULOT NICKEL MINING PROJECT

2.2 Estimated Capital Costs

The estimated initial capital expenditures and investment for the project are both Narra and Española IS **Php234, 012,118.78**. Breakdown and details of the aforementioned amount are shown in **Table 1** below:

Table 1. Details of the Initial Capital Expenditures

Particulars	Cost (PHP)
Exploration Drilling	12,320,000.00
Land Acquisition	3,745,500.00
Mobilization/Demobilization	17,250,000.00
Land clearing and site preparation	5,609,297.50
Road Construction	6,339,375.00
Safety and Health Management	244,090.00
Environmental cash fund	4,219,600.00
Environmental Remediation	21,493,383.00
Causeway Construction	4,600,000.00
Stockyard Development	6,265,200.00
Civil Works	16,657,750.00
General Services	3,300,000.00
Mechanical, Electrical and Laboratory Equipment	9,328,000.00
Office Equipment	2,092,200.00
Pre/Feasibility Studies	1,100,000.00
Permitting	3,080,000.00
EIS/ECC Acquisition	1,650,000.00
Occupation Fee	84,480.00
Working Capital	114,633,242.58
TOTAL	**234,012,118.78**

2.3 Minerals (Types of Minerals Extracted)

The minerals to be produced or mined in the project area is nickel ore with an average grade of 1.40% Nickel and other associated metal and minerals such as cobalt and iron.

2.4 Mining Method

The project pertains to the mining of laterite composed of limonite and saprolite ores. A type of mineral deposit requires a surface mining method. Standard operation procedures for the development scheme of the project before the mining operation will be maintained as follows:

- Construction of access roads and/or modification of existing mine roads. The road construction or improvement necessitated the utilization of bulldozer, grader, front-end loaders, compactor, excavator, and hauling trucks (dump trucks).

- Clearing of vegetation. The ore zone planned to be mined will be cleared with existing shrubs, bushes, trees, and other vegetation.

- Stripping of the overburden. Using hydraulic excavators or shovels stripping of overburden will be implemented. Removed topsoil/debris will be set aside and stockpiled to temporary stockpile area for future rehabilitation used.

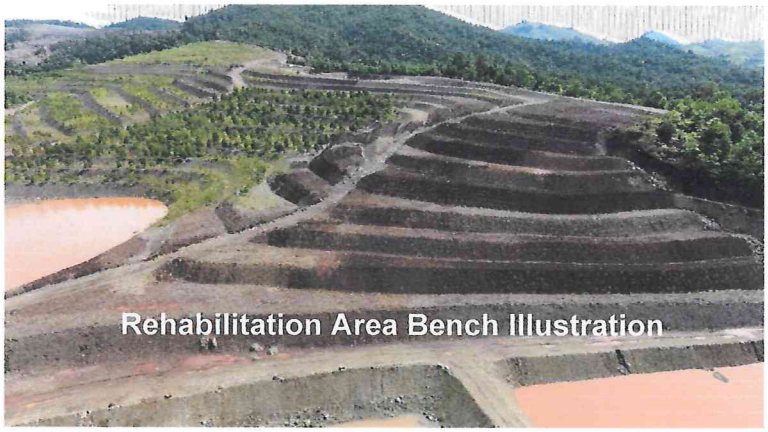
- Construction of benches and access ramps. Bench mining method will be used considering its undulating topography. In this project, the contour benching type will be adopted, these features the following:

- 3-meter bench height
- Multi-level mining that provides flexibility in handling various grades and tonnages
- Mined-out areas can be used as waste dumps
- Multiple mining areas can be programmed as the need arises.

A minimum of two pits will be maintained at all times to provide flexibility in operations and grade control. Pits will start from the lowest elevation progressing upwards to higher elevations. Earth-moving equipment like backhoes, excavators or shovels and loaders in combination with dump trucks will be utilized. All run-of-mine ores (limonite and saprolite) will be hauled directly to drying stockyards or loading stockyards in preparation for shipment.

Bench Parameter:

e = batter angle : 70°
a = pit-slope angle : 45°
n = bench height : 3m
c = berm width : 3m
Road width : 20m



2.5 Estimated Production

Under the new amended Environmental Compliance Certificate (ECC), the company had been granted a permit to produce an annual capacity of 2,000,000 WMT of nickel ore. The computed overburden or wastes tripping ratio is less than **1.00**. The estimated production for 2022 was around 800,000 WMT of nickel ore.

2.6 Plant Process

CMDC has no provision yet for the processing of nickel ore. Nickel ore is directly shipped to the foreign market in China and Australia.

2.7 Ore Stockpiling

The beneficiated ore is hauled and stockpiled at the 25-hectare ore stockyard area located at pier site. The stockpiling is done according to ore classification based on Ni and Fe content for grade control purposes during shipment.

Stockpiled soil and other waste materials will also be susceptible to erosion during rain. This will likewise contribute to the siltation. The water bodies, draining the stockpile areas, particularly Sulu Sea will be affected. This impact will be significant particularly during heavy rains.

It should be noted however that the drainage of the stockpile areas is engineered to allow run-offs to be directed initially to the rock dams, sumps, and the siltation ponds before discharge to the receiving bodies of water. This will mitigate the impacts of siltation. The impacts are minimal if erosion/siltation control measures are maintained. These include the preservation of some existing areas of grass, shrubs, and trees.

As mentioned before, sedimentation of the waterways is controlled by diverting the run-off water from the stockpile areas. Catchment basins are provided not only by siltation ponds but also by excavations in the stockyard. This ensures limited contamination of other waterways. The vegetation around rivers also provides good protection against contaminated run-off.

2.7.1 Pier Stockyard or Temporary Stockpile Area

The project has no area identified as Pier Stockyard. Ores are beneficiated and stored at the "Ore Stockyard" that is located approximately 200 meters away from the shoreline and has established environmental mitigating/

impounding structures where water laden with silt from a downpour are collected/ contained and settled in the Ore Stockyard Settling Pond.

2.8 Ore Shipment

The limnetic zone is located far from the causeway/pier docking area, foreign vessels are restricted to anchor 3.22 kilometers offshore to avoid coral reef damage and collision between small fishing boats that are usually fishing nearby. The TX excavator and wheel loader reclaim the beneficiated nickel silicate ore from the stockyard onto dump trucks which haul the ore to the pier about 200m to 800m away. The dump trucks unload directly to 1,500-2700 WMT LCTs anchored alongside the pier. The loaded LCTs travel directly to the anchorage area for unloading. Using a crane fitted at the ore vessel, the ore is loaded into the boat. With 2 to 3 LCTs operating 24 hours per day, it normally takes 4 to 5 days to fully load 25,000 to 50,000 WMT-capacity ore boats. The ore is brought to PAMCO of Japan and other smelting companies in China. To accommodate the shipment of nickel ore to China, at least two (2) LCTs are occasionally hired to augment the increased ore shipment schedule.

2.9 Projected Life of the Project

The company's operation is barely ten (10) years old since the start of development in the second quarter of the year 2011. Based on resource estimate of the ore deposit indicates potential production of 2.0 M tons/year that can last for almost 9 years. However, due to fluctuating market demand and world market price directly affect the operation of the company. The firm is yet to identify the exact year of decommissioning. Meanwhile, confirmatory or exploration works are continuously being conducted for possible other precious metal detection and the result of which will surely augment the life of the project.

2.10 Mineral Reserves/Resources

Based on the previous initial blocking survey of the three (3) areas conducted by the QNI and Marubeni-Pacific in the mine site the remaining measured mineral reserves is shown in **Table 2** with their respective cut-off grade.

Pulot Nickel Ore Reserve

Resource Inventory of Limonite					
Resource Classification	DMT	% Ni	% Fe	% Co	Sp. Gr.
Measured	2,665,095.25	1.40	38.03	0.11	1.10
Indicated	801,735.00	1.37	35.62	0.12	1.10
Inferred	812,460.00	1.43	34.29	0.11	1.10
Total	4,279,290.25	1.40	37.19	0.11	1.10

Resource Inventory of Saprolite					
Resource Classification	DMT	% Ni	% Fe	% Co	Sp. Gr.
Measured	8,138,778.75	1.71	12.43	0.03	1.35
Indicated	13,637,565.00	1.59	12.33	0.03	1.35
Inferred	22,492,586.25	1.51	12.35	0.03	1.35
Total	44,268,930.00	1.57	12.36	0.03	1.35

Table 2. Reserve Estimates

2.11 Potential for Additional Reserves

The mining claim totaling 1,408 hectares and most of the areas are still not subjected to drilling / detailed exploration is a potential source for additional ore reserves. Ongoing exploration works simultaneously with the conduct of mine operations will be the standard operating procedures in the mine development/production activity.

2.12 Utilities

2.12.1 Power Supply

The Palawan Electric Cooperative (PALECO) was commissioned by the company as a regular supplier of its daily electricity needs. Also, three (3) units 100 KVA transformer using the three-phase method of connection was installed to maintain the voltage requirements of the office, laboratory equipment, and pier facilities for barge loading operations. Furthermore, the company maintains two (2) units standby generator sets (100 KVA and 125 KVA) as an alternate source of power in the event of unexpected power interruption. Based on 2021 electricity monitoring data, an average of 585.8 kWh/day was used to sustain the daily requirements of the amenities and especially during shipment operation. The energy committee will set a target reduction of electricity consumption for the year 2022, in line with the objectives and programs for ISO 14001:2015.

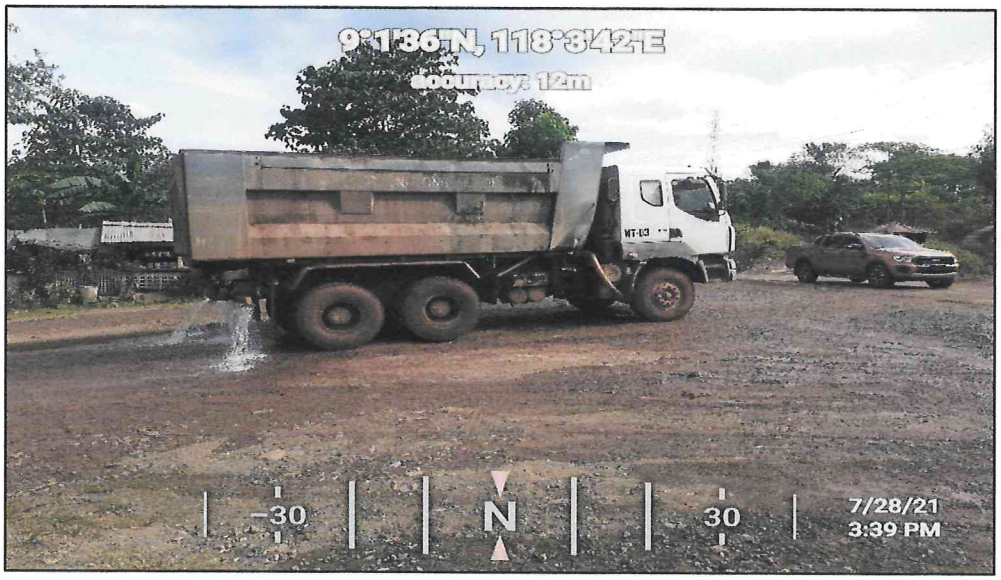
2.12.2 Water Supply

Potable drinking water was sourced-out from the nearest water refilling station of Sofronio Española. Likewise, water for domestic used is pump-out from a constructed deep well (water permit number WP no. 025114) using a submersible water pump directed to a 1,400 liters water tank capacity for distribution to staff house, admin building, assay laboratory, and sample preparation area.

Based on 2021 domestic water consumption data, an average of 6.75 cubic meters per day was used to sustain the daily requirements of the facilities. Regular inspection of leakages and posting of water conservation reminders were implemented to attain the 1% target reduction of water consumption throughout the year 2022 by following the objective and programs of ISO 14001: 2015 policy.

Water use for road sprinkling is sourced out from the settling ponds and nearby rivers (e.g., Pulot and Punang River) depending on the weather conditions.

Settling pond as source of water for road sprinkling



Regular road watering for dust suppression measures

2.13 Mining Equipment

2.13.1 Lists of Mining Equipment

a. Excavator - 4
b. Dump Trucks - 6
c. Bulldozer - 1
d. Compactor - 1
e. Water truck - 3
f. Service Pick Up - 3
g. Motorcycle - 2
h. Service jeep - 2
i. Service truck - 1

2.13.2 Lists of Fixed Equipment

Fixed equipment that was provided and installed in the project are Generator Sets being used to provide power at the mine site and port operations, laboratory sections consisting of X-ray Fluorescence, Drying Oven, Laboratory Crushers, Pulverizing machine, and other laboratory equipment.

2.14 Workforce Information

2.14.1 Total Operational Workforce

A total of one hundred nineteen (119) personnel are employed for the project. The table of organization for the project was further elaborated on the succeeding page.

For camp security, a total of fourteen (14) security guards were hired through a security agency. They work on two (2) shifts (7:00 am to 7:00 pm, and 7:00 pm to 7:00 am).

2.14.2 Housing Option

Hired in-house employees/officers (e.g., Manager, Senior and Junior Staff) were provided with a staff house located within the pier site. Workers from distant places are provided with bunkhouses while those locally hired reside in the host and neighboring barangays.

ADMIN BUILDING

VILLA 2

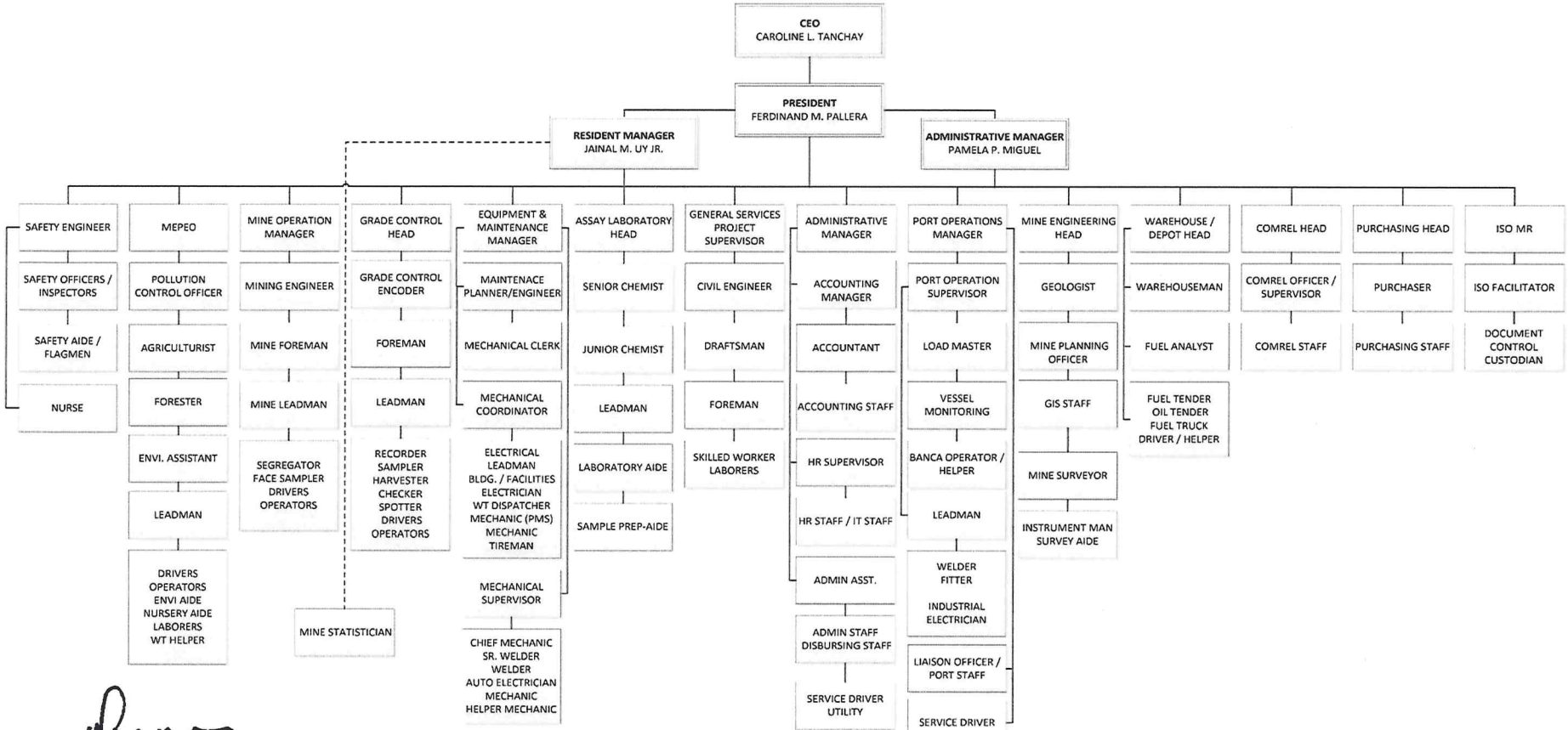
PIER SITE OFFICE

Citinickel Mines
AND DEVELOPMENT CORPORATION

CERTIFIED ISO 14001:2015 CRN 01 104 1633368
BY: TUV RHEINLAND / ID NO. 9105086752
REVISION 3

TABLE OF ORGANIZATION

PULOT NICKEL MINING PROJECT



FERDINAND M. PALLERA
President

2.15 Development Schedule

2.15.1 Site Development and Production Start-Up

The project started its development in the 2nd quarter of year 2011. The approximate volume of production for the year 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, and 2021 were 261,192 metric tons, 1,359,505.25 metric tons 1,150,275.361 metric tons, 646,562.7 metric tons, 1,260,484.6 metric tons, 304,855 metric tons, 165,210.5 metric tons, 123,608.2 metric tons, 362, 646.6 metric tons, 253,736.20 and 807,903.4 metric tons respectively.

For the year 2022, the company will sustain its production schedule to attain 800,000 WMT.

Table 3 shows the Development and Production Gantt Chart.

Site Development and Production Start-Up													
Activities	2022												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Remarks
1. Identification of Equipment Complement based on target volume production													
2. Access Road Improvement/Maintenance													Continuous activities
3. Construction of Mine Facilities													
- Assay Laboratory													Completed
- Mine Office/Warehouse/Mine Pit Office													Completed
- Temporary Bunkhouse Structure													Completed
- Motor pool/Mechanical Shop													Completed
- Sample Preparation House													Completed
- Sampling House													Completed
4. Mine Environmental Structures													
- Ore Stockyards/Beneficiation Area													Completed
- Settling Ponds/Sumps													Completed
- Drainage systems establishment/maintenance													Continuous activities or as necessary
- Barging Area/Causeway Maintenance													After shipment completion
5. Mine Development													
- Tree Cutting													Once the on going application of STCP is approved
- Clearing of vegetation													
- Stripping and Bench Forming													
5. Extraction of Minerals													
- Ore Mining (Continuing)													As per schedule
- Ore Stockpiling (Continuing)													As per schedule
6. Ore Shipment													As per schedule

3.0 SPECIFIC STRATEGY TO LIMIT AND CONTROL THE IMPACTS

3.1 Land Resources and Vegetation

Opening a mine particularly using a surface mining method will necessitate clearing of vegetation and stripping to extract the nickel ore. The result of the development is a temporary land disturbance that will eventually be rehabilitated.

The specific disturbance and impact on the environment are as follows:

a. Land deformation and creation of barren surface that will be exposed to rainfall and heat of the sun;

b. Eventually, during the rainy season, open space consisting of road cuts, mine benches/ mine openings, will be disturbed and the process of erosion and siltation will be active on this barren land surface;

c. Contamination of creeks and rivers as well as farm lots with laterites; and

d. Exposure of dry land surface with loose soil particles to wind and heat-producing dust will be aggravated with the passage of a fleet of haul trucks.

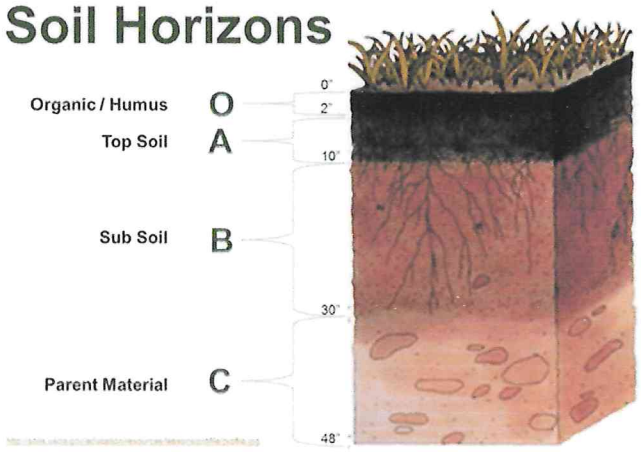
As a responsible mining company, the above-identified land disturbance and impact will be fully addressed with appropriate environmental mitigating measures as the mining of nickel advances.

3.1.1 Topsoil and Subsoil Management

Soil is one of the most important natural resources on earth. Most of the life forms on earth depend on the soil as it is a direct or indirect source of food for them. Plants obtain their nutrients from the soil and animals are dependent on them. Soil is home to many different forms of life. The soil has been formed by weathering, erosion, and decay of living plants and animals; however, valuable topsoil is formed so slowly that it should be protected and valued because it cannot be replaced in a lifetime of a man. Soil can be defined as the naturally occurring, loosed covering of broken rock particles and decaying organic matter (humus) on the surface of the earth which is capable of supporting life.

The soil consists of various layers called soil horizons and the arrangement of these horizons in the soil is known as the soil profile. Each soil horizon is different from the other in texture, color, chemical composition, and depth:

(i) ***O Horizon****: It is the top organic layer of soil, made up mostly of leaf litter and humus (decomposed organic matter).*



(ii) ***A Horizon:*** *This layer is also called topsoil. It is found below the O horizon. Seeds germinate and plants grow in this dark-colored layer. It is made up of humus (decomposed organic matter) mixed with mineral particles. Sometimes in the lower part of A-horizon, leaching of minerals and clay content takes place as water drips through this region. The process of leaching is called eluviation.*

(iii) ***B Horizon:*** *It is also called the subsoil-this layer is beneath the A Horizon and above the C Horizon. It contains clay and minerals deposits like iron, aluminum oxides, and calcium carbonates that it receives from layers above it when mineralized water drips from the soil above.*

(iv) ***C Horizon:*** *The layer beneath the B horizon and above the R horizon. It consists of slightly broken-up bedrock. Plant roots do not penetrate this layer, very few organic materials are found in this layer.*

(v) ***R Horizon:*** *This consists of the unweathered rock layer that is beneath all the other layers.*

Soil material is a critical component in the mining industry, where a massive volume of soil is involved particularly in open cast mining. However, poor topsoil management and lack of awareness on the importance of these materials by previous mining engineers and environmental officers has led to the shortage of topsoil and subsoil for mining rehabilitation used.

For future decommissioning plans, the company will sourced-out topsoil and subsoil from nearby farmland and grassland to augment the needs of topsoil requirements. Recovered topsoil and subsoil from the dredging of siltation ponds and external overburden were temporarily stored in waste dumping area located at Block A centered with coordinates 9º3'31" N and 117º57'36" E for future rehabilitation used. The temporary dumping area is equipped with bund walls to prevent nutrient depletion. Likewise, soil amelioration using organic matters and commercial fertilizer application is being applied to planted trees in mined-out areas to expedite the recovery of planted species.

Retrieval of stockpiled topsoil and subsoil for backfilling and topsoil matting on declared mined-out area were performed progressively.

3.1.2 Buffer Zone Management

The buffer zone strip exceeds 50 meters from MPSA boundary of PNMP. All environmental mitigating strucutures (e.g. Settling ponds, Silt collector sumps and drainage canals) are constructed 20-40 meter away from the edges of the normal high waterline of rivers and creeks that are within the MPSA. Bamboo plantation along gullies and creeks will be establish as part of the greening program and slope stabilization. Other bamboos were directly planted to the mine rehabilitation sites for adaptation and observation.

3.1.3 Progressive Rehabilitation Program

CMDC is proactive in the reforestation programs of denuded areas within its MPSA and adjacent impact barangays. To provide alternative sustainable livelihood to the grassroots of Sofronio Espanola, the company continuously provides a donation of Udling,

Agoho, and seedlings. Moreover, the company is also committed to rehabilitating the denuded and non-mineralized areas outside mining

claims adversely affected by human-induced activities such as uncontrolled forest extraction for timber and charcoal production, forest fires, unplanned settlements, and slash-and-burn making was included in the national greening program of the company. At the end of 2022, the company rehabilitated a total area of 3.92 hectares of mined-out areas. Mangrove areas in Pulot Shore, Sofronio Espanola have been enriched with a total of 2,160 propagules planted with an 80% survival rate. Fast-growing endemic and dominant species of Kupang (*P. Timoriana),* Agoho *(Casuarina equisetifolia)*, Narra *(Pterocarpus indicus)* are currently being used by CMDC for immediate rehabilitation of mined-out areas. Introduction of climax species is done starting one (1) year after the fast-growing species have been established which includes Nato *(Palaquium luzoniense)*, Kamagong *(Diospyros blancoi)*, Apitong (Dipterocarpus grandifloras), Mahulay, Ipil *(Intsia bijuga)* and Udling/eugenia oleina *(syzygium myrtifolium)*. As per a study conducted on mined-out areas of CMDC-PNMP the list of dominant species recommended to be used for rehabilitation of mined-out areas are Kupang *(P. Timoriana),* Agoho *(Casuarina equisetifolia)*, Narra *(Pterocarpus indicus)* and Batino (*Alstoniamacrophylla*).

3.1.4 Status of Mine Rehabilitation and Reforestation

As of October 2021, a total of 3.92 hectares with a corresponding total of 33,900 seedlings were planted on the mined-out area of CMDC-PNMP. A total of 650 seedlings were donated as of October 2021.

Furthermore, a total of 183.27 hectares with corresponding 358,408 seedlings was successfully planted on the denuded areas within MPSA and adjacent barangays of Sofronio Espanola. Likewise, CMDC has donated a total of 56,249 assorted tree seedlings to the

nearby community for livelihood improvements of the local and schools landscape improvements.

Table 4 shows the number of seedlings planted by the company. **Figure 2** shows the relative location of rehabilitation sites of CMDC.

Table 4. Progressive Documentation on Reforestation and Rehabilitation

Year	Total number of seedlings planted[1]	Survival rate[2]	Total number of areas rehabilitated and reforested[3]
2011	4,265	91.68%	2.44
2012	40,073	99.50%	57.24
2013	22,268	99.93%	76.25
2014	18,355	97.50%	79.95
2015	31,670	98.14%	87.15
2016	106,143	98.32%	194.68
2017	21,581	89.24%	198.48
2018	40,218	97.57%	152.72
2019	29,375	98.70%	160.56
2020	10,560	90.61%	179.35
2021	33,900	95.60%	183.27

[1]Includes seedlings donation;
[2]Based on submitted Mining Forest Program Accomplishment; and

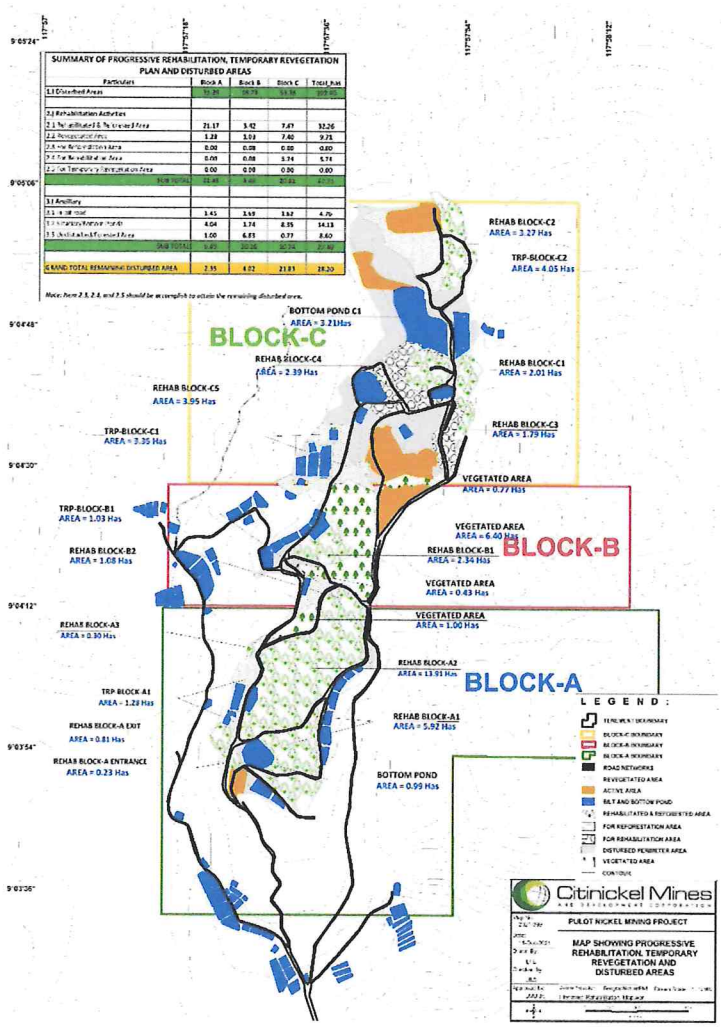


Figure 2. Relative Location of Rehabilitation Sites of CMDC

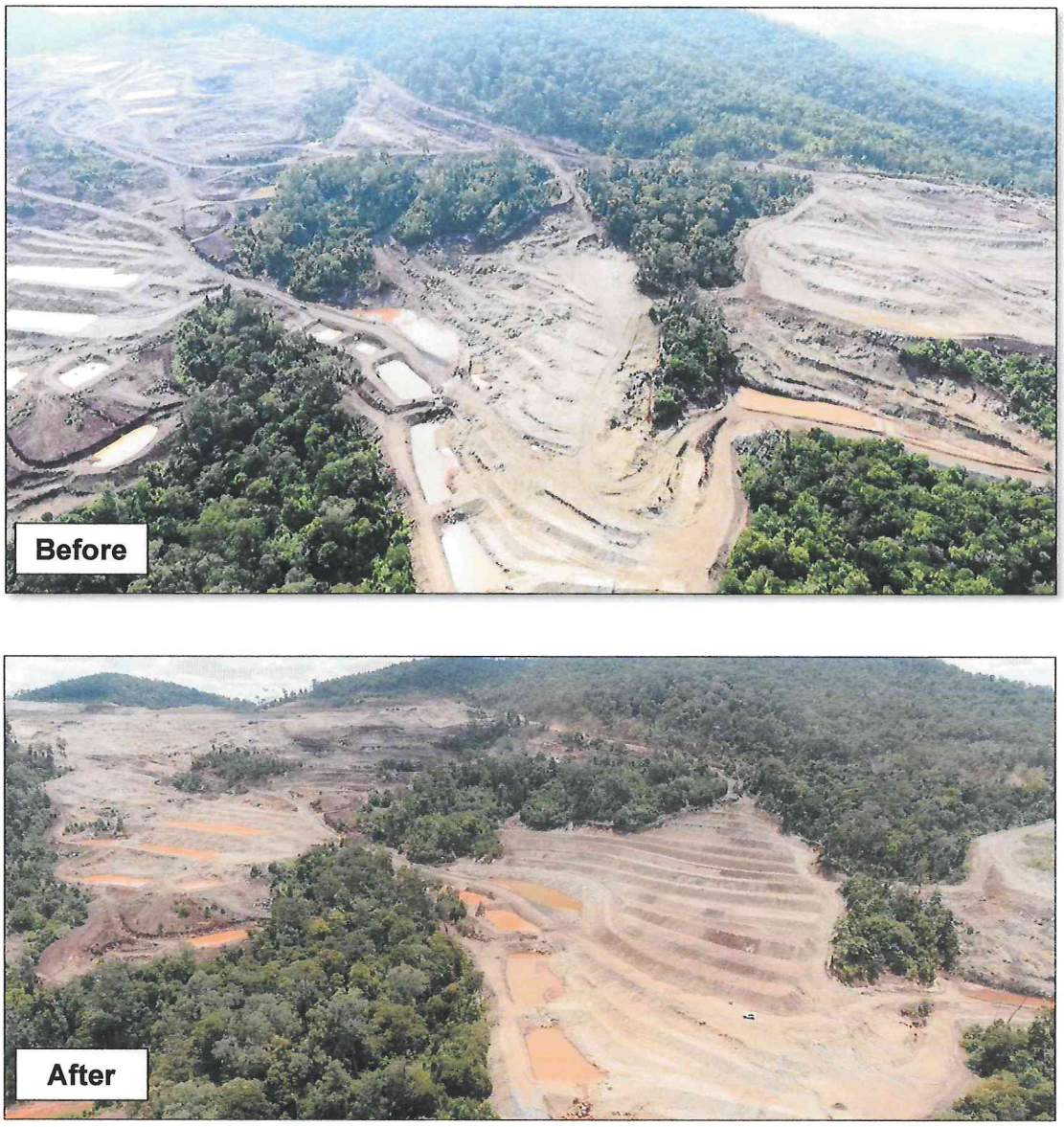
[3]Total area rehabilitated (i.e., mined-out and denuded areas).

The areas that are not rehabilitated inside tenement area, with a total of 27.49 hectares, are currently used for:

- Road network: 4.76 has;
- Pit bottoms, siltation ponds and silt-traps: 14.13 has; and
- Active mine area: 3.00 has.

The sequence of Mined-out Rehabilitation Illustration

Aerial View of Block C Active Mine and Rehabilitated Area



Aerial View of Block B Rehabilitation Area and Environmental Mitigating Structures

In support of the ecosystem and biodiversity restoration of the country, the company has established its Nursery to preserve endangered, endemic, and exotic species of plants that existed within the project site. Nevertheless, to improve the knowledge and

understanding of technical capabilities of the community in support of livelihood improvement of the grassroots in the locality, the horticulture project herbal and botanical garden was established. Continuous research studies have been conducted to further improve the horticulture project and herbal and botanical garden as well as adverse impact mitigation of the project.

3.1.5 Seedling Nursery Operation

Established in 2011, the permanent seedling nursery is located at the campsite with a capacity of 500,000 seedlings. To guarantee the rehabilitation and reforestation of mined-out areas according to the adjacent forest canopy, the collection, propagation, and seedlings production of indigenous species of trees found within the MPSA area have been strictly implemented. The collection and propagation of seedlings in the nursery were organized by IPs employees. **Table 5** shows the inventory of seedlings in the nursery as of October 2021

As part of soil fertility enhancement, the company has engaged in vermicomposting and bio-char production to augment the volume of fertilizers needed in the future.

3.1.6 Herbal and Botanical Garden

Established in 2015, located in the nursery area were preserving the medicinal plants and tropical plants that are locally available and being used mainly by IPs as an antidote or remedy to diseases.

3.1.7 Horticulture Project

The horticulture project has a total area of 1-hectare and was established in 2015, is envisioned to study different varieties of vegetables, cash crops, and fruit-bearing trees that will thrive in the area. The project served as an educational facility for visitors and residents that can train for skill development. Varieties of vegetables have successfully grown and provided tremendous output (e.g., Upo, okra, lettuce, string beans, eggplant, pechay, etc.). This year, the company will conduct a research study on the endemic fruit tree species.

3.1.8 Research Studies

CMDC has succeeded in various research studies conducted in the past few years these include (1) Diameter at breast height of planted species in the mined-out area to determine the appropriate endemic species suitable for immediate rehabilitation; (2) Recolonization in mined-out area; (3) Evaporation and infiltration rate capacity of pit bottom; (4) Active mine area run-off calculation and rainfall probability of return period; (5) Tilapia aquaculture for trace metal bioaccumulation analysis; and (6) Milkfish adaptation capacity in freshwater (7) mud crab aquaculture as mangrove forest deforestation solution (8) mushroom production and (9) mud crab aquaculture.

Clarify this ↴

The researcher will be focusing on the massive mined-out rehabilitation target accomplishment and temporary revegetation program (TRP) activities. Here is the list of proposed research studies for C.Y. 2022:

1. Adaptability of Mushroom Production in mining areas
2. Flora and Fauna Biodiversity Monitoring with Initial Identification
3. Survivability of Azolla in Mine Wastewater (Settling Ponds)

4. Effectiveness of Native Chicken Dung for Progressive Rehabilitation
5. (Optional) Citronella Production for Rehab Revegetation

3.1.8.1 Adaptability of Mushroom in Mining Areas

Mushrooms are edible fungi that can grow and obtain food from decaying organic matters such as rice straw, sawdust, and others. White oyster mushrooms are proposed to be used in this study. Mushrooms are a good source of vitamins such as Vitamin D, B1 (thiamin), B2 (riboflavin), B3 (niacin), B5 (pantothenic acid), B8 (Folate), Vitamin H-Biotin.

General and Specific Objective

1. To provide livelihood skills for employees and the local community as additional income.
2. To train employee skills and techniques in cultured mushroom production.
3. To increase the knowledge of every individual through the adaption of mushroom culture.

Significance of the Study

The project will serve as a training ground for employees who have skills and interest in a community-based mushroom production so that upon reintegration into the mainstream of society, they can be productive citizens in the community they belong in.

Methodology

a. **Making mushroom compost**

Making mushroom compost is initiated by mixing and wetting ingredients like rice straw and sawdust.

b. **Finishing the compost**

Pasteurization is necessary to kill any insect, nematodes, pest fungi, or others pests that may be present in the compost.

c. **Spawning**

Spawn is purchased in the Department of Agriculture in Abo-Abo, Sofronio Española, Palawan.

d. **Casing**

The casing is a top-dressing applied to the spawn-run compost on which the mushroom eventually forms.

e. **Pinning**

Mushroom initials develop after rhizomorphs have formed in the casing. The initials are extremely small but can be seen as outgrowths on a rhizomorph.

f. **Cropping**

The terms flush, break, or bloom are names given the repeating 3 to 5-day harvest periods during the cropping cycle.

Schedule of work

The study will continue and it will be shared to be host community. Proposal of in-house training and workshop will be one of the targets of the company to educate the community on sustainable projects. General knowledge

about mushroom production is seasonal but with this study, production will not depend on wet or dry season, assuming that the production is all season.

3.1.8.2 Flora and Fauna Biodiversity Monitoring

Objective

The purpose of this study is to evaluate and describe the flora and fauna in general and the different existing ecological associations present in the project site and neighboring areas. To determine and identify the presence of both common and/or endangered species. Recommendation of measures that will reduce or minimize interferences to the adaptation of wildlife to the new environment.

Methodology

Monitoring Procedures

Regular monitoring is conducted every week by the environmental staff. Observations on the project site are duly noted for data gathering. Observation includes the site of interest, sighting with the initial identification of plant and animal species, and description or remarks.

3.1.8.3 Effectiveness of Native Chicken Dung for Progressive Rehabilitation

Objective

Instead of buying chicken dung, the company will establish a backyard free range poultry farm for chicken meat and egg consumption. Chicken manure will be utilized for its purpose.

To provide additional soil enhancer for a good development of propagated tree seedlings in the nursery and an additional organic fertilizer aside from vermicast.

Purpose of the study

Chicken dung/manure is a good soil amendment, it adds organic matter and increases the water holding capacity and beneficial biota in the soil. Chicken manure also provides Nitrogen, Phosphorus, and Potassium NPK to the plants (more than horse and cow manure).

3.1.8.4 Survivability of Azolla in Mine Wastewater

Objective

This study will be demonstrated in the horticulture pond. The study aims to provide observation either the azolla will sustain or not. The survival of the plant species will be monitored regularly.

Purpose of the study

There are few farmers in the Philippines who were investing and farming azolla these days. Some of them were producing azolla as alternative feeds to poultry and fish farms. Farming these kind of plant species is low-cost and less maintenance, suitable to the project since we have numerous units of settling ponds.

3.1.8.5 Citronella Propagation for Rehab Revegetation (Company Initiative Project not included in the EPEP)

Objective

The production or propagation of citronella plant was a proposal as part of introducing other grass species for TRP and rehabilitation sites. If propagation of citronella will succeed, it will be planted in the rehabilitated sites.

Purpose of the study

Citronella was known for its heat-loving characteristics and low maintenance type of plant. These features are best suited in our TRP and rehabilitation sites. If we can grow citronella in the mine-out areas, this can be converted into a livelihood project for the life after mining vision or programs. If this could sustain to its best potential, citronella farming can be established and could produce essential oils.

2022 Research Study Gantt Chart

Research Study and Projects Schedule													
Research Study	2022												Remarks
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1. Adaptability of Mushroom Production in mining areas													
Submission of Quarterly Progress Report			■			■			■			■	To be submitted to Dept. Head
In-house demo to selected farmers/community				■			■			■			To included in the Progress Report
2. Flora and Fauna Monitoring													
Regular field monitoring and documentation	■	■	■	■	■	■	■	■	■	■	■	■	Weekly monitoring
Submission of Quarterly Progress Report			■			■			■			■	To be submitted to Dept. Head
3. Effectiveness of Native Chicken Dung for Progressive Rehabilitation													
Submission of Quarterly Progress Report			■			■			■			■	To be submitted to Dept. Head
Site preparation and shelter construction			■	■	■								
Monitoring, documentation, and maintenance						■	■	■	■	■	■	■	Daily monitoring and maintenance
Retrieval of chicken dung						■	■	■	■	■	■	■	Daily collection
4. Survivability of Azolla in Mine Wastewater													
Submission of Quarterly Progress Report			■			■			■			■	To be submitted to Dept. Head
Monitoring for documentation			■	■	■	■	■	■	■	■	■	■	Monthly monitoring
5. Citronella Production for Rehab													
Introduction to rehabilitation sites						■			■			■	Planting of citronella to rehab sites
Submission of Quarterly Progress Report							■			■			To be submitted to Dept. Head
Monitoring for documentation							■	■	■	■	■	■	Monthly monitoring

Table 5. Seedling Inventory as of October 2021

Species	No. of Seedlings Previously Produced	No. of Seedling Out-Planted		Balance in Stock
		Propagated 2021 Q3	Planted 2021 Q3	49,161
Acacia				0
Agoho				0
Apitong				0
Bamboo				0
Batino	29,579	10,411	1,500	38,490
Coffee	840			840
Gmelina/ Yemane				0
Ipil				0
Kamagong				0

Katumpos	2,307		800	1,507
Kupang				0
Lambunaw				0
Lampong	30			30
Lumboy-lumboy	2,840			2,840
Mahogany	410	600	410	600
Mango				0
Mangium				0
Mangrove				0
Malabayabas	112		112	0
Mansalogon	683			683
Narra	0			0
Nato	1,230			1,230
Pal. Cherry	300		80	220
Panasan	0			0
Rapitik	0			0
Tabingalan	2,330		120	2,210
Tunom	0			0
Udling	1,941		1,400	541
Total	**42,602**	**11,011**	**4,422**	**49,161**

3.1.9 Mining Rehabilitation and Reforestation Targets for the Year 2022

The practice of planting large planting materials of trees in mined-out rehabilitation areas has guaranteed the highest survival rate of planted endemic species of trees in mined-out areas of CMDC-PNMP. Continuous propagation and planting of the same will be sustained in the present year.

For the year 2022, the Block C and Block A areas will be scheduled for rehabilitation. A composite of 10 hectares is targeted for mined-out area rehabilitation.

CMDC will sustain the maintenance of the National Greening Program (NGP) of the country and will continuously provide seedling donations to the locals that are interested in tree planting for landscaping and greening programs. Currently, CMDC has only (1) one TRP left for maintenance. The TRP Block B1 with a total area of 1.08 hectares. See geographical coordinates below.

BLOCK-B / TRP-B1 (1.03 has)					
POINT	LATITUDE	LONGITUDE	POINT	LATITUDE	LONGITUDE
1	9.071129	117.960034	10	9.070248	117.959426
2	9.071020	117.960091	11	9.070061	117.959345
3	9.070931	117.960334	12	9.069668	117.958795
4	9.070866	117.960181	13	9.069689	117.958771
5	9.070732	117.959933	14	9.069784	117.958837
6	9.070574	117.959816	15	9.070544	117.959038
7	9.070315	117.959693	16	9.070529	117.959216
8	9.069877	117.959646	17	9.071133	117.959414
9	9.070211	117.959600	18	9.071174	117.959397

The mining rehabilitation and reforestation targets of CMDC-PNMP for 2022 are shown in **Table 6**.

Figure 3 shows the locations of the accomplished plantation, rehabilitation, and NGP areas, including the targeted areas for rehabilitation in 2022. Moreover, **Figure 4 shows** the areas targeted for the Rehabilitation Areas for 2022 to further reduce the open area of the PNMP mine site. The information on the schedule of activities is shown in **Table 7.**

TABLE 6

2022 MINING REHABILITATION AND REFORESTATION TARGETS

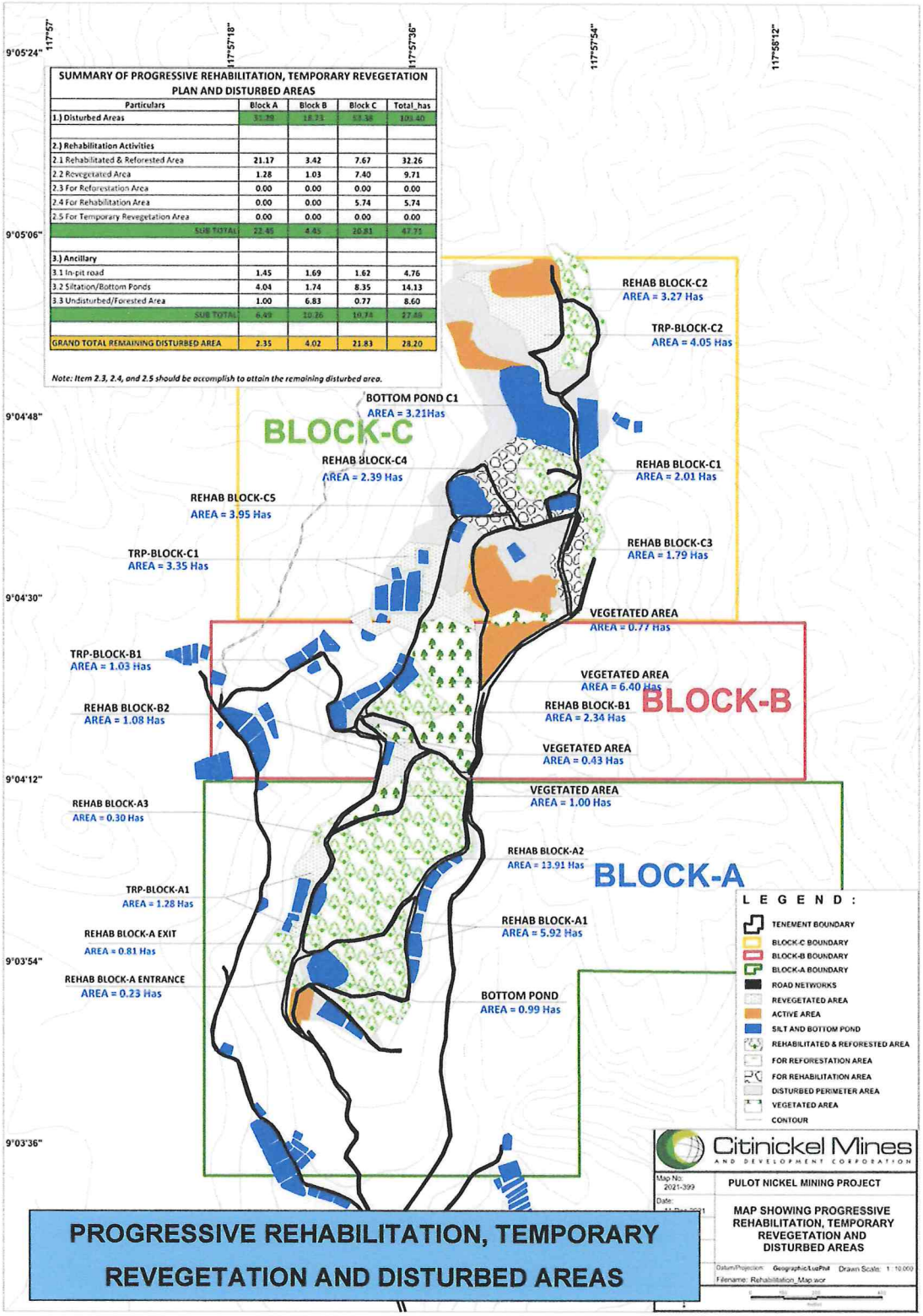
Project/Activity	Location	Area (hectares)
1. Rehabilitation of Mined-Out Area	Block C and Block A	**10**
	TOTAL	**10**

3.1.9.1 Summary of Land-Used and Disturbed Areas

The Pulot Nickel Mining Project MPSA No. 229-2007-IVB has a total area of 1,408 hectares. The project has (3) three mining blocks, A (31.29 has), B (18.73 has), and C (53.38 has).

SUMMARY OF PROGRESSIVE REHABILITATION, TEMPORARY REVEGETATION PLAN AND DISTURBED AREAS

	Particular	Block A	Block B	Block C	Total_ Has
1	Disturbed Areas	**31.29**	**18.73**	**53.38**	**103.40**
2	Rehabilitation Activities				
2.1	Rehabilitated & Reforested Area	21.17	3.42	7.67	32.26
2.2	Revegetated Area	1.28	1.03	7.40	9.71
2.3	For Reforestation Area	0.00	0.00	0.00	0.00
2.4	For Rehabilitation Area	0.00	0.00	5.74	5.74
2.5	For Temporary Revegetation Area	0.00	0.00	0.00	0.00
	SUB TOTAL	**22.45**	**4.45**	**20.81**	**47.71**
3	Ancillary				
3.1	In-pit road	1.45	1.69	1.62	4.76
3.2	Siltation/Bottom Ponds	4.04	1.74	8.35	14.13
3.3	Undisturbed/Forested Area	1.00	6.83	0.77	8.60
	SUB TOTAL	**6.49**	**10.26**	**10.74**	**27.49**
	GRAND TOTAL	**2.35**	**4.02**	**21.83**	**28.20**


117°57'
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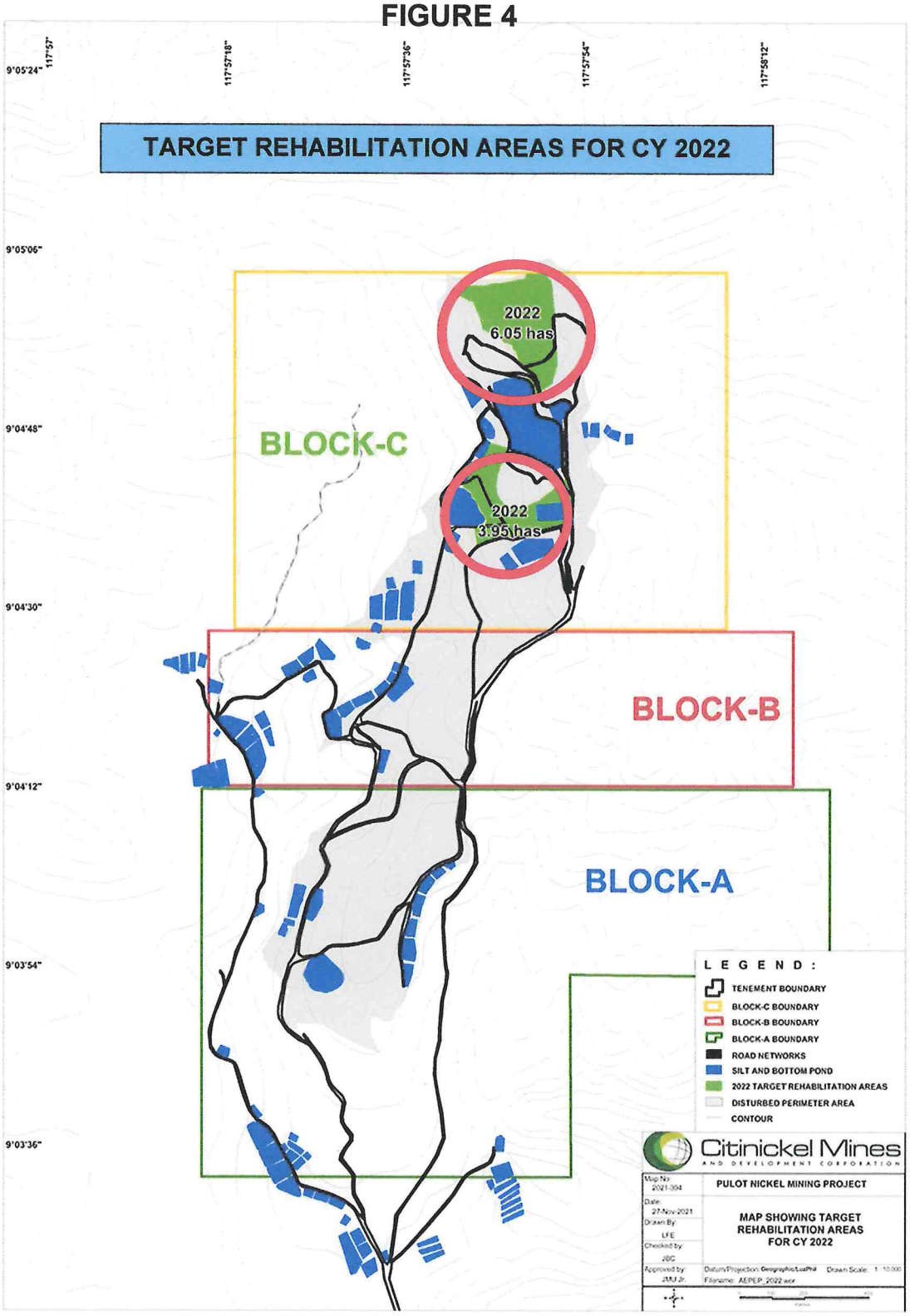
9°04'30"
9°04'12"
9°03'54"
9°03'36"
SUMMARY OF PROGRESSIVE REHABILITATION, TEMPORARY REVEGETATION PLAN AND DISTURBED AREAS
Particulars | Block A | Block B | Block C | Total_has
1.) Disturbed Areas | 31.79 | 18.71 | 53.38 | 103.40
2.) Rehabilitation Activities
2.1 Rehabilitated & Reforested Area | 21.17 | 3.42 | 7.67 | 32.26
2.2 Revegetated Area | 1.28 | 1.03 | 7.40 | 9.71
2.3 For Reforestation Area | 0.00 | 0.00 | 0.00 | 0.00
2.4 For Rehabilitation Area | 0.00 | 0.00 | 5.74 | 5.74
2.5 For Temporary Revegetation Area | 0.00 | 0.00 | 0.00 | 0.00
SUB TOTAL | 22.45 | 4.45 | 20.81 | 47.71
3.) Ancillary
3.1 In-pit road | 1.45 | 1.69 | 1.62 | 4.76
3.2 Siltation/Bottom Ponds | 4.04 | 1.74 | 8.35 | 14.13
3.3 Undisturbed/Forested Area | 1.00 | 6.83 | 0.77 | 8.60
SUB TOTAL | 6.49 | 10.26 | 10.74 | 27.49
GRAND TOTAL REMAINING DISTURBED AREA | 2.35 | 4.02 | 21.83 | 28.20
Note: Item 2.3, 2.4, and 2.5 should be accomplish to attain the remaining disturbed area.
BLOCK-C
BLOCK-B
BLOCK-A
REHAB BLOCK-C2 AREA = 3.27 Has
TRP-BLOCK-C2 AREA = 4.05 Has
BOTTOM POND C1 AREA = 3.21Has
REHAB BLOCK-C4 AREA = 2.39 Has
REHAB BLOCK-C1 AREA = 2.01 Has
REHAB BLOCK-C5 AREA = 3.95 Has
REHAB BLOCK-C3 AREA = 1.79 Has
TRP-BLOCK-C1 AREA = 3.35 Has
VEGETATED AREA AREA = 0.77 Has
TRP-BLOCK-B1 AREA = 1.03 Has
VEGETATED AREA AREA = 6.40 Has
REHAB BLOCK-B2 AREA = 1.08 Has
REHAB BLOCK-B1 AREA = 2.34 Has
VEGETATED AREA AREA = 0.43 Has
VEGETATED AREA AREA = 1.00 Has
REHAB BLOCK-A3 AREA = 0.30 Has
REHAB BLOCK-A2 AREA = 13.91 Has
TRP-BLOCK-A1 AREA = 1.28 Has
REHAB BLOCK-A1 AREA = 5.92 Has
REHAB BLOCK-A EXIT AREA = 0.81 Has
REHAB BLOCK-A ENTRANCE AREA = 0.23 Has
BOTTOM POND AREA = 0.99 Has
LEGEND :
TENEMENT BOUNDARY
BLOCK-C BOUNDARY
BLOCK-B BOUNDARY
BLOCK-A BOUNDARY
ROAD NETWORKS
REVEGETATED AREA
ACTIVE AREA
SILT AND BOTTOM POND
REHABILITATED & REFORESTED AREA
FOR REFORESTATION AREA
FOR REHABILITATION AREA
DISTURBED PERIMETER AREA
VEGETATED AREA
CONTOUR
Citinickel Mines
AND DEVELOPMENT CORPORATION
Map No: 2021-399
PULOT NICKEL MINING PROJECT
MAP SHOWING PROGRESSIVE REHABILITATION, TEMPORARY REVEGETATION AND DISTURBED AREAS
Datum/Projection: Geographic/Luzon
Drawn Scale: 1: 10,000
Filename: Rehabilitation_Map.wor
PROGRESSIVE REHABILITATION, TEMPORARY REVEGETATION AND DISTURBED AREAS

Aerial View of Block C Facing South

Aerial View of 4 Hectares Proposed 2022 Rehabilitation Area in Block C

FIGURE 4


TARGET REHABILITATION AREAS FOR CY 2022
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117°57'36"
117°57'54"
117°58'12"
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9°05'06"
9°04'48"
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9°04'12"
9°03'54"
9°03'36"
2022
6.05 has
2022
3.95 has
BLOCK-C
BLOCK-B
BLOCK-A
LEGEND:
TENEMENT BOUNDARY
BLOCK-C BOUNDARY
BLOCK-B BOUNDARY
BLOCK-A BOUNDARY
ROAD NETWORKS
SILT AND BOTTOM POND
2022 TARGET REHABILITATION AREAS
DISTURBED PERIMETER AREA
CONTOUR
Citinickel Mines
AND DEVELOPMENT CORPORATION
Map No. 2021-394
PULOT NICKEL MINING PROJECT
Date: 27-Nov-2021
Drawn By: LFE
Checked by: JBC
Approved by: JMU Jr.
MAP SHOWING TARGET REHABILITATION AREAS FOR CY 2022
Datum/Projection: Geographic/Luzon
Drawn Scale: 1:10,000
Filename: AEPEP_2022.wor

TABLE 7

2022 PROJECTED SCHEDULE OF ACTIVITIES

PROJECT TITLE / JUSTIFICATION	SCHEDULE OF ACTIVITIES			
	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4
Mining Rehabilitation Project / for compliance with the requirements of the Phil. Mining Law	Nursery operations Site preparation (earthworks)	Nursery operations Site preparation (earthworks) Out-planting activities	Out-planting activities	Out-planting activities Maintenance operations
Nursery production of planting stocks for mining rehabilitation and reforestation uses	Wildling collection Potting of soil media Seedling maintenance	Seedling maintenance Seedling maintenance and disposal for out-planting purposes	Seedling maintenance Seedling maintenance and disposal for out-planting purposes	Wildling collection Potting of soil media Seed sowing Seedling maintenance
National Greening Program/compliance to the commitment to MGB	Site identification, reconnaissance survey, area preparation, and wildling collection Seedling donation	Tree planting and maintenance activities Mangrove planting Seedling donation	Tree planting and maintenance activities Mangrove enrichment planting Seedling donation	Tree planting and maintenance activities Seedling donation
Re-greening Project/greening of bare areas in stockyard and ore stockyard	Bamboo collection and propagation	Bamboo nursery maintenance	Hole digging, staking and hauling of bamboo and planting	Bamboo collection and propagation

3.2 Water Resources

There are three impact water resources, two (2) river systems, and one (1) marine water. These are the following:

a. Pasi River (mine impact area)
b. Tagusao River (mine impact area)
c. Brgy. Punang Coastal Areas (pier loading area)

3.2.1 Sediment Control

The company has continuously been implementing siltation prevention measures such as sediment barriers and containment ponds at strategic places to avoid siltation of adjacent river systems, the Pasi River, Tagusao River, and coastal waters.

The settling ponds are designed to contain all silted run-off mine wastewater. This allows the silt to settle before discharging the clear effluent into nearby tributaries. The company continues to improve these silt preventive measures by adding more silt collector sumps whenever necessary and periodically desilting these to help maintain their holding capacities. Recently, a series of settling ponds, collector sumps, and drainage canals have been constructed. These structures do not only improved water retention within the ponds but also allow desilting activities to be undertaken manageably at any time, even during the rainy season. **Figure 5** shows the strategic location of siltation structures. Succeeding pages reflecting photo documentation of siltation ponds and bottom ponds.

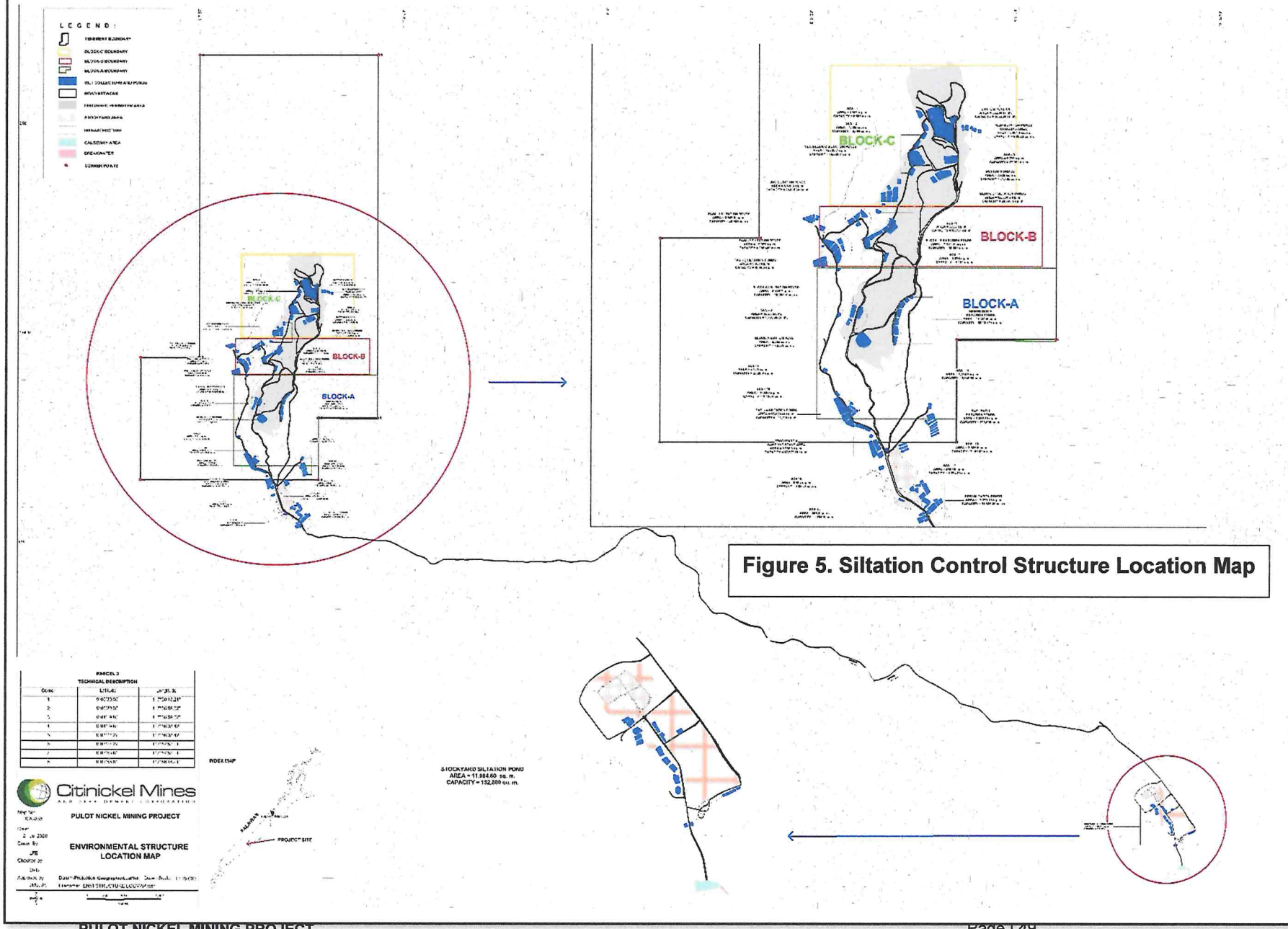
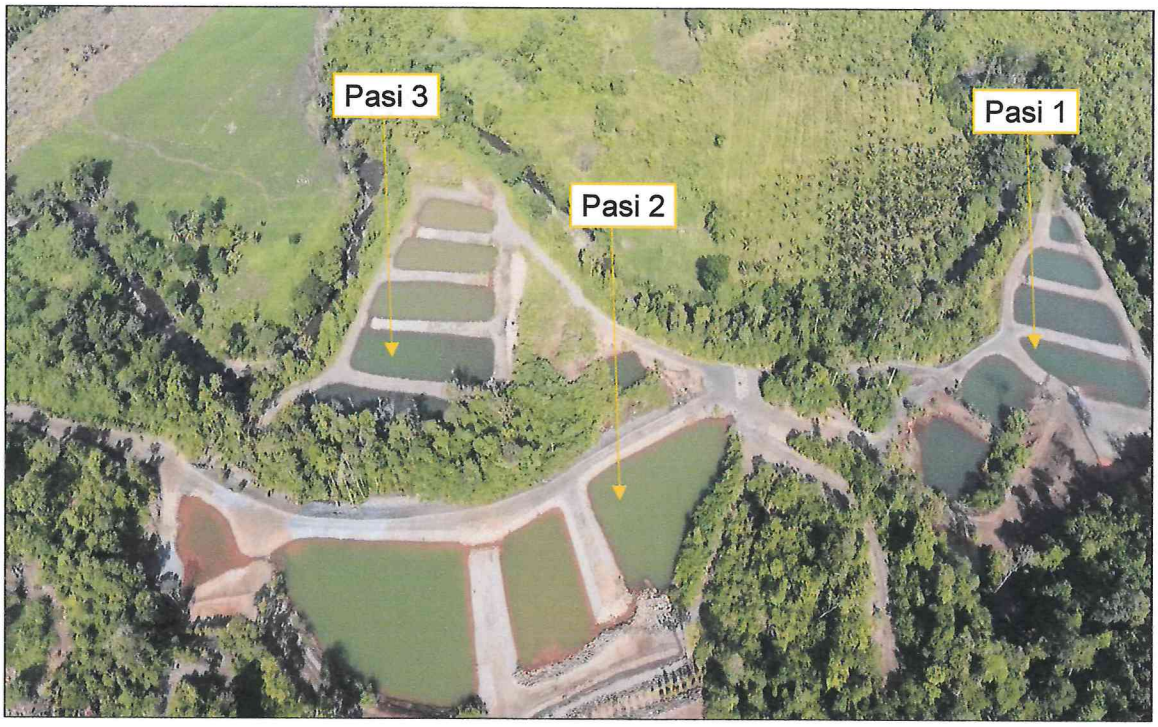


Figure 5. Siltation Control Structure Location Map



Aerial view of Pasi Siltation Pond no. 1, 2 and 3

Aerial view of Tagusao Settling Pond

Aerial View of Block A Rehabilitation Area and Bottom Pond 1

Aerial View of Block A2 Rehabilitated Area

Regular desilting of siltation ponds and silt collector sumps were thoroughly conducted as scheduled to attain its maximum serviceable usage and capacity. **Figure 6** shows the desilting activity and designated waste dumpsite.

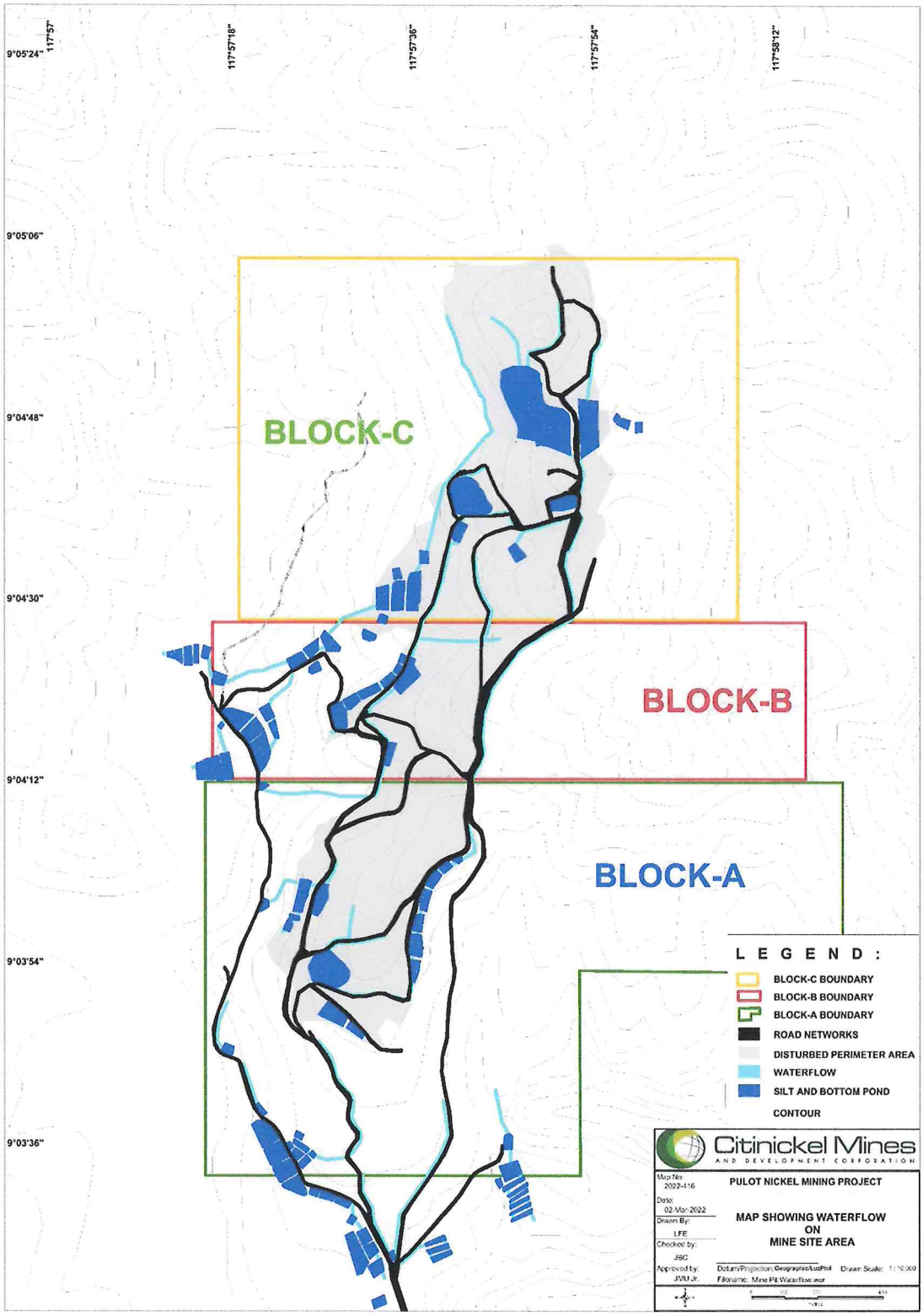
Desilting activities

Waste Dump Area

Figure 6. Desilting Activities and Waste Dumping area

The silt materials were hauled far from the siltation ponds and temporarily stockpile to the designated dumping area of silt materials. The desilted materials were preserved for future mined-out rehabilitation's base matting. Likewise, the perimeter canals had also been constructed to prevent the spillage of silt to the nearby adjacent creeks/rivers.

As environmental control strategies, all avenues of runoff that may contaminate waterways are provided with drainage channels as control structures that will divert water to silt traps, sumps, and eventually to silt ponds for containment. Control structures such as drainage systems and siltation ponds are intended to trap sediments, silts, and reduce the velocity of runoff. **Figures 7 and 8** reflect the drainage system and diversion canal to divert run-off from open areas.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9°04'30"
9°04'12"
9°03'54"
9°03'36"
BLOCK-C
BLOCK-B
BLOCK-A
LEGEND:
BLOCK-C BOUNDARY
BLOCK-B BOUNDARY
BLOCK-A BOUNDARY
ROAD NETWORKS
DISTURBED PERIMETER AREA
WATERFLOW
SILT AND BOTTOM POND
CONTOUR
Citinickel Mines
AND DEVELOPMENT CORPORATION
Map No: 2022-416
Date: 02-Mar-2022
Drawn By: LFE
Checked by: JBC
Approved by: JVU Jr.
PULOT NICKEL MINING PROJECT
MAP SHOWING WATERFLOW ON MINE SITE AREA
Datum/Projection: Geographic/LuzPrs1
Filename: Mine Pit Waterflow.wor
Drawn Scale: 1:10,000

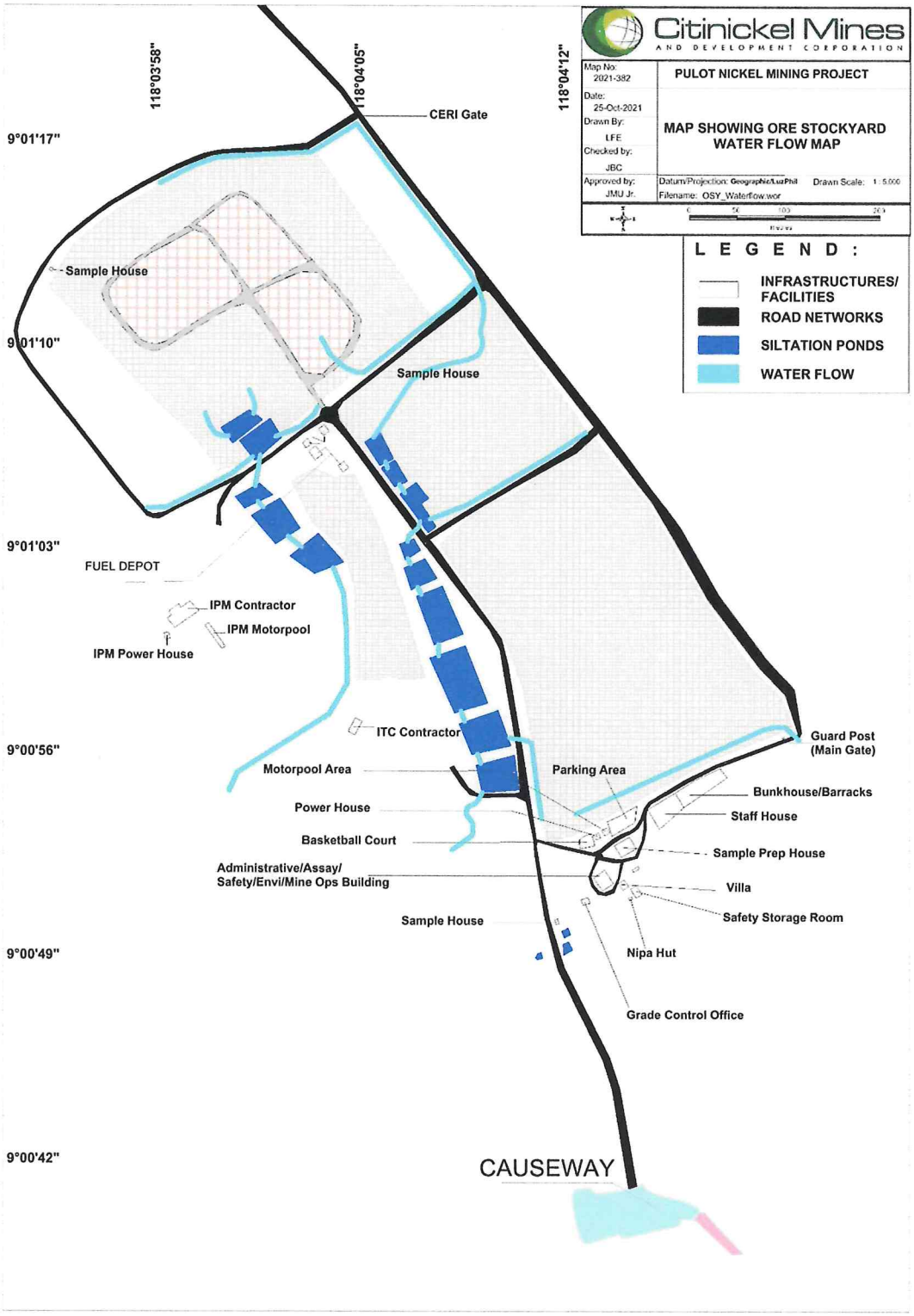
Citinickel Mines
AND DEVELOPMENT CORPORATION
Map No: 2021-382
PULOT NICKEL MINING PROJECT
Date: 25-Oct-2021
Drawn By: LFE
MAP SHOWING ORE STOCKYARD WATER FLOW MAP
Checked by: JBC
Approved by: JMU Jr.
Datum/Projection: GeographicNad Phil
Drawn Scale: 1:5,000
Filename: OSY_Waterflow.wor
LEGEND:
INFRASTRUCTURES/ FACILITIES
ROAD NETWORKS
SILTATION PONDS
WATER FLOW
118°03'58"
118°04'05"
118°04'12"
9°01'17"
9°01'10"
9°01'03"
9°00'56"
9°00'49"
9°00'42"
CERI Gate
Sample House
Sample House
FUEL DEPOT
IPM Contractor
IPM Motorpool
IPM Power House
ITC Contractor
Motorpool Area
Parking Area
Guard Post (Main Gate)
Bunkhouse/Barracks
Staff House
Power House
Basketball Court
Sample Prep House
Administrative/Assay/ Safety/Envi/Mine Ops Building
Villa
Safety Storage Room
Sample House
Nipa Hut
Grade Control Office
CAUSEWAY

Figure 7. Mine Drainage System

Figure 8. The constructed canal for run-off diversion

The target schedule of desilting/maintenance of siltation ponds was reflected in the AEPEP matrix of activities including the cost of implementation thereof.

3.2.2 Slope Stabilization of Mining Areas (Active and Non-active)

3.2.2.1 Low-Grade Ore, Waste, and Top Soil

The stripped-off top layer of soil was recovered and used in rehabilitating the mined-out areas. Management of soil and low-grade ores is included in the mine operation cost.

3.2.3 Road Maintenance

3.2.3.1 Haulage Road (Mine pit/ Pier)

It is necessary for the efficient transport of nickel ore and waste materials as well as in the environmental control and safety of trucks the proper maintenance of haul roads (mine pit roads and main haul road). mine pit haul road includes access from active mining areas to pre-stockpiled and final stockpile areas, waste dumpsite, and topsoil dumping areas.

Haul road distances vary as nickel ore extraction advances and progressive rehabilitation is always on the top of the schedule of activity. With regards to the main haul road, year-round maintenance is to be conducted by backfilling, road grading/leveling, compaction, and water sprinkling. The length of the main road that connects the mine site and pier is approximately eighteen (18) kilometers.

3.2.4 Maintenance and Monitoring Activities

Regular monitoring of environmental facilities (e.g., silt collector sumps, siltation ponds and dikes, embankments, water levels, color, and discharge) was conducted to ensure the efficiency of the structures to contain/retain a certain level of water in the siltation ponds and silt collector sumps. Replacement of gabions and geotextile filter materials were also conducted regularly.

3.3 Ground Water

The existing mine operations do not use any toxic chemicals nor produce toxic materials such as tailings, acid drainage, among others. Hence, there is no chance of contaminating the groundwater resources.
All solid wastes are properly disposed of in the sanitary landfill in regular scheduling of garbage collection in mine site and pier site.

All hazardous waste is properly stored in the temporary hazardous waste storage facility of the company and transported/treated by the DENR-Accredited transporter/ treater of hazardous waste. Used oil-filled drums are stored in a 10 x 8 m open storage area with slightly slanted concrete flooring provided with a gutter. The lowest point of the flooring is provided with one unit of an oil-water separator. Spilled oils are washed by water and flow towards the separator unit.

The oil-water separator operates simply by the concept of difference in specific gravity. In an oil-water mixture, water being heavier separates forming the lower layer while the oil floats over the water. The oil layer is decanted and stored in drums while the water flows through the drain pipe towards the drainage canal.

The company's diesel fuel requirements are being delivered in bulk by a fuel tanker and transferred to the storage tanks through the pumping method. The storage tank is lined with an impervious bund-wall to contain 110% of the total volume of the tank to confine oil spillage in case of tank breakages. Likewise, the storage tank area is provided with an oil-water separator unit.

3.4 Noise

The sources of noise pollution may come from the following operations:

a. From the use of heavy equipment during mining, loading, and road maintenance operation; and

b. Passage of hauling trucks along roads adjacent to host barangays and neighboring communities and residential areas.

3.4.1 Control Strategies

Noise pollution in the project area and vicinity is expected to be well within the standard limit set by the DENR. However, as a means to further control the noise coming from the mining operation due to utilization of heavy equipment and during hauling of nickel ore from the mine site to pier, the following measures to control or limit noise within DENR Standard is being implemented:

a. Instead of using explosives in breaking the hard rock portion of the pit area, hydraulic rock breakers are utilized, thereby reducing the generation of noise from an explosion from blasting materials.

b. A Series of humps along the haulage road has been constructed to force the company and contractor's vehicles to slow down, thereby reducing noise level. Whenever necessary, silencers and mufflers are installed in machines generating uncontrollable noise levels.

c. The project site is located far away from the communities. Thus, the construction of sound barriers is not necessary. However, a portion of traversed haulage road is exposed, where haulers of beneficiated ore to the ore stockyard regularly traveled during the dry season. The company planted a different types of tree species such as Narra, Kamagong, Palawan Cherry, among others, along the road side of the road network to act as a sound barrier.

d. Regular maintenance, check-up, and replacement of mufflers of company vehicles and contract haulers of nickel ore were performed as scheduled to minimize the noise generation;

e. All drivers are regularly instructed during the safety talk that truck speed shall be limited to 10-40 kph when traveling within populated areas or national highways;

f. In-house noise monitoring using a handheld or portable digital noise meter was regularly performed to check the level of noise in the affected areas; and

g. Provision of ear muffs to heavy equipment operators whenever necessary.

3.5 Air Quality

In nickel mining and hauling operation, dust generation is the main identified impact due to very fine lateritic soil particles produced as a result of soil excavation, transportation, and stockpiling. However, since the main sources are already known, its control and prevention will be the activity in this program. But it is a mandatory requirement to have the technical information through the sampling of air to determine which areas of operation are expected to exceed the DENR standard for air quality so that appropriate mitigation will be implemented.

Parameters that are necessary to be monitored are the Total Suspended Particulate (TSP) Matter (PM-10) according to RA 8749 and National Ambient Air Quality Standard (NAAQS).

3.5.1 Control Strategies

3.5.1.1 Dust Suppression Strategies

During the dry season and any time of the day, regular road water sprinkling was conducted to minimize the dust emission. The total length of the road being sprayed with water is approximately 18.6 kilometers starting from the pier up to the mine haul road at the mine pit. The number of water trucks to be used is six (6) units. There will be no specific hours of water sprinkling. It will be the policy of the company to continuously conduct water sprinkling as often as necessary which starts at 7 AM up to 5 PM. Other control measures being implemented are the following:

a. Maintaining a speed limit to 10 kph and a maximum of 40 kph;

b. Constructing road humps across the haulage road to reduce the speed of hauling trucks and other vehicles;

c. Planting of trees, which act as dust curtain, along sides of the haulage road;

d. Proper maintenance of haulage road through the use of road grader and road roller/compactor, bringing the road to a near paved-road status;

e. Using minimum drop height during ore loading to minimize fugitive dust;

f. Stabilizing and re-vegetating mined areas; and

g. Planting of fast-growing trees, which act as windbreakers, around the open storage areas to prevent fugitive dust emission by wind action.

3.6 Conservation Values

3.6.1 Nature Issues

Reforestation and mine rehabilitation activities of the company continue to be implemented to restore disturbed areas to their original wildlife habitat. Clearing of vegetation is in the segment and only when needed.

3.6.2 Visual Aesthetics

Total rehabilitation and greening of disturbed areas, especially the mined-out pits, are the only mitigating measures possible to enhance the visual aesthetics of the affected area. In the meantime, thick vegetation curtains (trees planted along sides of major access roads and the periphery of disturbed areas) are installed to somehow

temporarily conceal the ill effects of excavations and junkyards while at the same time observing good housekeeping.

3.7 Social Issues

Social issues such as those that are raised by NGO's and anti-mining groups will be addressed by the company. Continuous Information and Education Campaign (IEC) about the programs of CMDC on environmental protection, operations, social responsibility, and Social Development and Management Program (SDMP) including the progressive rehabilitation strategies to address the issues and concerns of the rice farmers.

CMDC will maintain the line of communication open and transparent to the LGU, residents, NGOs, and government agencies concerned to be able to respond promptly on future issues that may be raised by anti-mining groups. It will also use the tri-media information drive to counter the misinformation and disinformation campaign of the local NGO's and educate people on the responsible mining and the truth about nickel mining operations and their temporary impact on the surrounding environment and how the company successfully implements the mitigation measures.

For more than 8 years now, the mining operation of CMDC has played a central role in the development not only on the impact barangays but in the Municipality of Sofronio Española as a whole. It is the multiplier effect in which the communities can develop through active local economic activities.

Aside from these, the industry has helped in carrying out priority development projects at the local and national levels through regular reimbursement of mining revenues. The investment of the mineral wealth through full compliance and implementation of the Social Development and Management Program (SDMP)

gives the local stakeholders direct access to benefits and local developmental funds.

3.8 Emergency Response Committees

In the event of an environmental disaster brought about by heavy downpour and flooding, fire, and hazardous waste spill, the Flood and Typhoon Committee and the emergency first responder organized by the company shall automatically respond to such eventualities.

4.0 APPROACH AND STRATEGY FOR MONITORING

4.1 Monitoring

4.1.1 Significant Impact to be Monitored

All identified environmental pollution/degradation that includes the following shall be monitored:

a) Deforestation/ de-vegetation
b) Land disturbances
c) Soil erosion
d) Siltation
e) Water quality degradation
f) Air quality degradation
g) Adverse socio-economic impacts, if any

Regular in-house air and water quality monitoring, as well as the in-house noise level monitoring, shall be done and brought to the third-party laboratory for analysis. The results shall be presented to the scheduled validation activities of the Multi-Partite Monitoring Team (MMT).

4.2 Sources of Impact

4.2.1 Mining Activities/ Infrastructures

i. Parameters to be monitored

The impact water bodies are the Pasi, Maribong, Tagusao, and Pulot River. Marine water at Causeway and Pulot river delta was also monitored areas. Parameters to be monitored are pH, TSS, temperature, heavy metals, and Oil & Grease.

ii. Purposes of Monitoring

The main concern to be monitored is the water quality and condition of river systems and marine water near the causeway that will be impacted by the mining activities such as total suspended solids, and heavy metals.

iii. Monitoring Methods

Monthly water quality monitoring shall be conducted by the company and quarterly by MMT. Sampling methods to be adopted is following the prescribed method of sampling by the EMB.

Erosion control measures and silt control structures shall be inspected regularly especially during the rainy season to check silt accumulation at the silt traps and other areas of concern.

iv. Monitoring Frequency

Water Quality	-	Monthly
Stability/Environmental Integrity	-	Daily
Reforestation area/Planted trees	-	Weekly

4.2.2 Noise

i. Parameters to be Monitored

The noise level, expressed in decibel (dB), of various equipment of the mine operation or point sources of noise at different distances, will be monitored.

ii. Purposes of Monitoring

To determine noise level emanated from the mine operation especially during hauling from mine site to pier site if the noise level is within DENR standard.

iii. Monitoring Methods

To determine the noise level around mine industrial premises, sampling stations were established. A handheld noise level meter will be used to give instantaneous display readings. The sampling activities shall be done quarterly by MMT or monthly by the company.

iv. Monitoring Frequency

Noise sampling will be done monthly or often as possible as required by MMT.

4.2.3 Air Quality

Air quality is usually described in terms of the concentration levels of the various types of air pollutants over a certain area at any given time.

i. Parameters to be Monitored

Based on the nature of the mine operation, the air pollutants parameter to be considered are the TSP and PM_{10}. However, the company is open to any recommendations to be included in the monitoring parameter

ii. Purposes of Monitoring

To determine the quality of air around mine site premises and nearby residential areas.

iii. Monitoring Methods

Total suspended particulates (TSP) and particulate matter 10 are collected using air filters and a High-Volume Air Sampler, set up at a fixed station within and around the mine area.

iv. Monitoring Frequency

Ambient air quality monitoring will be done monthly.

4.2.4 Conservation Values

i. Parameters to be monitored:

Forest patches for in-situ conservation, including tree species and mangroves areas, shall be monitored. Likewise, both Pasi River and Tagusao River shall be regularly observed/ inspected for any significant environmental degradation.

ii. Purpose of monitoring:

To determine the presence and degree of degradation.

iii. Monitoring method:

Regular field ocular inspection/ observation by the company's deputized forest guard and/or Pollution Control Officer of these areas identified for preservation.

iv. Monitoring locations:

1. Identified forest patches
2. Areas with the presence of banned tree species
3. Pasi and Tagusao area

v. Monitoring frequency:

A regular annual inspection or as the need arises.

4.2.5 Heritage and Cultural Values

i. Parameters to be monitored:

a) Artifacts of archeological significance, if any
b) Customs and traditions of native *Palaw'ans*

ii. Purpose of monitoring:

To help preserve the customs and traditions of native *Palaw'ans* living in the vicinity of the mine site and to turn over to the National Museum any artifacts found in the area.

iii. Monitoring method:

Actual interactions/interviews with the native *Palaw'ans* as well as actual ocular inspection of newly disturbed land areas suspected for the presence of artifacts.

iv. Monitoring locations:

a) Nearby *sitios* where native *Palaw'ans* reportedly have settled.
b) Newly distributed land areas

v. Monitoring frequency:

Annual monitoring will be conducted or as the need arises.

vi. Acceptable Impacts of the mining operation

Culture and Lifestyle

There may be some immigration to the mine community despite the fact that the project itself will not need great

number of work force, considering the attraction that the project to laborers, entrepreneurs, and traders. The new residents may influence the local populace by introducing their customs, culture, and moral values.

Archeological/ Anthropological/ Historical sites

The seas of Palawan are sites of significant historical and archeological discoveries that provide insights into the Filipino race. However, there are not many similar discoveries in the terrestrial zones of the province. IPs in the uplands and the Muslim communities near the shore freely practice their traditional rites and beliefs. A site in Pulot shore has been designated as burial grounds while the IPs in the upland areas have yet to be officially granted their ancestral domain claim. The location of the mining activity will not in any way affect any archeological, anthropological, or historical sites in the area. Unless the excavation of the site will reveal an archeological discovery of national significance, it is expected that the mining activity will not have any effect on any heritage site. (*Source: ENVIRONMENTAL IMPACT STATEMENT (EIS)- CMDC, 2007*).

4.2.6 Social Issues

i. Parameters to be Monitored

Parameters to be monitored include the perception of the residents, rice farmers, and neighboring communities regarding the project implementation. Monitoring shall likewise include the effectiveness of the environmental

mitigation measures and community development programs/projects provided by the company through the Social Development and Management Program (SDMP).

ii. Purposes of Monitoring

To monitor public perception and acceptability of the project from the affected people and the effect of the program on the Social Development and Management Program (SDMP) so that the company could assess if there is a need for further improvements of the environmental and social activity implementation.

iii. Monitoring Methods

Social meetings, coordination with the community leaders, NGOs, and LGUs.

iv. Monitoring Locations

Host and neighboring communities.

v. Monitoring Frequency

The company's COMREL is tasked to monitor frequently the issues and concerns being raised by the communities, civil societies, and government regulatory agencies.

The summary of the monitoring plan/matrix showing the sources of impacts and their corresponding parameters to be

monitored, monitoring frequency, monitoring method, and purpose of monitoring is reflected in **Table 8**.

Table 8

ENVIRONMENTAL IMPACTS, CONTROL STRATEGIES AND MONITORING PROGRAM

Environmental Impact				Mitigating Measures	Impact Monitoring						Budget P x 1000
Description of Impact		Affected Areas	Sources of Impact		Objectives	Parameter	Method or procedures	Monitoring location	Frequency	Schedule	
General	Detailed										
Water Quality Degradation	Turbid water from mine runoff will significantly provide changes of water quality on nearby rivers and coastal area.	Pasi River, Tagusao River and Causeway	Mining Operation/ Ore Stockyard	1. Construction of 2 Pit Bottom, 16 Siltation Ponds, 16 Silt Collector Sumps (SCS). 2. Construction of mine drainage channel to divert water run-off to nearest siltation ponds. 3. Regular desilting of constructed Pit Bottom, SCS and siltation ponds. 4. Construction of additional Siltation ponds based on the calculated excess runoff.	To ensure that the constructed mitigating measures are efficiently contained silted water.		Daily monitoring of siltation ponds discharge and mine drainage channel	Mine pit, Pasi Siltation Ponds and Ore Stockyard	Daily or as frequent as necessary	January-December 2022	2,220
				5. Daily monitoring of siltation ponds discharge and monthly water sampling for laboratory analysis of heavy metals and onsite parameters.	To determine the effectiveness of constructed siltation ponds and validate the water quality in	The samples parameter are the following; pH, arsenic, cadmium, lead, manganese, nickel, TSS (for the regular station) and	1. Daily inspection of siltation pond discharge. 2. Monthly in-house water sampling for onsite and heavy	Pasi settling pond, Tagusao settling pond	Daily/Monthly	January-December 2022	1,310

					conformance with RA 9275.	chromium hexavalent, oil and grease (for effluence).	metals parameters for laboratory analysis				
Air Quality	The use of heavy equipment for mining and hauling activities will generate dust emission, gaseous emission and increase of noise level	Nearby residence of Pasi area, contractor's campsite, hauling road resident and Ore Stockyard resident	Mine pit excavation and Ore transport from mine pit to Ore Stockyard	1. Use of properly maintained heavy equipment installed with mufflers. 2. Protection of existing vegetation near the mining area to serve as noise barrier. 3. Use of properly maintained motor vehicles and heavy equipment. 4. Regular water sprinkling along exposed areas especially during dry periods. 5. Limiting the speed of service vehicles, hauling trucks and other heavy equipment. 6. Imposition of truck load limits to prevent the unwanted discharge of materials and dusts.	To verify the effectiveness of established mitigating measures and continuously provide improvement as necessary to reduce dust emission, noise level and gaseous emission in compliance to RA 8749 and DAO 2000-98.	The standard noise monitoring will not more than 90 decibels. And 300 µNm3 TSP results, for the ambient air quality monitoring.	1. Securing yearly smoke emission test results of all vehicles. 2. Monthly in-house noise level monitoring 3. Monthly in-house air quality monitoring. 4. Daily monitoring of service vehicles' speed thru trip tickets 5. Monthly validation/inspection of road watering consumption and 6. Daily monitoring of water sprinkling activity	Mine pit, pre-pile yard, hauling road and Ore Stockyard stockpile.	Daily/Monthly or as frequent as necessary	January-December 2022	2,820
De-vegetation/ Land Disturbances	The mining operation and activities will cause loss of top soil, soil erosion, slope failure or mass movement,	Mine pit, Pasi River, Tagusao River, Ore Stockyard and causeway	Mine pit, pier yard, motor pool, campsite and causeway	1. Revegetation of the open/expose areas. 2. Maintaining a stockpile for topsoil in a designated area away from	To apply state-of-the-art mine rehabilitation strategies and performed progressive		1. Daily patrol works on established rehabilitation sites 2. Regular application of organic	Nursery, Mine pit, hauling road, Ore Stockyard and established buffer zone and rehabilitated areas.	Daily/monthly	January-December 2022	16,372.28

	change in land reform, siltation of drainage systems, generation of solid waste and soil contamination with oil and grease			creeks/erosion prone areas. 3. Use of a combination of permanent engineering structures and vegetative means to stabilize toe and slope stockpiles. 4. Installation of proper drainage along road systems and open areas and by immediately revegetating the peripheries. 5. Maintaining vegetation cover in the designated buffer zones and in the peripheries of roads and minepit. 6. Diversion of runoff away from steep slopes and denuded areas by constructing interceptors, drains and berms. 7. Keeping stockpiles with moderate slopes to minimize high erosion rate 8. Progressive rehabilitation.	mined-out rehabilitation.		fertilizer for growth development of potted seedlings in nursery. 3. Massive production of seedling for large planting stocks 4. Regular patrol works on buffer zone area for illegal activity inspection. 5. Planting of endemic/endangered species and 6. Regular inspection of stockpile slope. 7. Regular inspection of interceptor canals, drains and berms.				
				9. Implementation of Solid Waste Management Program involving local community and contractors.	To validate the reduction of solid waste generation at source and proper toxic and		1. Regular garbage collection and inventory of solid waste generated.	Mine pit, campsite, contractors motor pool and Ore Stockyard.	Twice a week/ Weekly hazwaste inspection	January-December 2022	47

				10. Maintenance of vehicles/heavy equipment strictly at motorpool. 11. Regular maintenance of the oil and water separator will be done to ensure optimum performance. 12. Good housekeeping practices including proper handling and clean-up of oil at motorpool.	hazardous waste management in compliance to RA 9003 and RA 6969		2. Recycling of biodegradable waste for mine rehabilitation. 3. Regular inspection of hazardous waste storage facility				
				13. Protection of Mangrove areas 14. Rehabilitation of denuded mangrove areas	To ensure the protection of mangrove areas for the improvement of fish production and income generation of fisherman within the impact area of mine operation		4. Regular patrol works and enrichment planting on established mangrove rehabilitation areas	Sitio Mangingisda /Causeway	Weekly	January-December 2022	50

Activity	Affected Resources/Areas	Foreseen Impacts	Mitigating Measures	Estimated Budget (P x 1000)
Mining Operation/ Ore stockpiling and mobilization for ore shipment	Water Quality in Pasi River, Tagusao River and Causeway area	Turbid water from mine runoff will significantly provide changes of water quality on nearby rivers and coastal area.	1. Construction of additional settling ponds, collector sumps with drainage canals. 2. Construction of mine drainage channel to divert water run-off to nearest settling ponds. 3. Regular desilting of constructed Pit Bottom, SCS and settling ponds.	3,962

Mine pit excavation and Ore transport from mine pit to Ore stockyard	Nearby residence of Pasi area, contractor's campsite, hauling road resident and adjacent ore stockyard resident	The use of heavy equipment for mining and hauling activities will generate dust emission, gaseous emission and increase of noise level	1. Use of properly maintained heavy equipment installed with mufflers. 2. Protection of existing vegetation near the mining area to serve as noise barrier. 3. Use of properly maintained motor vehicles and heavy equipment. 4. Regular water sprinkling along exposed areas especially during dry periods. 5. Limiting the speed of service vehicles, hauling trucks and other heavy equipment. 6. Imposition of truck load limits to prevent the unwanted discharge of materials and dusts.	1,720
Mine operation, ore stockpiling, construction of motor pool, campsite and causeway/pier area for LCT docking area	De-vegetation/ Land Disturbances	The mining operation and activities will cause loss of top soil, soil erosion, slope failure or mass movement, change in land reform, siltation of drainage systems, generation of solid waste and soil contamination with oil and grease	1. Implement temporary revegetation of the open/exposed areas of block A & B. 2. Maintaining a stockpile for topsoil in a designated area away from creeks/erosion prone areas. 3. Use of a combination of permanent engineering structures and vegetative means to stabilize toe and slope stockpiles. 4. Installation of proper drainage along road systems and open areas and by immediately revegetating the peripheries. 5. Maintaining vegetation cover in the designated buffer zones and in the peripheries of roads and minepit. 6. Diversion of runoff away from steep slopes and denuded areas by constructing interceptors, drains and berms. 7. Keeping stockpiles with moderate slopes to minimize high erosion rate. 8. Perform 5 hectares mined-out rehabilitation within a year. 9. Implementation of Solid Waste Management Program involving local community and contractors. 10. Maintenance of vehicles/heavy equipment strictly at motor pool. 11. Regular maintenance of the oil and water separator will be done to ensure optimum performance. 12. Good housekeeping practices including proper handling and clean-up of oil at motor pool. 13. Protection of Mangrove areas	20,711.75

			14. Rehabilitation of denuded mangrove areas	

Source of Impacts	Parameters Considered	Purpose of Monitoring	Monitoring Method/s	Monitoring Locations	Monitoring Frequency
Mining Operation/ Ore Stockyard	Water Quality	1. To insure that the constructed mitigating measures are efficiently contained silted water. 2. To determine the effectiveness of constructed siltation ponds and validate the water quality in conformance with RA 9275.	1. Daily monitoring of siltation ponds discharge and mine drainage channel. 2. Daily inspection of siltation pond discharge. 3. Monthly in-house water sampling for onsite and heavy metals parameters for laboratory analysis	Mine pit, Pasi Siltation Ponds and ore stockyard	Daily or as frequent as necessary
Mine pit excavation and Ore transport from mine pit to Ore Stockyard	Air Quality	To verify the effectiveness of established mitigating measures and continuously provide improvement as necessary to reduce dust emission, noise level and gaseous emission in compliance to RA 8749 and DAO 2000-98	1. Securing yearly smoke emission test results of all vehicles. 2. Monthly in-house noise level monitoring 3. Monthly in-house air quality monitoring. 4. Daily monitoring of service vehicles' speed thru trip tickets 5. Monthly validation/inspection of road watering consumption and 6. Daily monitoring of water sprinkling activity	Mine pit, pre-pile yard, hauling road and Ore Stockyard stockpile.	Daily/Monthly or as frequent as necessary

Mine pit, Ore Stockyard, motor pool, campsite and causeway	De-vegetation/ Land Disturbances	To apply state-of-the-art mine rehabilitation strategies and performed progressive mined-out rehabilitation.	1. Daily patrol works on established rehabilitation sites 2. Regular application of organic fertilizer for growth development of potted seedlings in nursery. 3. Massive production of seedling for large planting stocks 4. Regular patrol works on buffer zone area for illegal activity inspection. 5. Planting of endemic/endangered species and 6. Regular inspection of stockpile slope. 7. Regular inspection of interceptor canals, drains and berms.	Nursery, Mine pit, hauling road, Ore Stockyard and established buffer zone and rehabilitated areas.	Daily/monthly
		To validate the reduction of solid waste generation at source and proper toxic and hazardous waste management in compliance to RA 9003 and RA 6969.	To validate the reduction of solid waste generation at source and proper toxic and hazardous waste management in compliance to RA 9003 and RA 6969	Mine pit, Ore Stockyard, motor pool, campsite and causeway	Twice a week/ Weekly hazwaste inspection
		Protection of Mangrove areas and Rehabilitation of denuded mangrove areas	To ensure the protection of mangrove areas for the improvement of fish production and income generation of fisherman within the impact area of mine operation	Sitio Mangigisda/ Causeway	Weekly

For the year 2022, the total budget for the various environmental protection and enhancement projects/activities amounts to **Php33,879,560.00**. This will be used to sustain priority projects that include tree planting, siltation and dust control, and environmental monitoring. The EPEP matrix for the quarterly implementation of these projects/activities including the targets and budget allocations are presented in **Table 9**

4.3 REPORTING

The company's AEPEP activities accomplishment will be reported to the Multi-Partite Monitoring Team (MMT) on a quarterly frequency. The accomplishment reports will be submitted by the MMT to the Mine Rehabilitation Fund Committee (MRFC) for scrutiny and further recommendations to improve CMDC's environmental mitigation activities.

In the case of infractions, CMDC is responsible to report to MRFC its compliance with the MMT's recommendations. The report will be submitted after the MMT's quarterly monitoring.

Aspect	MMT Reporting	Company Reporting
Water Quality	Quarterly	Quarterly
Air Quality	Quarterly	Quarterly
Noise Level	Quarterly	Quarterly

Table 9

2022 ANNUAL ENVIRONMENTAL PROTECTION AND ENHANCEMENT PROGRAM (AEPEP) PHYSICAL TARGETS AND BUDGET ALLOCATIONS MATRIX

2022 Annual Environmental Protection and Enhancement Program of Pulot Nickel Mining Project of CMDC

2022 AEPEP Activities	Unit of Work Measure (UWM) / Unit Cost	Annual Physical / Financial Target	Quarterly Physical / Financial Target				REMARKS	Location	Indicator
			1stQ	2ndQ	3rdQ	4thQ			
1.0 LAND RESOURCES									
1.1 Reforestation Efforts									
1.1.1 Mining Forest Program (MFP) and Progressive Rehab	hectares established	**13.69**	4.16	5.51	2.77	1.25	This proram includes reshaping, recontouring, sub-soil and top soil matting, and tree planting	Rehabilitation at Block A and Block C	Establishment of rehabilitation area
	1,066,851.72	**14,605,200.00**	4,438,800.00	5,877,900.00	2,955,000.00	1,333,500.00			
	no. of bamboo culms planted	**500**	200	0	0	300	Enhancement planting on the existing rehabilitated sites and along tributaries or creeks	Within the PNMP-MPSA and identified locations	Reported in the EPEP accomplishments and MFP report
	100.00	**50,000.00**	20,000.00	0	0	30,000.00			
1.1.3 Climax Species/ Fruit Tree Plantation	no. of seedlings planted	**1,200**	300	300	300	300	Planting of fruit bearing trees in the rehabilitation areas.	Block AA rehab and block C5, C6 rehab	Reported in the EPEP accomplishments and MFP report
	84.67	**101,600.00**	25,400.00	25,400.00	25,400.00	25,400.00			
1.2 Maintenance of Reforestation Areas									
1.2.1 Mining Forest Program (MFP)	hectares maintained	**5**	1.25	1.25	1.25	1.25	Monitoring, enhancement planting, and fertilizer application	All established rehabilitation sites in the mine pit	Reported in the EPEP accomplishments and MFP report
	113,200.00	**566,000.00**	141,500.00	141,500.00	141,500.00	141,500.00			
1.2.2 National Greening Program (NGP)	hectares maintained	**20.34**	8	8	2.17	2.17	Monitoring, strip brushing, enhancement planting, and fertilizer	NGP sites near PNMP- Nursery	Reported in the EPEP accomplishments and NGP report
	3,933.14	**80,000.00**	31,465.09	31,465.09	8,534.91	8,534.91			
1.2.3 Bamboo Plantation	hectares maintained	**9.24**	0	2.34	0	6.9	Monitoring, enhancement planting, and fertilizer application	Block B1 rehab, block C4 rehab and block C	Reported in the EPEP accomplishments
	2,597.40	**24,000.00**	0	6,077.92	0	17,922.08			
1.2.4 Climax Species/ Fruit Tree Plantation	no. of seedlings	**600**	0	0	300	300	Monitoring, enhancement planting, and fertilizer application	Block AA rehab, Block C3 rehab, and Block C4	Reported in the EPEP accomplishments
	75.00	**45,000.00**	0	0	22,500.00	22,500.00			
1.2.5 Temporary Revegetation Program (TRP)	hectares maintained	**4.37**	0	1.03	1.67	1.67	Monitoring, enhancement planting with other grass species and fertilizer application	Block A and block B	Reported in the EPEP accomplishments
	26,315.79	**115,000.00**	0	27,105.26	43,947.37	43,947.37			

2,126,580

1.3 Nursery Operations									
1.3.1 Seedlings Production	no. of seedlings produced	**70,000**	10,000	20,000	20,000	20,000	Continuous production of endemic tree species for rehabilitation areas	PNMP Mine site	Reported in the EPEP accomplishments and MFP report
	28.0	**1,960,000.00**	280,000.00	560,000.00	560,000.00	560,000.00			
1.3.2 Vermicast Production	no. of sacks	**120**	30	30	30	30	Continuous production of organic fertilizer	PNMP- Nursery Mine Site	Reported in the EPEP accomplishments
	666.67	**80,000.00**	20,000.00	20,000.00	20,000.00	20,000.00			
	weight produced (kgs)	**600.00**	150	150	150	150			
1.3.3 Nursery Storage Expansion	no. unit expanded	**1**	0	0	1	0	In preparation for future mine expansion and bigger storage for nursery tools and equipment	PNMP- Nursery Mine Site	Reported in the EPEP accomplishments
	86,580.00	**86,580.00**	0	0	86,580.00	0			
1.4 Construction of Environmental Facilities									
1.4.1 Trapezoidal weir for SP with concrete pathway	no. constructed	**2**	0	1	1	0	Compliance to the permit conditions for WDP	Pasi 3 SP and OSY SP	
	50,000.00	**100,000.00**	0	50,000.00	50,000.00	0			
1.4.2 Eco-Park Observation Post	no. constructed	**1**	0	1	0	0	For wildlife viewing and documentation	Block B Forested area	
	40,000.00	**40,000.00**	0	40,000.00	0	0			
2.0 WATER RESOURCES AND QUALITY									
2.1 Construction and Maintenance of Existing Environmental Structures									
2.1.1 Siltation Ponds Construction	No. of SP constructed (unit)	**2**	0	1	1	0	Block A new SP area: 3,521sq.m capacity: 17,605 cu.m Block C new SP area: 1,403sq.m capacity: 7,015cu.m	Within the PNMP-MPSA	Well-maintained and constructed environmental mitigating structures
	1,050,000.00	**2,100,000.00**	0	1,050,000.00	1,050,000.00	0			
2.1.2 Silt Collector Sumps Construction	No. of SCS constructed (unit)	**4**	0	2	2	0	SCS 8 area: 585.3sq.m capacity: 1,755.90cu.m SCS 9 area: 776.1sq.m capacity: 2,328.3cu.m SCS 10 area: 476.80sq.m capacity: 1,430.4cu.m SCS 7 area: 1,378sq.m capacity: 4,134.3cu.m	Within the PNMP-MPSA	Well-maintained and constructed environmental mitigating structures
	50,000.00	**200,000.00**	0	100,000.00	100,000.00	0			
2.1.3 Siltation Pond Desilting/Repair	no. of SP monitored and maintained	**6**	3	3	0	0	Monitoring and maintenance of primary SP in the mine pit	Within the PNMP-MPSA	Well-maintained environmental mitigating structures
	106,666.67	**640,000.00**	320,000.00	320,000.00	0	0			
2.1.4 Silt Collector Sumps Desilting/Repair	no. of SCS maintenance activity	**8**	2	2	2	2	Monitoring and maintenance of SCS before and after SPs in the mine pit	Within the PNMP-MPSA	Well-maintained environmental mitigating structures
	15,000.00	**120,000.00**	30,000.00	30,000.00	30,000.00	30,000.00			

140,000

and Resource: 17,853,380

5,010,000

2.1.5	Pit Bottom Desilting/Repair	no. of PB monitored and maintained	**2**	1	0	1	0	Monitoring and maintenance	Block A and block C	Well-maintained environmental mitigating structures
		250,000.00	**500,000.00**	250,000.00	0	250,000.00	0			
2.1.6	Drainage System Maintenance/Repair	Length of drainage system maintained (kilometers)	**18**	18.0 4.5	18.0 4.5	18.0 4.5	18.0 4.5	Monitoring and maintenance of drainage system from mine pit to causeway	Within the PNMP-MPSA	Well-maintained access roads
		80,555.56	**1,450,000.00**	362,500.00	362,500.00	362,500.00	362,500.00			
2.2 Water Quality Monitoring										
2.2.1	Monthly Water Quality Monitoring	no. of inhouse sampling conducted per quarter	**8**	2	2	2	2	13 samplings stations with the ff. parameters Arsenic, Cadmium, Lead, Manganese, Nickel, TSS, and Chromium Hexavalent	Within the PNMP-MPSA and identified stations	Within the DENR standard based on DAO No. 2016-08
		16,000.00	**128,000.00**	32,000.00	32,000.00	32,000.00	32,000.00			
		no. of sampling stations	**52**	13	13	13	13			
2.2.2	Third Party Laboratory Analysis	no. of sampling activity	**4**	1	1	1	1	13 samplings stations with the ff. parameters Arsenic, Cadmium, Lead, Manganese, Nickel, TSS, and Chromium Hexavalent	Within the PNMP-MPSA and identified stations	Within the DENR standard based on DAO No. 2016-08
		8,000.00	**32,000.00**	8,000.00	8,000.00	8,000.00	8,000.00			
		no. of samples collected	**52**	13	13	13	13			
		no. of parameters analyzed	**28**	7	7	7	7			
2.3 Solid Waste Management										
2.3.1	Collection, Segragation, Disposal, House keeping, Maintenance	no. of collection	**48**	12	12	12	12	Weekly collection and temporarily stored at the RCA. Awaiting for disposal to Municipal SLF	RCA in Old admin building at mine site	Compliance to MENROs recommendation for temporary storage of residual waste
		770.83	**37,000.00**	9,250.00	9,250.00	9,250.00	9,250.00			
		weight of waste generated (kgs)	**4716**	1179	1179	1179	1179			
2.4 Hazardous Waste Management										
2.4.1	Collection and Storage of liquid hazardous wastes	drums	**14**	2	3	4	5	Collected hazwaste will be stored at the THSF and subject for disposal to TSD	Temporary Hazwaste Storage Facility 1 (OSY)	In compliance with the R.A. 6969
		714.29	**10,000.00**	1,428.57	2,142.86	2,857.14	3,571.43			
2.4.2	Collection and Storage of solid hazardous wastes	drums	**8**	2	2	2	2	Collected hazwaste will be stored at the THSF and subject for disposal to TSD	Temporary Hazwaste Storage Facility 1 (OSY)	In compliance with the R.A. 6969
		1,250.00	**10,000.00**	2,500.00	2,500.00	2,500.00	2,500.00			

160,000

37,000

20,000

Water Resource:
5,227,000.00

9,464,180

3.0 AIR QUALITY MONITORING (20%)									
3.1 Dust Suppression									
3.1.1 Water Spraying on mine road	kilometer	**18**	18	18	18	18	Road water sprinkling using 3 water trucks to mitigate dust pollution	Mine roads from mine pit to causeway	Well-maintained access roads
	111,030.28	**7,994,180.00**	1,998,545.00	1,998,545.00	1,998,545.00	1,998,545.00			
3.1.2 Road Maintenance	kilometer	**18**	4.5	4.5	4.5	4.5	Road maintenance includes scraping, compaction, drainage canal enhancement	Mine roads from mine pit to causeway	Well-maintained access roads
	80,555.56	**1,450,000.00**	362,500.00	362,500.00	362,500.00	362,500.00			
3.2 Ambient Air Quality Monitoring									
3.2.1 Monthly In-house Air monitoring	no. of sampling	**12**	3	3	3	3	Air quality monitoring using High Volume sampler and/or PM10 for TSP	Within the PNMP-MPSA and identified stations	Within the DENR standard parameter and in compliance with RA 8749
	1,666.67	**20,000.00**	5,000.00	5,000.00	5,000.00	5,000.00			
	no. of sampling stations	**28**	7	7	7	7			
	No. of parameters	**4**	1	1	1	1			
4.0 NOISE AND VIBRATION									
4.1 Ambient Noise Monitoring									
4.1.1 Monthly In-house Noise monitoring	no. of noise monitoring	**28**	7	7	7	7	Conducted monthly in-house noise level monitoring	Within the PNMP-MPSA and identified stations	Within the DENR standard
	1,328.57	**37,200.00**	9,300.00	9,300.00	9,300.00	9,300.00			
	no. of monitoring	**12**	3	3	3	3			
5.0 CONSERVATION VALUES									
5.1 Adopt-a-creek/river Program									
5.1.1 Maribong Spillway, Pasi River	No. of clean-up activities	**4**	1	1	1	1	Quarterly	Maribong and Pasi river	Reported in the EPEP accomplishments
	5,000.00	**20,000.00**	5,000.00	5,000.00	5,000.00	5,000.00			
5.2 Coastal Revegetation/Enhancement Planting									
5.2.1 Mangrove tree planting and monitoring	no. of activities	**18**	4	4	5	5	Enhancement planting will be conducted during 3rd and 4th Q of the year	Pulot Shore and Caramay	Annual report will be provided and MFP
	4,044.44	**72,800.00**	8,200.00	8,200.00	28,200.00	28,200.00			

37,000

92,800

490,000

6.0 ENVIRONMENTAL RESEARCH										
6.1 Research Study										
6.1.1	Adaptability of Mushroom in Mining Areas	No. of progress report prepared	**4**	1	1	1	1	Application on site	PNMP Mine site	Quarterly progress report will be provided
		45,000.00	**180,000.00**	45,000.00	45,000.00	45,000.00	45,000.00			
6.1.2	Flora and Fauna monitoring	no. of monitoring	**48**	12	12	12	12	Weekly monitoring on the rehabilitated sites	PNMP Mine site	Annual report will be provided
		4,166.67	**200,000.00**	50,000.00	50,000.00	50,000.00	50,000.00			
6.1.3	Effectiveness of Native Chicken Dung for Progressive Rehabilitation	No. of progress report prepared	**4**	1	1	1	1	For study purposes. Chicken dung and vermicast effect on soil mix	PNMP Pier site	Quarterly progress report will be provided
		15,000.00	**60,000.00**	15,000.00	15,000.00	15,000.00	15,000.00			
6.1.4	Survivability of Azolla in mine wastewater	No. of progress report prepared	**4**	1	1	1	1	For study purposes. Azolla or mosquito fern as alternative feeds for chicken and fish	PNMP Mine site	Quarterly progress report will be provided
		12,500.00	**50,000.00**	12,500.00	12,500.00	12,500.00	12,500.00			

320,000

7.0 OTHERS										
7.1 Multi-Partite Monitoring Team Validation										
7.1.1	MMT Monitoring	no. of inspection/ monitoring	**4**	1	1	1	1	Quarterly	PNMP Mine site	Regular reporting of monitoring result and compliance with government rules and regulations
		50,000.00	**200,000.00**	50,000.00	50,000.00	50,000.00	50,000.00			
7.2 Mine Rehabilitation Fund Committee Meeting										
7.2.1	MRFC Meeting	no. of meetings	**4**	1	1	1	1	Quarterly Virtual Meeting	TNMP Clubhouse/ Puerto Princesa City	Regular reporting of monitoring result and compliance with government rules and regulations
		30,000.00	**120,000.00**	30,000.00	30,000.00	30,000.00	30,000.00			

7.3 Regulatory compliance monitoring/inspection									
7.3.1	Regulatory compliance monitoring/inspection (EMB, ISHES, MICC, etc.)	no. of monitoring	**4**	1	1	1	1	Quarterly	PNMP Mine site	Regular reporting of monitoring result and compliance with government rules and regulations
		5,000.00	**20,000.00**	5,000.00	5,000.00	5,000.00	5,000.00			
7.4 Seminars and Trainings									
7.4.1	Seminars and Trainings (PCO, MEPEO, and other envi related)	no of trainings and seminars	**3**	0	1	1	1	Webinars and virtual meetings as needed	PNMP Mine site	Regular reporting of monitoring result and compliance with government rules and regulations
		25,000.00	**75,000.00**	0	25,000.00	25,000.00	25,000.00			
7.5 IEC Activities									
7.5.1	IEC Activities	no. of activities	**3**	0	1	1	1	Participation to environmental events and conducts IEC to recepients	PNMP Mine site and neighboring community	Regular reporting of monitoring result and compliance with
		6,666.67	**20,000.00**	0	6,666.67	6,666.67	6,666.67			
7.6 Rice planting assistance to Farmers									
7.6.1	Rice farmers assistance (fertilizers)	no. of farmers	**12**	3	3	3	3	Quarterly	PNMP Mine site and neighboring community	Donation of fertilizers every cropping season
		7,500.00	**90,000.00**	22,500.00	22,500.00	22,500.00	22,500.00			
7.7 MEPEO Portable Digital Equipment									
7.7.1	Purchase of Handheld GPS	no. of units	**1**	0	0	1	0	For mapping and geolocation purposes	PNMP Mine site	
		30,000.00	**30,000.00**	0	0	30,000.00	0			
7.8 Horticulture Project									
7.8.1	Production of horticulture products	no. of kilograms	**480**	120	120	120	120	To produce organic vegetables for consumption	PNMP- Nursery Mine Site Horticulture 1 and 2	Harvested crops presented in the EPEP accomplishments
		333.33	**160,000.00**	40,000.00	40,000.00	40,000.00	40,000.00			
GRAND-TOTAL			**33,879,560.00**	**8,631,388.66**	**11,386,052.80**	**8,500,781.08**	**5,361,337.45**			

Prepared by:

CARL JAY C. TAN
Pollution Control Officer

Noted by:

ENGR. JAINAL M. UY, JR.
Resident Manager

Total Environmental-Related Costs	= **33,879,560.00**
Estimated Direct Mining Cost[1]	= **445,994,625.00**
Percentage of Total Environment-Related Cost to the Direct Mining Costs	= **7.59%**

Note: [1]Partial and unofficial, awaiting results of official 2021 audit report by third party auditor. These includes breakdown of estimated direct mining cost.

5.0 NAME AND SIGNATURE OF PERSONS PREPARING THE AEPEP

CARL JAY C. TAN
Pollution Control Officer

PCO COA No.	:	2021-R4B-03396
Date Issued	:	20 April 2021
Expiry Date	:	19 April 2024

JAINAL M. UY, JR.
Resident Manager

PRC No.	:	002410
Date Issued	:	19 August 2021
Place Issued	:	PRC Puerto Princesa City, Palawan