



MAR 04 2022

**DENR ADMINISTRATIVE ORDER**  
**NO. 2022- 04**

**SUBJECT: ENHANCING BIODIVERSITY CONSERVATION AND PROTECTION IN MINING OPERATIONS**

Consistent with the provisions of Republic Act (RA) No. 7942<sup>1</sup>, RA No. 7076<sup>2</sup>, RA No. 9147<sup>3</sup>, RA No. 7586<sup>4</sup> as amended by RA No. 11038<sup>5</sup>, RA No. 8371<sup>6</sup>, RA No. 9072<sup>7</sup>, RA No. 9003<sup>8</sup>, RA No. 9275<sup>9</sup>, RA No. 8749<sup>10</sup>, RA No. 6969<sup>11</sup>, RA No. 7160<sup>12</sup>, RA No. 8550<sup>13</sup>, RA No. 10654<sup>14</sup>, Presidential Decree (PD) No. 1586<sup>15</sup>, PD No. 705<sup>16</sup>, as amended, Executive Order (EO) No. 578 s. 2006<sup>17</sup>, EO No. 533 s. 2006<sup>18</sup>, EO No. 79 s. 2012<sup>19</sup>, EO 270 s. 2004<sup>20</sup> and EO No. 130 s. 2021<sup>21</sup>, and their respective implementing rules and regulations, and pursuant to DENR Administrative Order (DAO) No. 2016-12<sup>22</sup>, DENR Memorandum Circular (DMC) No. 2016-745,<sup>23</sup> and other pertinent laws, rules and regulations, this Administrative Order is hereby promulgated for the information, guidance and compliance of all concerned.

**SECTION 1. Basic Policy.** It is the policy of the State to protect and advance the rights of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature<sup>24</sup>. It is also the policy of the State to promote responsible mining that adheres to the

<sup>1</sup> "Philippine Mining Act of 1995"

<sup>2</sup> "People's Small-scale Mining Act of 1991"

<sup>3</sup> "Wildlife Resources Conservation and Protection Act"

<sup>4</sup> "The National Integrated Protected Areas System Act of 1992"

<sup>5</sup> "Expanded National Integrated Protected Areas System Act of 2018"

<sup>6</sup> "The Indigenous People's Rights Act of 1997"

<sup>7</sup> "National Caves and Cave Resources Management and Protection Act"

<sup>8</sup> "Ecological Solid Waste Management Act of 2000"

<sup>9</sup> "Philippine Clean Water Act of 2004"

<sup>10</sup> "Philippine Clean Air Act of 1999"

<sup>11</sup> "Toxic Substances and Hazardous and Nuclear Waste Control Act"

<sup>12</sup> "Local Government Code of 1991"

<sup>13</sup> "Philippine Fisheries Code of 1998"

<sup>14</sup> "An Act to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, Amending Republic Act No. 8550"

<sup>15</sup> "Establishing an Environmental Impact Statement System including other Environmental Management Related Measures and for Other Purposes"

<sup>16</sup> "Revised Forestry Code of the Philippines"

<sup>17</sup> "Establishing the National Policy on Biodiversity"

<sup>18</sup> "Adopting Integrated Coastal Management as a National Strategy"

<sup>19</sup> "Institutionalizing and Implementing Reforms in the Philippine Mining Sector to Ensure Environmental Protection and Responsible Mining, Particularly on the Full Enforcement of Environmental Standards in Mining"

<sup>20</sup> "National Policy Agenda on Revitalizing Mining in the Philippines"

<sup>21</sup> "Amending Section 4 of Executive Order No. 79 S. 2012"

<sup>22</sup> "Adopting the Philippine Biodiversity Strategy and Action Plan (PBSAP) 2015-2028"

<sup>23</sup> "Integration of Biodiversity in the Planning, Implementation and Monitoring of Development Projects and Tenurial Instruments Issued by the DENR"

<sup>24</sup> Article 2, Section 16 of The 1987 Constitution of the Republic of the Philippines,

principles of sustainable development including biodiversity conservation and with due regard to justice and equity while contributing to economic growth.

**SECTION 2. Objective.** This Order aims to provide adequate measures for responsible mining towards ensuring biodiversity conservation and protection including progressive and final rehabilitation of mined-out areas. It also aims to minimize negative impacts on biodiversity and ensure its conservation of biodiversity, thereby promoting the sustainable development and utilization of the country's natural and mineral resources for the benefit of present and future generations.

**SECTION 3. Coverage.** This Order shall apply to all stages of on-shore and off-shore mining operations.

**SECTION 4. Definition of Terms.** As used in this Order, the following terms shall be defined and/or construed as indicated below:

- a. *Biodiversity*<sup>25</sup> – the variability among living organisms from all sources including, inter alia, terrestrial, marine and aquatic ecosystems and the ecological complexes of which they are part. This includes diversity within species, between species and of ecosystems;
- b. *Biodiversity-friendly enterprise (BDFE)*<sup>26</sup> - involves the utilization of resources leaning towards sustainability and further enhancement of resources in which the community will have an increased appreciation of biodiversity through its ecosystem services;
- c. *Detailed Exploration*<sup>27</sup> - is conducted to delineate with a high level of confidence the volume, tonnage and grade of the mineral deposit. The main activities consist of detailed geologic mapping and geochemical sampling at closer spaced and adequate observation points, and additional extensive/intensive drilling in the highly mineralized areas. The desired target is Measured Mineral Resource;
- d. *Development*<sup>28</sup> - the work undertaken to explore and prepare an ore body or a mineral deposit for mining, including the construction of necessary infrastructure and related facilities;
- e. *Ecological restoration* - the process of managing or assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed as a means of sustaining ecosystem resilience, and conserving biodiversity, (CBD)<sup>29</sup>;
- f. *Ecosystem goods and services*<sup>30</sup> – refers to the multitude of material and nonmaterial provisions and benefits of healthy ecosystems necessary for human sustenance, well-being, and survival, including support processes, provisioning and environment regulating services, and cultural resource preservation services;

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<sup>25</sup> RA 11038, Section 4(a)

<sup>26</sup> DENR AO No. 2021-13, Section 4(c)

<sup>27</sup> IRR of Philippine Mineral Reporting Code

<sup>28</sup> RA 7942, Chapter 1, Section 3.

<sup>29</sup> United Nations Convention on Biological Diversity (CBD/COP/DEC/XIII/5, 10 December 2016)

<sup>30</sup> RA 11038, Section 4 (i)

- g. *Endemic species*<sup>31</sup> - refers to species or subspecies of flora and fauna which are naturally occurring and found only within the country or specific areas in the country;
- h. *Environmental Impact Assessment (EIA)*<sup>32</sup> – the process of predicting the likely environmental consequences of implementing projects or undertakings and designing appropriate preventive, mitigating, and enhancement measures;
- i. *Environmental Protection and Enhancement Program (EPEP)*<sup>33</sup> - the comprehensive and strategic environmental management plan for the life of the mining project on which Annual Environmental Protection and Enhancement Programs (AEPEPs) are based and implemented to achieve the environmental management objectives, criteria and commitments including protection and rehabilitation of the disturbed environment;
- j. *Environmental Work Program (EWP)*<sup>34</sup> - the comprehensive and strategic environmental management plan to achieve the environmental management objectives, criteria and commitments including protection and rehabilitation of the disturbed environment during the exploration period;
- k. *Exotic species*<sup>35</sup> - species or subspecies which do not naturally occur in the country;
- l. *Exploration*<sup>36</sup> - searching or prospecting for mineral resources by geological, geochemical and/or geophysical surveys, remote sensing, test pitting, trenching, drilling, shaft sinking, tunneling or any other means for the purpose of determining their existence, extent, quality and quantity and the feasibility of mining them for profit;
- m. *Final Mine Rehabilitation and/or Decommissioning Plan (FMR/DP)* – a plan for returning the mine sites and affected areas to viable and, whenever practicable, self-sustaining ecosystems that are compatible with a healthy environment and with human activities;
- n. *Flagship species*<sup>37</sup> – species of wild flora and fauna which can be used as emblems of conservation for a certain community/facility/region owing to its outstanding characteristics, occurrence, importance to the system, capacity to attract attention and contribution to the most important conservation areas;
- o. *Forest over ultramafic rock*<sup>38</sup> - also known as *ultramafic forest*, which is found on rocks with very low silica content, high concentrations of heavy metals (magnesium, iron, chromium, cobalt and nickel), low concentrations of phosphorus, potassium and calcium; and is composed of usually greater than 90 percent mafic minerals (dark colored, high magnesium and iron content). Associated vegetation is generally sclerophyllous - vegetation with hard leaves

<sup>31</sup> International Union for Conservation of Nature. Retrieved from [https://www.iucn.org/downloads/en\\_iucn\\_glossary\\_definitions.pdf](https://www.iucn.org/downloads/en_iucn_glossary_definitions.pdf)

<sup>32</sup> DAO 2010-21: "Revised IRR of the Philippine Mining Act", Section 5(ad)

<sup>33</sup> DAO 2010-21, Section 5(ag)

<sup>34</sup> DAO 2010-21, Section 5 (ah)

<sup>35</sup> RA 9147, Section 5 (j)

<sup>36</sup> DAO 2010-21, Section 5 (aj)

<sup>37</sup> DAO 2007-03.

<sup>38</sup> Philippine Tropical Forest Conservation Foundation, Inc. 2013. Connecting Forests, People and Development.

that have short distances between them along the stem - that is sharply demarcated from adjoining vegetation;

- p. *Indigenous species*<sup>39</sup> - species or subspecies of wildlife naturally occurring or has naturally established population in the country but can also be found naturally in other areas;
- q. *Invasive alien species* - an exotic or non-native species that is able to establish viable populations, spread and colonize natural or built ecosystems and cause negative impacts to biological diversity, human health, economy, and the environment;
- r. *Mined-out area* – previously mined area that is no longer feasible for mineral/ore extraction based on existing economical, geological, technological and legal parameters;
- s. *Mineral Processing*<sup>40</sup> - the milling, beneficiation, leaching, smelting, cyanidation, calcination or upgrading of ores, minerals, rocks, mill tailings, mine waste and/or other metallurgical by-products or by similar means to convert the same into marketable products;
- t. *Mineral Production Sharing Agreement*<sup>41</sup> – an agreement wherein the Government grants to the Contractor the exclusive right to conduct mining operations within, but not title over, a contract area and shares in the production whether in kind or in value as owner of the minerals therein;
- u. *Mining Area*<sup>42</sup> - a portion of the contract area identified by the Contractor as defined and delineated in a Survey Plan duly approved by the MGB Director/Regional Director concerned for purposes of development and/or utilization, and sites for support facilities;
- v. *Mining Operations*<sup>43</sup> - mining activities involving exploration, feasibility study, development and utilization;
- w. *Mining Rights*<sup>44</sup> – a right to explore, develop, or utilize mineral resources;
- x. *Mining Tenement*<sup>45</sup> – any tenorial instrument providing mining rights, such as Exploration Permit, Mineral Production Sharing Agreement, Financial or Technical Assistance Agreement, Mineral Processing Permit, Mining Patents and Special Mines Permit;
- y. *Off-shore*<sup>46</sup> – the water, sea bottom and subsurface from the shore or coastline reckoned from the mean low tide level up to the two hundred (200) nautical miles of the Exclusive Economic Zone;

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<sup>39</sup> International Union for Conservation of Nature.

<sup>40</sup> DAO 2010-21, Section 5(bb)

<sup>41</sup> DAO 2010-21, Section 31(a)

<sup>42</sup> DAO 2010-21, Section 5(bk)

<sup>43</sup> DAO 2010-21, Section 5 (bl)

<sup>44</sup> DAO 2010-21, Section 5(bn)

<sup>45</sup> DAO 2018-19 “Guidelines for Additional Environmental Measures for Operating Surface Metallic Mines”, Section 4(b)

<sup>46</sup> DAO 2010-21, Section 5(bs)

- z. *On-shore*<sup>47</sup> – landward side from the mean low tide level including submerged lands in lakes, rivers, and creeks;
- aa. *Private land*<sup>48</sup> - land belonging to any private person or entity which includes alienable and disposable land being claimed by a holder, claimant or occupant who has already acquired a vested right thereto under the law, including those whose corresponding certificate or evidence of title or patent has not been actually issued;
- bb. *Progressive rehabilitation* - a cost-effective engineering and biological measures of rehabilitating mined-out areas, during utilization stage, in accordance to the approved post-mining land use;
- cc. *Reference ecosystem* – representation of the original state of the ecosystem during pre-mining status or existing and undisturbed ecosystems in the mining area that serve as guiding image for ecosystem restoration or rehabilitation;
- dd. *Rehabilitation for ecological restoration* – the process of repairing the negative impacts of mining on the environment close to its original ecosystem. The long-term objective of rehabilitation is to restore mined-out areas to pre-mining status using as basis the condition of the reference ecosystem. This type of restoration strictly applies in mined-out areas whose final land use is protection and conservation, regardless of land classification category;
- ee. *Rehabilitation for other purposes*- the process of developing a mined-out area for purposes other than ecological restoration in consideration of the land classification category of the area, projected land use, and the existing, in-process and future development and management plans under a shared governance responsibility by the local government unit and DENR;
- ff. *Responsible mining* – contributes significantly to economic growth while at the same time ensuring that the impacts to the environment are remediated toward sustained productivity of the land after mining and the host communities are developed into self-reliant communities beyond the life of the mine<sup>49</sup>;
- gg. *Semi-Detailed Exploration*<sup>50</sup> - is the geological mapping and geochemical sampling at closely-spaced observations and sampling points, soil grid sampling and closely-spaced drilling in the delineated mineralized areas to determine the depth and extent of mineralization. Other specialized exploration techniques are also applied such as geophysics. The objective is to be able to estimate the volume, tonnage and grade with reasonable level of confidence. The desired target is Indicated Mineral Resource;
- hh. *Social Development and Management Program (SDMP)*<sup>51</sup> – the comprehensive five-year plan of the Contractor/Permit Holder/Lessee authorized to conduct actual mining and milling operations towards the sustained improvement in the living standards of the host and neighboring communities by creating responsible, self-reliant and resource-based communities capable of developing, implementing

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<sup>47</sup> DAO 2010-21, Section 5(bt)

<sup>48</sup> DAO 2010-21, Section 5(ce)

<sup>49</sup> Definition adopted during the 1st and 2nd Responsible Mining Forum in 2019 organized by Chamber of Mines and DENR.

<sup>50</sup> IRR of Philippine Mineral Reporting Code

<sup>51</sup> DAO 2010-21, Section 5(co)

and managing community development programs, projects, and activities in a manner consistent with the principle of people empowerment;

- ii. *Small-scale Mining*<sup>52</sup> – mining activities that heavily rely on manual labor using simple implements and methods and do not use explosives or heavy mining equipment;
- jj. *Subsoil*<sup>53</sup> - the mineral horizon between topsoil and the underlying parent material and usually lighter in color with an average depth of 0.15 to 1.20 meters;
- kk. *Topsoil*<sup>54</sup> – the layer of the soil characterized by the presence of soil organic matter and usually darker in color than subsoil with an average depth of 0 to 0.15 meters;
- ll. *Utilization*<sup>55</sup> - the extraction, mineral processing and/or disposition of minerals; and
- mm. *Wildlife*<sup>56</sup> - wild forms and varieties of flora and fauna, in all developmental stages, including those that are in captivity or are being bred or propagated.

**SECTION 5. Guiding Principles.** The following guiding principles shall be promoted in the enhancement of biodiversity conservation in mining operations:

- a. **Connectivity.** All ecosystems, living organisms, including humans, are dependent on each other, which is clearly shown through the food web, and in ecological processes such as pollination, seed dispersal, and natural control of pests. However, as natural landscapes are transformed for development, species survival is compromised and remnant habitats become isolated from established patterns of ecological processes and genetic exchange. Inevitably, the mix of ecosystem services is reduced and the overall resilience of the landscape is weakened. Conserving remnant biodiversity, building connectivity and restoring ecosystems affected by developmental activities including mining are wise strategies for sustaining ecosystem services and resilience;
- b. **Precautionary principle.** Where there is a lack of scientific certainty on the impacts of particular mining activities in all stages of the mining operation to natural and social capital assets, cost-effective and preventive measures should still be undertaken to avoid and/or minimize threats and to protect the environment and the people who value it;
- c. **Sustainable use of natural resources.** Use of natural resources should not lead to the decline of biological diversity to attain balance between economic development and ecological integrity; and
- d. **Participatory governance/participation of stakeholders.** Public participation in the protection, conservation and sustainable use of biodiversity around or adjacent to mining/exploration/mineral processing areas should be encouraged and promoted to maximize conservation and community benefits.

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<sup>52</sup> RA No. 7076, Section 3(b).

<sup>53</sup> DAO 2018-19, Section 4 (d).

<sup>54</sup> DAO 2018-19, Section 4(f).

<sup>55</sup> RA No. 7942 Section 3(az).

<sup>56</sup> RA 9147, Section 5(x).

**SECTION 6. Measures for Enhancing Biodiversity Conservation and Protection in Mining Operations.** The following measures shall be undertaken to ensure the integration of biodiversity conservation and protection in all stages of mining operations:

6.1. The biodiversity measures as provided in Table No. 1 shall be integrated in the EWP, EPEP and FMR/DP, or any related and relevant plans of all existing mining applications and approved mining tenements, upon approval of this Order. These biodiversity measures set the direction for more specific guidelines in the rehabilitation of mined out areas towards conservation and ecological restoration.

Table No. 1. Biodiversity Measures

STAGES OF MINING OPERATIONS	BIODIVERSITY MEASURES
<p><b>I. EXPLORATION</b></p> <p>This stage includes prospecting for mineral resources by geological, geochemical and/or geophysical surveys, remote sensing, test pitting, trenching, drilling, shaft sinking, tunneling or any other means for the purpose of determining their existence, extent, quality and quantity and the feasibility of mining them for profit.</p>	<p>Mining companies shall undertake the following activities in consultation with DENR:</p> <p><u>A. Preparatory Stage</u></p> <ol style="list-style-type: none"> <li>1. Conduct data gathering to determine available information on biodiversity particularly the critical ecosystems and species in the area to establish a baseline; and</li> <li>2. In this stage, the mining applicant/contractor/permittee shall follow the existing guidelines in the preparation of the <i>Environmental Work Program (MGB Form 16-1)</i>. It details the potential impact of exploration activities to several critical environments including land, water and biological systems.</li> </ol> <p><u>B. Reconnaissance Stage</u></p> <ol style="list-style-type: none"> <li>1. Conduct biodiversity assessment to validate areas which are critical for ecosystem services and wildlife habitats, both terrestrial and aquatic, e.g. nesting sites, roosting sites, feeding and breeding grounds. The biodiversity assessment will confirm and supply gaps, if necessary, in the baseline information listed in the <i>Environmental Work Program (MGB Form 16-1)</i>;</li> <li>2. In areas where biodiversity assessment have not been conducted or not updated, biodiversity assessment shall be undertaken by the company which may be done by in-house experts under the Environmental Office/Mine Environment Protection and Enhancement Office (MEPEO) of the mining company or by engaging third-party consultants (See Section 6.3); and</li> </ol>

3. If present, caves are identified and located within the mining area, and assessment shall be conducted together with the DENR following the procedures prescribed in DENR MC 2007-04: Guidelines for Cave Classification.

#### C. Semi-detailed to Detailed Exploration

1. Include the soil type and profile (pedology) in the environmental baseline;
2. Conduct monitoring of water quality parameters such as temperature, alkalinity, pH, total dissolved solids, salinity and conductivity in major river channels, tributaries as well as coastal waters to establish an environmental baseline;
3. Avoid disturbance to critical wildlife habitats (both terrestrial and aquatic) e.g., nesting sites, roosting sites, feeding and breeding grounds;
4. Use less invasive and advanced technologies such as but not limited to unmanned aerial vehicle (UAV) or drone, electrical resistivity and Ground Penetrating Radar (GPR) to reduce impacts on biodiversity. The conduct of these surveys before any major exploration activity (i.e. drilling, trenching, tunneling) will reduce the possibility of water resource contamination and disturbance of ecosystem in the site;
5. Strict enforcement of the provisions of the Wildlife Act on hunting, collection or injuring wildlife species; and
6. Conduct initial or rapid economic valuation of ecosystem services using existing tools to determine the environmental costs of the mining operation in consultation with BMB.

#### D. After exploration

1. Progressive rehabilitation of areas subject to exploration and related activities, by reforestation and/or by undertaking civil structural interventions (e.g., rip-rap, retaining walls, etc.);
2. Management of stockpile of excavated and



	<p>removed earth, toxic and hazardous materials that could affect nearby critical ecosystems;</p> <ol style="list-style-type: none"> <li>3. Establishment of water lines as sources of water for planting/rehabilitation sites*;</li> <li>4. Use of indigenous or native species as nurse trees and for the re-establishment of vegetation to promote return/in-migration of wildlife to the area*;</li> <li>5. Use of invasive alien species are strictly prohibited*; and</li> <li>6. Gradual replacement of all existing exotic species, especially those that are considered Invasive Alien Species (IAS), to native species shall be done two (2) years after the approval of this Order*.</li> </ol> <p><i>*This shall apply in all succeeding stages of mining operation.</i></p>
<p><b>II. DEVELOPMENT and UTILIZATION</b></p> <p>Development stage includes the following activities:</p> <ol style="list-style-type: none"> <li>1. The preparation of the deposit for mining. This is also where preliminary development works are undertaken, e.g. acquiring water and mineral rights, buying surface lands, financing arrangements, permit applications.</li> <li>2. Construction of access roads, power sources, mineral transportation systems, mineral processing facilities, waste disposal areas, offices and other support facilities.</li> <li>3. Actual mining, which may either be stripping or underground mining.</li> </ol> <p>Utilization stage is where the actual extraction of minerals from the earth is undertaken through the selected mining method.</p>	<p>Mining companies shall develop site-specific progressive rehabilitation plan subject for approval of DENR to contain the following:</p> <ol style="list-style-type: none"> <li>a. Identify reference ecosystem within the mining area as basis for progressive rehabilitation;</li> <li>b. Exclude roosting, and breeding ground of flagship species and other wildlife from any development;</li> <li>c. Wildlings from the areas targeted to be stripped shall be collected and set aside in established nurseries for future rehabilitation. Seeds shall also be collected from native trees within the MPSA for propagation in the nurseries;</li> <li>d. Earth-balled plants shall be immediately translocated as enrichment planting materials for reference ecosystem, secondary forest, buffer zone, canopy gaps within mining area or identified rehabilitation areas;</li> <li>e. Nurseries of native and endemic species shall be established and should be designed for the propagation of indigenous or native species and when necessary develop propagation techniques for indigenous or native species;</li> <li>f. Avoid construction of infrastructure and</li> </ol>

	<p>support facilities in critical areas for biodiversity including source of water or water bodies and wetlands;</p> <p>g. Include in the EPEP the monitoring of impact areas such as adjoining caves, wetlands, marine, and other ecosystems that may be affected by mining operations;</p> <p>h. Develop and implement topsoil and subsoil management plan including soil analysis to ensure the long-term re-establishment of biodiversity in accordance to DAO No. 2018-19. Topsoil and subsoil management plan shall include stripping, stockpiling, erosion potential and control, and reporting;</p> <p>i. Reestablish stable topography and acceptable drainage patterns during landform reconstruction;</p> <p>j. Strict compliance to the provisions of the Wildlife Act on hunting, collection or injuring wildlife species;</p> <p>k. In areas where second growth forests still exist, "enrichment planting" can be done where the target species are planted under canopy gaps or along cleared strips;</p> <p>l. Integrate biodiversity conservation measures in the environmental awareness plan;</p> <p>m. In cases of offshore mining, Coastal Integrity Vulnerability Assessment shall be conducted; and</p> <p>n. Conduct of biodiversity monitoring using existing tools and methods per BMB Technical Bulletin Nos. 2016-05, 2017-05, 2019-04, 2019-06, and other applicable tools for flora and fauna assessments and monitoring.</p> <p>o. Comply with proper protocol, adopt appropriate techniques for tree cutting and secure necessary permits and clearance for the cutting, removal and relocation of naturally growing trees.</p>
<p><b>III. CLOSURE, DECOMMISSIONING, and REHABILITATION</b></p> <p>This is the final stage of the mining operation that include the</p>	<p>A. The following shall serve as indicators of a successful and compliant rehabilitation activity:</p> <p>1. At least 85% survival rate of the established vegetation at the end of</p>

<p>following activities:</p> <ul style="list-style-type: none"> <li>● Final revegetation of mined-out areas and restoration of the water and land values of the area.</li> </ul>	<p>rehabilitation period;</p> <ol style="list-style-type: none"> <li>2. Species diversity in the rehabilitation area closely mirrors the diversity of the reference ecosystem; and</li> <li>3. Indication of restored ecosystem functions are evident, such as controlled erosion, sustained water supply in water tributaries (streams), etc.</li> </ol> <p>B. Monitoring and management of the rehabilitated area shall continuously be undertaken for ten (10) years or a lesser number of years as may be decided by the Contingent Liability and Rehabilitation Fund Steering Committee (CLRFSC);</p> <p>C. Conduct of biodiversity monitoring using existing tools and methods per BMB Technical Bulletin Nos. 2016-05, 2017-05, 2019-04, 2019-06, and other applicable tools for flora and fauna assessments and monitoring; and</p> <p>D. The mining company should facilitate the establishment of a community-based monitoring and management body for the rehabilitated mined-out area in collaboration with the DENR.</p>
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6.2. Progressive rehabilitation shall be undertaken at every stage of mining operation to restore mined-out areas close to its natural ecosystems and to allow regeneration of biodiversity in order to sustain ecosystem goods and services. It shall be implemented by the mining contractor/permit holder based on the EPEP.

6.3. Mining companies shall employ full time personnel with expertise on ecology and biodiversity conservation under the Mine Environment Protection and Enhancement Office (MEPEO) to lead the integration of biodiversity measures in various stages of mining operations.

6.4. At least five (5) percent of the total area of the approved tenement shall be set aside as a reference ecosystem. If there is no applicable area within the mining tenement, reference ecosystems may be set in an area one (1) kilometer away from the tenement, as may be practicable as determined by DENR. Such areas shall serve as benchmark and source of propagules for future restoration activities. As such, the ecosystem types found within the tenement should be represented in the reference ecosystem. The reference ecosystem is over and above the mandatory buffer zone under DAO No. 2018-19 and such area should be utilized as permanent biodiversity monitoring area.

6.5. Mined-out areas which are originally forested and areas which are deemed necessary for conservation of critical ecosystem services shall undergo rehabilitation for ecological restoration. These areas shall be rehabilitated/restored close to its original state to regain ecosystem goods and services. For privately owned lands or private lands legally acquired by mining companies developed for mining purposes, mining companies are encouraged to allot a portion of the mined-out area for biodiversity conservation and protection during final mine rehabilitation regardless of the final land use as may be

agreed upon in the approved mining tenement. Mining companies are required to conduct additional compensatory rehabilitation activities outside the mining area to be identified by the DENR.

6.6. Rehabilitation of mined-out areas for purposes other than ecological restoration shall consider the land classification category of the area, projected land use, and the existing, in-process and future development and management plans under a shared governance responsibility by the local government unit (LGU) and DENR.

6.7. In mining areas that are identified as habitats of Philippine dipterocarps, Forest Over Ultramafic Rocks/Ultramafic Forests, and areas critical for ecosystem services and wildlife habitats, mining companies shall be required to conduct additional compensatory rehabilitation activities outside the mining area, the identification of which shall be done in coordination with and with the assistance of the DENR.

**SECTION 7. Issuance of Additional Guidelines for Biodiversity Conservation in Small-scale Mining.** Detailed guidelines on integrating biodiversity in small-scale mining shall be jointly prepared by BMB and MGB within one (1) year upon issuance of this Order. Additional scientific research shall also be conducted by the Ecosystems Research and Development Bureau (ERDB).

**SECTION 8. Integration of Biodiversity Conservation and Protection in the Social Development and Management Program (SDMP).** The mining companies shall integrate biodiversity conservation and protection in the Social Development and Management Program (SDMP), such as the inclusion of biodiversity-friendly enterprises, propagation of native plants, development of green parks, promotion of agroforestry, and other wealth creation projects that would create green jobs to augment livelihood during and after mining.

**SECTION 9. Inclusion of Additional Members in Relevant Committees.** The CLRFSC, the Mine Rehabilitation Fund Committee (MRFC), and Multipartite Monitoring Team (MMT) as per DAO No. 2010-21 shall include BMB and ERDB, and their regional counterparts as members.

**SECTION 10. Capacity Building Program.** The DENR-BMB in consultation with MGB shall subsequently develop modules and instructional materials on the integration of biodiversity in the mining sector. They shall also conduct corresponding trainings, seminars, and workshops for concerned DENR Offices, CLRFSC, MRFC, MMT, and mining companies, among other relevant stakeholders upon approval of this Order.

**SECTION 11. Monitoring, Evaluation, and Reporting.** BMB and the Conservation and Development Division of DENR Regional Offices shall undertake annual monitoring and evaluation using the compliance monitoring tools to be developed by BMB, in coordination with MGB. Existing tools such as Biodiversity Assessment and Monitoring System and Biodiversity Monitoring System shall be used to monitor the progress of biodiversity in mined out areas, including environmental structure facilities (e.g., Tailings Storage Facility). Results of compliance monitoring shall be submitted to BMB and MGB.

**SECTION 12. Transitory Provision.** In coordination with BMB, MGB and other concerned offices under DENR shall incorporate the provisions of this Order in the updating of their applicable manuals, guidelines, plans, and programs, and other related issuances. Existing EPEP, Annual EPEP (AEPEP), SDMP and Annual SDMP (ASDMP) shall be revised to comply within one (1) year from the effectivity of this Order. Submission of the revised EPEP, AEPEP, SDMP and ASDMP shall be a requirement for the resumption of the mining/mineral processing operation/exploration activity that are suspended and under care and maintenance.

**SECTION 13. Funding.** MGB, BMB, Regional and Field Offices shall allocate regular funds to support the implementation of this Order.

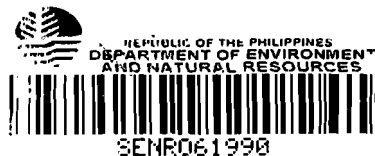
**SECTION 14. Penalty.** Non-compliance of a mining company with the provisions in this Order warrants the imposition of suspension order or revocation of the MPSA by the MGB subject to existing procedures of the agency.

**SECTION 15. Separability Clause.** If any provision of this Order shall be held invalid or unconstitutional, the other portions or provisions hereof which are not affected shall continue in full force and effect.

**SECTION 16. Repealing Clause.** All Orders and other similar issuances inconsistent herewith are hereby revoked, amended or modified accordingly.

**SECTION 17. Effectivity Clause.** This Order shall take effect fifteen (15) days after its publication in a newspaper of general circulation and upon acknowledgement of the receipt thereof by the Office of the National Administrative Register (ONAR).

**JIM OSAMPULNA**  
Acting Secretary



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April 21, 2022

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April 21, 2022