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**GOVERNMENT OF ODISHA**  
**STEEL & MINES DEPARTMENT**

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**RESOLUTION**



No. 4238 /S&M, Bhubaneswar, dated 20/05/2024

**SM-MC3-MISC-0080-2023**

**Sub:-Guidelines for the sand quarrying in the State.**

Odisha is rich with natural minor mineral resources. Sand deposits are found in river systems, sand dunes, and beaches in Odisha. Primarily river sand is being used for construction of road, railway, industry, and buildings in Odisha. Odisha has many river systems with sand deposits. Almost all districts have rivers with sand deposits. Mahanadi, Bramhani, Baitarani, Budhabalang, Subarnarekha, Rushikulya, Bansadhara, Nagabali, Indravati, Ong, Tel, etc. River network provide rich source of sand deposits.

Sand deposits along the river courses occur as sand bars/channel bars and levees. Haphazard mining from river channels may cause channel instability, river geometry and damage the embankments and bridges. In this context a more scientific and engineering study is essential for finding suitable locations for sand mining and excavation for use as construction material and other purposes. It is also more important to study the replenishment of the lease areas after each monsoon season to ascertain whether sites (lease areas) are potent enough for the mining of sand for the post monsoon season or not, following the MoEF& CC Guide lines for Sand Mining.

The Odisha Sand Policy 2021 has been published by the Revenue and Disaster Management Department vide their Resolution No.26372/ R&DM, Bhubaneswar, dated 02 September,2021. This policy is a step in the direction to systematize the process of river sand mining and ensure scientific and sustainable sand mining in the State. Instructions and guidelines have been issued by the Government from time to time for scientific and systematic quarrying, and for the prevention of illegal mining of minor minerals including sand. However, it has been observed that the mandate of Odisha Sand Policy is yet to be translated into effective implementation at various places in the State.

The administration of Minor Minerals including River Sand Mining has been transferred to Steel & Mines Department since November, 2022. In order to streamline the process of sand mining, it is necessary to adopt a holistic process-chain with IT enabled management system for ensuring sustainable and scientific mining of sand sources of the State. In this context, in supersession of the letter dated 21.12.2023 issued by Government in Steel & Mines Department on the subject of 'Guidelines for



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Mrs. S. Aruna, ASO

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regulating the sand quarrying in the State' is being further strengthened with these guidelines for ensuring an effective implementation of the Odisha Sand Policy, 2021.

These guidelines provide a procedural framework and modalities for the implementation of the components of Odisha Sand Policy 2021. These are also in accordance with the provisions of Sustainable Sand Mining Management Guidelines, 2016, issued by the Ministry of Environment, Forests & Climate Change, Government of India along with the "Enforcement & Monitoring Guidelines for Sand Mining, 2020" and directives issued by the Hon'ble NGT from time to time and in the lights of directions in the judgment of the Hon'ble Supreme court, on the matter of Deepak Kumar Vrs State of Haryana and Others (2012) 4 SCC 629 and Goa Foundation Vrs Union of India & Others (2014) 6 SCC 590.

### 1. **Demand Supply Estimation:**

Scientific demand-supply estimation and the resultant gap assessment shall be prepared for every district every year which can help for allocation of sand from surplus districts to meet the need of deficit districts, adoption of business models and framing of policy for alternatives of sand, if in short supply.

- a. All public authorities carrying out projects within the district will intimate by end of February every year to the Mining Officer consumption of sand in the financial year including estimated consumption to be made till the end of the year and the projected consumption during the next financial year.
- b. Every year, by the end of February the Mining Officers shall report to the Deputy Director of Mines the production capacity of all the operational and operable sand sources in their Districts (source-wise). At the district level, assessment of the annual supply position of sand in the district will be made on such report for the next financial year. This will be done by the end of March.
- c. Demand-Supply estimation as above and resultant gap analysis along with the action plan to meet the deficit, if any, from the adjoining surplus district(s) (if the district is a sand deficit district) shall be made in the month of March by a district level committee under the chairmanship of the Collector with following members:
  - Project Director DRDA
  - Executive Engineers of WR and other Engineering Departments
  - All Sub-Collectors of the district
  - Deputy Director, Mines
  - Mining Officer (Convener)
  - Joint/Deputy Director, Geology of the zone
  - Executive Officers of ULBs.
  - Special invitee/ Public Authority, if any decided by the Collector.

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- d. Demand -Supply estimation, gap analysis and action plan to meet sand deficit, if any shall be intimated by the Deputy Director of Mines to the Directorate of Minor Minerals, Department latest by end of March.
- e. The Directorate of Minor Minerals will make an analysis of the district-wise demand- supply position, gap analysis and action plan to meet the deficit, if any and approve the allocation of sand from surplus districts to deficit districts with modification, if any required. From the district Demand-Supply estimation and gap analysis reports the Director, Minor Minerals will draw up the State Demand-Supply estimation and gap analysis and if, necessary shall propose the provision of alternatives of sand to meet the deficit situation, if any.
- f. Demand for successive five years may be projected and incorporated in the District Survey Report (DSR) prepared by Sub-Divisional Committee.

## **2. Identification of sources:**

Development of scientific method of sand mining to reduce the adverse effect on river morphology, safeguarding the embankments, bridges and hydraulic structures along the river networks is the recommendations of Odisha sand policy. This can be achieved with accurate geotagged and georeferenced geospatial datasets. Therefore, identification and quantification of all potential sand sources will be done using high-resolution satellite data and Geomatics based high-tech survey techniques. The process of identification of sand sources will be to ensure identification of areas of aggradations of deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area. This process will include the following steps:

- a. Remote sensing and GIS will be used for mapping of all rivers, river flow channels, sand deposit bars, existing sand mining areas and embankments along the river channels HR World View 0.5m data will be used to map the Drainage and River system. Cartosat/Free download satellite image will be used for temporal mapping of rivers, channel and river sand. (Temporal satellite images available at ORSAC will be used). Satellite data along with ORSAC archive data will be used to prepare the District/Block wise Geo-morphology, Land use and other thematic maps.
- b. A regular annual exercise shall be carried out by a Committee headed by the Mining Officers with officers from Water Resources Department, State Pollution Control Board, Forest Department, Steel and Mines Department, in December & January to select the potential sand sources following the guidelines issued in this context vide MoEF& CC notification dated 25.07.2018(preparation of DSR).
- c. The spatial distribution of sand deposits along with information on their temporal/seasonal variations, geo-environmental status, river morphology and the criteria for its mining as stipulated by the Water resources Department (the engineering perspective) and by the SPCB for environmental aspects are to be studied in an integrated manner using Geo-informatics and spatial planning techniques. Further matrix based Geospatial parameter analysis will be made to prepare sites suitable for sand mining.

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- d. Locations, area and volume of each potential deposit for mining can be estimated by the Water Resources by technology application and Steel & Mines Department jointly considering the river safety and stability criteria. The mineral potential is calculated based on field investigation and geology of the catchment area of the river of stream. As per the site conditions and location, depth of minable minerals is defined. The area for removal of the mineral in a river or stream can be decided depending on geo-morphology and other factors, it can be 50% to 60% of the area of a particular river of stream.
  - e. After selection of sources, the recommendation of the committee shall be submitted to the District Collector along with a location map, geological resource potential, and feasibility report.
  - f. Emphasis should be given to identify large stretches of rivers and beds exceeding 5 Hectares as sand sources for scientific and sustainable sand mining.
  - g. The mining lease area should be so selected as to cover the entire deposition area excluding the safety zones. Dividing a large area of deposition into smaller mining leases should be avoided as it promotes illegal and unscientific mining and causes revenue loss to the State.
  - h. Transportation route with its carrying capacity to be selected in such a way that the movement of vehicles through the villages/ habitation can be avoided to the extent possible.
  - i. The suitable areas so selected for sand mining will be overlaid with georeferenced Revenue cadastral maps for identification of plots/mouzas. While finalizing the areas for sand mining, the connectivity for transportation and requirement of hinterland will also be considered. GIS Database of the potential area will be prepared along with the location wise (village) maps in 1:4000 scales.
  - j. All such identified sources will be demarcated in the field with posting of pillars on the boundary and shall be made part of the District Survey Report (DSR) prepared by the Sub-Divisional Committee. Instructions regarding the preparation of DSR issued vide Steel & Mines Department Letter No.10684/S&M dated 25.10.2023 shall be followed.
  - k. After demarcation of the above sand sources in the field, the potential of each source in terms of the quantum of extractable sand will be assessed through drone survey and the Minimum Guaranteed Quantity (MGQ) will be fixed accordingly.
  - l. Fixation of Minimum Guaranteed Quantity (MGQ) of the sources shall be duly approved by the Controlling Authority. It should be done as per the instructions issued by the Department from time to time.
3. **DGPS Survey of sand sairat sources:**
- a. After completion of pillar posting of a source, the competent authority shall submit a requisition along with the cadastral map of the source to Odisha Space Application Centre (ORSAC) and upon requisition, ORSAC shall take up the Differential Global Positioning System (DGPS) survey of the source boundaries.
  - b. The Deputy Director of Mines shall review the status of DGPS Survey of sources on monthly basis and submit it to the Directorate of Minor minerals

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and the Department.

- c. The areas proposed for mining and individual areas should be earmarked by DGPS survey after finalization by Steel & Mines Department. The demarcated pillars near water flow channels may be damaged due to flood/ change in stream flow for which digital database of DGPS surveyed coordinates would be helpful for restoration/demarcation of source boundaries. The source areas will be surveyed using DGPS and maps will be prepared along with coordinates and plot boundary vis-à-vis the sand source area. The existing sand sources surveyed by DGPS will be linked to the database and the approved SOP for DGPS survey by ORSAC will also be followed for new potential zones.
- d. All such identified sources will be put to auction as per the provisions of the OMMC Rules'2016 for selection of the bidders to be granted with the quarry lease.

#### 4. **Quarrying Operation:**

The Operation of sand quarries should be carried out strictly in adherence to the applicable provisions of law and the related guidelines and executive instructions. In this regard the following measures are specifically to be ensured.

- a. Environment Clearance for grant of quarry lease.

Environment Clearance as applicable under the provisions of the Environment (Protection) Act 1986 shall be obtained from SEIAA by the lessee/Competent Authority before operationalization of sources. Also the lessee is responsible for the implementation of the Environment Management Plan (EMP).

- b. The lessee shall obtain Consent to Establish (CTE) & Consent to Operate (CTO) of such mine from State Pollution Control Board under the provisions of sections 25/26 of the Water (Prevention and Control of Pollution) Act'1974 and section 21 of the Air (Prevention and Control of Pollution) Act'1981 and the Rules framed there under. The SPCB shall not grant CTO unless the EC has been obtained by the lessee.
- c. On registration of quarry lease or issue of permit order as the case may be the boundary of the source area shall be demarcated and shown to the lease/permit holder with written and dated acknowledgment to that effect. Mining Officer or Assistant Mining Officer in charge of the District shall remain present at the time of such demarcation.
- d. Geo-fencing of the sites, allotment of geo-coordinates to all the pillars on the boundaries of the sources and electronic surveillance shall be done.
- e. Baseline data in respect of the initial level of mining lease in the interval not more than 25 X 25 meters shall be collected for record by the leaseholder.
- f. Display board showing details like name of the source, revenue village, name of the lessee/permit holder, area of the source, lease/permit period, approved quantity of extraction, etc. shall be fixed by the lease/permit holder at a conspicuous place near the approach to the source.
- g. Quarry operation shall be carried out strictly in accordance with the approved

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mining plan duly adhering to the provisions of Odisha Minor Mineral Concession Rules'2016 and terms and conditions of respective statutory clearances and approvals. The mining plan shall be prepared by following the guidelines of MoEF& CC Government of India formulated in their **Sustainable Sand Mining Guidelines, 2016** and the said guidelines prescribed standard environmental condition for sand mining at Sl. No.19 which clearly envisages **“Depending upon the location, thickness of sand, deposition, agricultural land/Riverbed, the method of mining may be manual, semi-mechanized or mechanized; however, manual method of mining shall be preferred over any other method.”** Sand quarrying activity shall be stopped when the approved quantity of extraction is reached unless through duly modified and approved mining plan & EC for extra quantity is permitted for extraction. It shall be the responsibility of the Competent Authority to ensure that no extraction takes place beyond the permitted quantity.

- h. All precautions shall be taken to ensure that the water stream flows unhindered and the process of natural river meandering does not get affected due to mining activities.
- i. The mine closure plan should be a part of the mining plan prepared for the source and shall be carried out by the lessee in accordance to it.
- j. A copy of the approved mining plan may be kept at the quarry site for ready reference.
- k. First aid kit with all essentials shall be kept ready at the quarry site, to be used in case of any emergency.
- l. To prevent air pollution due to the dust during sand quarrying operations constant water sprinkling on the pathways and dust-prone areas shall be done. The sand loaded vehicles shall be properly covered with a tarpaulin before moving out of the quarries.
- m. On the expiry of the lease period or termination of lease sheds and other constructions at the quarry site shall be removed by the lessee. All the roads and pathways shall be leveled so that there is no obstruction to the normal flow of the river.
- n. Steps shall be taken sufficiently ahead of the completion of the lease period of a source to initiate the process of subsequent lease of the source so as to avoid time gap between leases.
- o. Quarterly returns as per OMMC Rules, 2016 regarding extraction of minor mineral shall be checked by Mining Officer in respect of all the quarries under his jurisdiction so as to prevent over extraction. The quarterly production report shall be submitted by the lessee to the Mining Officer and SPCB Regional office concerned for record.
- p. District administration/mining officer shall provide detailed information on their website about the sand mines in its district for public information.
- q. All the records/registers shall be carefully maintained by the lessee for future reference.

5. **Monitoring & Enforcement:**

- a. IT-enabled technology of i4MS (Integrated Minor Minerals Mines Management System) which is being developed by the Department has already been implemented to track and monitor the sand mining activities in



an effective and efficient manner. Features like barcode enabled transit pass(Y Form) and a facility for accessing illegal transportation via mobile app has already been implemented and used by enforcement squads to verify e-pass details like approved quantity and validity period etc.

- b. Steps will be taken to workout modality for tracking the vehicles carrying minor minerals through incorporation of GPS Units and a befitting monitoring module under i4MS.
- c. A Project Monitoring Unit (PMU) shall be set up in the Directorate of Minor Minerals to regularly monitor the sand mining activities of the State.
- d. State Level Enforcement Squads (SLES) are being constituted in the Range Police Headquarters of the State to conduct regular enforcement activities, functioning of which should be regularly reviewed and effectively monitored.
- e. Regular inspection of operational sources will be ensured through frequent visits of the concerned Junior Mining Officers, Assistant Mining Officers, Mining Officers and Deputy Director of Mines.
- f. The Mining Officer of the District may make requisition to SLES of his/her jurisdiction as and when required for Enforcement and conducting raid in his/her jurisdiction.
- g. During field visits Senior Officers like Deputy Director of Mines, Officers from Directorate of Minor Minerals should visit sand sources to see adherence rules and regulations in sand mining and check the incidence of illegal mining if any.
- h. Constitution of District Level Task Forces (DLTF) will be ensured in each district under the chairmanship of the District Collector as per the guidelines envisaged in the order of the Hon'ble NGT.

6. **Post Environmental Clearance Monitoring and Environmental Audit:**

The Mining Officer (Competent Authority) shall ensure that Post Environmental Clearance Monitoring and Environmental Audit is carried out. The Deputy Director of Mines concerned shall supervise such exercise to ensure that it is carried out in compliance with the guidelines/directives issued from time to time.

It is the responsibility of the EC holder to comply with the Environmental Clearance conditions as laid down by SEIAA at the time of grant of EC and monitoring shall be carried out by SEIAA as per the procedure laid down by MoEF& CC from time to time.

The environmental audit shall be carried out at least once a year by a three member committee nominated by District Collector/ Magistrate comprising ex-serviceman, ex-Government official of repute, Professor or person having experience of mining/environment. The audit report shall be uploaded on the website of the district administration.

Environmental Statement for the financial year ending the 31st March shall be submitted to the concerned State Pollution Control Board, on or before the 30th September of the same year. NABET/QCCI Accredited consultant may be engaged for Environment Audit and during the course of the audit, a three-member committee nominated by District Magistrate shall be associated.



## **7. Replenishment study:**

- a. Regular replenishment study shall be carried out to keep a balance between deposition and extraction and to minimize the adverse impact arising out of excessive sand mining in a given stretch of river. Each lessee shall carry out such replenishment study in respect of the source leased out to him. NABET/QCCI accredited consultant may be engaged to carry out the Replenishment Study of the sand by following the guidelines issued by MoEF&CC in their notification **Enforcement and Monitoring Guideline of Sand Mining 2020**. The Mining Officer of the respective district shall ensure the same in respect of the sources in their jurisdiction.
- b. Initially, the Sub-Divisional Committee preparing the DSR shall carry out the replenishment study and incorporate the same in the DSR. Subsequently, as per the terms and conditions of the grant of EC by SEIAA, the lessee shall get the annual replenishment study conducted in respect of his/her lease area and submit the report to SEIAA through Competent Authority.
- c. Drones are to be used for studying the replenishment of the Sand Leased Areas as desired under MoEF&CC Guide Line Clause 5.2.2. Drone flying of the leased areas is to be done in the Pre-Monsoon, around 15<sup>th</sup> of May of each year before onset the Monsoon and after post Monsoon, before starting of the sand mining for Leased Areas. The difference in Digital Elevation Model of the two data will give an estimate for the replenished sand for Leased Areas.
- d. Initially, virtual Ground Control Points (GCP) at a grid interval of 10m x 10m shall be established around Sand Leased Area. The horizontal and vertical controls shall be transferred to those virtual GCPs for the creation of precise Digital Elevation Model from the Drone Imagery.
- e. A close network of GCP shall be established at a Grid interval of 500 m X 500 M around the Study Areas and the platforms shall be constructed in the River Banks along with defining the offsets from the GCPs to the Sand Leased areas from different directions clearly. The Horizontal Co-ordinate (Latitude & Longitude) shall be transferred from nearby Survey of India GCP using Dual frequency DGPS following the Post Processing Survey Methodology and occupying the GCP during the DGPS Survey for minimum one hour at each GCP. The vertical co-ordinate shall be transferred from nearby Bench Mark Height of Survey of India using Digital Levelling following the Methodology of Survey of India. The GCP Documentation, DGPS Survey for the calculation of Horizontal Co-coordinates for the GCPs transferred from the National GCP Grid established by Survey of India and transfer of Bench Mark Height (MSL Height) to the Ground Control Points are to be done through the professional organisations as it is a field intensive work. In this regard, ORSAC will provide technical assistance through its empanelled professional organisations.

## **8. Customer Grievance Redressal Centre:**

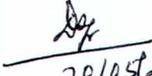
- a. Customer Grievance Redressal Centre shall be established in each district in the office of the Mining Officer which will inquire into and address the grievances of the sand consumers/Lessee/Public & etc.
- b. A monthly report on receipt and disposal of such grievances during the month shall be submitted to the Directorate of Minor Minerals and Steel & Mines



Department.

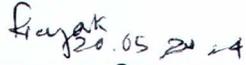
These guidelines are framed in supersession of all guidelines issued earlier and will come into effect from the date of issuance.

By order of the Governor

  
20/05/2024  
Additional Chief Secretary to Government

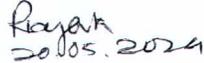
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20.05.2024  
Deputy Secretary to Government

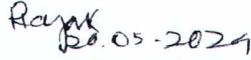
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20.05.2024  
Deputy Secretary to Government

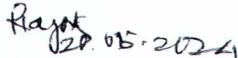
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Deputy Secretary to Government

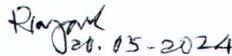
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20.05.2024  
Deputy Secretary to Government

Memo No. 4243 /S&M Dated 20/05/2024

Copy forwarded to the Advisor(Mining)/Director of Minor Minerals, Odisha/Director of Mines & Geology, Odisha/ All Sections of Steel & Mines Department for information and necessary action.

  
20.05.2024  
Deputy Secretary to Government

Memo No. 4244 /S&M Dated 20/05/2024

Copy forwarded to all Departments of Government / All Heads of Department/ Member Secretary, State Environmental Impact Assessment Authority, Odisha/ Member Secretary, State Pollution Control Board, Odisha/ All Revenue Divisional Commissioners/

All Collectors/ All Deputy Director of Mines/ All Mining Officers.

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Deputy Secretary to Government

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