

Chapter IV

Prevention and detection of unauthorised mining activity

There was shortfall in inspection of mines/leases by Assistant Director of Mines and Geology (ADMG) and there was no monitoring mechanism to watch receipt of tour diaries by Director, Mines and Geology (DMG) and submission of review report on inspection of mines to Government. The State Level Task Force was not established. The District Level Task Force meant for effective vigilance to curb illegal mining and transportation of minerals was non-functional. The Department is yet to take action on the recommendations of Indian Bureau of Mines/Directorate General of Mines Safety for termination/ suspension of leases. Government has waived off penalty (in some cases seigniorage fee also) imposed/proposed by ADMG and approved by DMG without proper justification. Differential Global Positioning System survey of 40 *per cent* of the leases in the State was not completed. Many of the registered vehicles involved in transport of minerals were not enabled with installation of Global Positioning System (GPS) and permits were issued to the vehicles not enabled with GPS. Installation of meagre number of Closed Circuit Cameras and all of them being non-functional, non-installation of weighbridges to measure quantum of minerals transported in the entire State clearly showed ineffective efforts on the part of Department to curb/prevent illegal mining activities. The extracted quantity quantified by Technical Consultant IISc was varying with that of the recorded extracted quantity of the Department and environmental management was absent in most mines in the selected two mandals.

The Mines and Minerals (Development and Regulation) Act 1957, empowers State Government to make rules by notification for preventing illegal mining, transportation, and storage of minerals and for the purposes connected therewith. Such rules provide for establishment of check-posts for checking minerals under transit, establishment of weighbridges to measure quantity of minerals transported. The Act provides for inspection, checking and search of minerals at the place of excavation or storage or during transit.

Inspections related to mining activities are being conducted by various agencies for compliance with the permit system, labour norms and environmental protection. The agencies involved in inspection are Mines & Geology Department, Indian Bureau of Mines, Directorate General of Mines Safety and Environment agencies¹⁰⁸.

¹⁰⁸ MoEF & CC, SEIAA and Andhra Pradesh Pollution Control Board

4.1 Conduct of inspections of mining leases and minerals

As per Section 24 of Mines and Minerals (Development and Regulation) Act 1957, for the purpose of ascertaining the position of the working, actual or prospective, of any mine or abandoned mine or for any other purpose connected with this Act or the rules made thereunder, any person authorised by the Central or a State Government in this behalf, by general order, may enter and inspect any mine, survey and take measurements in any such mine, weigh, measure or take measurements of the stocks of minerals lying at any mine.

4.1.1 Conduct of inspections by the Department

As per clause 8.5 of Departmental Manual, 1983, the inspection of all the mines/quarries (both working and non-working) located in the jurisdiction of Mines & Geology Department should be covered over a period of one year without leaving any mine/quarry uninspected. Further, as per clause 8.7 and 8.8, tour diaries of the inspecting officers (ADMG/ DDMG/ AD (Vigilance)) for the inspections conducted during a month shall be consolidated and a review report shall be submitted to DMG by 10th of subsequent month for approval. On approval, the same shall be submitted to the Government by 15th of subsequent month. The tour diaries should contain the abstract for each month together with detailed reports in respect of working and non-working mines inspected.

Audit noticed that in five out of eight ADMGs¹⁰⁹ there was shortfall in inspection of the mines/leases during 2017-22. Out of 8,939 inspections to be conducted during 2017-22, only 5,953 were conducted. Thus, there was overall shortfall of 33 *per cent* in inspection as detailed in *Appendix XXIV*. Two ADMGs (Kadapa and Nandigama) did not furnish the data. In respect of ADMG Vijayawada, the number of inspections conducted were more than the number of leases.

The Government replied (January 2024) that shortfall of inspection during the year 2020-21 and 2021-22 was due to pandemic of COVID-19. The Government replied that the Departmental manual was revised and further instructions were issued (February 2019).

The Government did not furnish the reasons for non-conduct of inspections for the period 2017-20.

Thus, it is evident that periodic inspection of mines/quarries was not done though prescribed in departmental manual.

4.1.2 Functioning of District and State level task force

The GoAP ordered¹¹⁰ (March 2006) to constitute a State Level Task Force (SLTF) and District Level Task Force (DLTF) for effective vigilance with a view to curb illegal 'mining and transportation' of minerals in the State. A periodical meeting, once in quarter and month were to be conducted for SLTF and DLTF respectively.

The objectives for constitution of DLTF were to collect and review the information related to the illegal mining within their jurisdiction and to communicate the action taken to the Chairman¹¹¹ of SLTF. The SLTF is to be constituted to review the action taken by DDMGs/ADMGs/Forest officials for checking the illegal mining activities, to coordinate

¹⁰⁹ Anakapalli, Banaganapalle, Kurnool, Visakhapatnam and Yerraguntla

¹¹⁰ G.O.Ms.No.69, Industries and Commerce Department, dated 08.03.2006

¹¹¹ Secretary to Government and District Collector were the Chairman for SLTF and DLTF respectively

and discuss the pending issues with members¹¹². The action taken and recommendations of SLTF are to be communicated to the Central Government on a quarterly basis.

Audit noticed that though the State Government had issued orders for constituting SLTF, the same was not constituted even after a lapse of 17 years. The DLTF was mostly non-functional in test-checked districts. Non-functionality of DLTF highlights the inaction of the Department to utilise the existing provisions to curb and prevent illegal mining activities.

In DDMG, Kurnool DLTF meeting was conducted only once in August 2018 and in DDMG, Kadapa no meetings were conducted. DMG replied (June 2022) that SLTF did not exist in the State.

During the Exit Conference, the Government stated (March 2024) that there is district level task force which is working in the State. However, the Government stated that a detailed reply would be furnished.

The reply is not acceptable, as DLTF in test-checked districts was mostly non-functional during the audit period.

In the absence of SLTF and mere existence of DLTF without functionality, clearance of pending issues, coordination between other Departments to curb illegal mining activities, adherence to directions issued by other Departments would not be ensured.

4.1.3 Non-compliance to directions of regulatory agencies

The other regulatory agencies include Indian Bureau of Mines (IBM), which inspects major mineral mining leases and Directorate General of Mines and Safety (DGMS) which monitors compliance of labour norms and safety issues in the mining leases of major and minor minerals. The Ministry of Environment, Forest and Climate Change (MoEF&CC) and its subordinate offices (SEIAA) inspect the leases for compliance of the conditions mentioned in EC and other pollution related clearances. The power to inspect the mines related to compliance with the terms and conditions of Environmental clearances granted by SEIAA and DEIAA is vested with State Pollution Control Board (from November 2018).

(a) Continuation of leases despite termination orders by Indian Bureau of Mines

Section 24 of Mines and Minerals (Regulation & Development) Act, 1957 empowers IBM for entry and inspection of any mine for the purpose of ascertaining the position of the working, actual or prospective, of any mine or abandoned mine. The Act allows IBM to survey and take measurements in any such mine, weigh, measure or take measurements of the stocks of minerals lying at any mine.

As per IBM Manual for Inspection of Mines, 2017, IBM conducts inspection of major mineral mining leases for compliance of rules and adherence of the conditions mentioned in the mining plan or any other conditions imposed. The IBM informs the nature of violation and recommends to the State Government for levy of penalty or termination of lease after following the due procedure of serving notices to the lessee. The State Government should take proper action on the recommendations of IBM.

¹¹² the members of the task forces are the officers from Government, Mines & Geology Department, Forest and Police Department, APPCB, DGMS, IBM. DMG and DDMG are the member secretary/convenors for SLTF and DLTF respectively

Scrutiny of information obtained (October 2022) from Regional Office, IBM, Hyderabad, revealed that IBM had recommended termination of 196 leases in the entire State. However, Audit noticed that 13 leases (as detailed in the **Appendix XXV**), were still shown as leases in force as per the list of leases (September 2022) displayed in OMEPS portal provided by the Mines & Geology Department.

The Government replied (January 2024) that in one case¹¹³, lease was already deleted from OMEPS portal whereas in another case¹¹⁴, government has terminated the mining lease. In the remaining cases, termination of mining leases is still pending.

Further, a detailed scrutiny of the above 13 leases revealed that permits were given in four out of 13 leases though recommended (between October 2013 and October 2021) for termination by IBM as shown in **Table 4.1** below.

Table 4.1: Details of permits given to leases despite recommended for termination

Sl. No.	Lessee ID	Lessee Name	Details of IBM Recommendation	Latest Permit details		
				Permit number	Approved Quantity (in cum)	Created Date
1.	722030291	B. Sarada	Recommended for termination on 14.10.2013	PR07220302910005	900	9/13/2019 11:55:25 AM
2.	912870514	M/s. Dugar Insulation Private Limited	Recommended for termination on 07.06.2019	PR09128705140014	900	8/29/2022 5:07:24 PM
3.	1212070095	Sai Balaji Minerals		PR12120700950084	500	1/26/2022 12:18:17 PM
4.	1312060109	M/s Shiva Lakshmi Minerals		PR13120601090034	2000	12/14/2021 2:04:09 PM

Source: Information furnished by IBM

The Government accepted (January 2024) audit observation and stated that issuance of permits before dropping the action by the DMG would not be repeated in future. It was further stated that necessary instructions would be issued to all District Offices in this regard.

(b) Issue of permits despite stop orders given by Directorate General of Mines Safety

As per Regulation 34 of Metalliferous Mines Regulations, 1961, no mine shall be opened, work or re-opened unless a Manager¹¹⁵ of the mine is appointed.

Cross verification of information obtained from DGMS with records of DMG revealed that stop orders for 11 mining leases were issued by DGMS Bellary region for not appointing Managers for the mining leases (as detailed in **Appendix XXVI**). However, the Department allowed mining operations for the 11 miners.

The DGMS stated (December 2022) that the recommendations for stop order were forwarded directly to DMG. The DMG further stated that all ADMGs were instructed to furnish information related to violations identified by DGMS.

¹¹³ Sri K. Anjaneyulu

¹¹⁴ Sri Mohammed Hussain

¹¹⁵ being a person duly appointed and having such qualifications as are required by these regulations

The Government replied (January 2024) that ADMG, Chittoor and Palamaneru did not receive any communication from DGMS, Bellary region. Further, ADMG Chittoor and Palamaneru comes under the territory of DGMS, Chennai and not under the territory of Bellary region. Due to non-receipt of DGMS stoppage order, stop order was not issued.

The reply of the Government is not acceptable, as the DMG has received the stop orders directly from DGMS and had communicated to all ADMGs to furnish information related to violations identified by DGMS.

(c) Non-furnishing of consolidated returns

As per Rule 59 of MCR, 2016, a consolidated annual return of all mineral concessions granted or renewed under the Act and Rules made thereunder shall be furnished by State Government within two months of such grant or renewal to IBM and to DGMS not later than the 30th day of June following the year to which the return relates. The DGMS role is to look after the safety norms of employees/workers working in all the mines.

Audit noticed that consolidated returns of all the mineral concessions granted or renewed during the period of audit were not communicated to DGMS.

The DMG accepted the audit observation and replied that the information would be obtained from the concerned ADMGs.

The response from the Government is awaited.

This shows non-compliance of provisions by DMG. In the absence of communication of leases granted or renewed by the State Government, DGMS would not be in a position to analyse and inspect the mining leases for compliance with the safety norms.

Recommendation 4.1: *It is recommended that the inspection of mining leases may be given utmost priority by making the district/state level task force functional, for effective vigilance to curb illegal mining and transportation of mineral. Recommendations made by IBM/DGMS are to be implemented efficiently to enforce immediate action on illegal mining activities.*

4.2 Revision of penalties without proper justification

The Hon'ble High Court of Andhra Pradesh in its judgments¹¹⁶ (2015) clearly stated that the revisionary power vested with the Government through any rule should be exercised reasonably so as to stand the test of judicial scrutiny. The reasons recorded would alone disclose the justifiability of the exercise of such power, as application of mind by the authority at that time can only be revealed when the order records reason.

Audit noticed that in seven out of eight sampled ADMGs¹¹⁷, penalty amount of ₹84.18 crore was reduced by the Government to ₹9.85 crore in 31 cases, thereby reducing penalty by 88.30 *per cent* (as detailed in the *Appendix XXVII*) without any recorded reason or justification. Responsibility needs to be fixed for reducing the penalty without recording reasons or justification.

¹¹⁶ Writ Petition No. 40621 of 2015

¹¹⁷ Anakapalli, Banaganapalle, Kadapa, Kurnool, Vijayawada, Visakhapatnam and Yerraguntla. ADMG Nandigama did not furnish the information

During the Exit Conference, the Government stated (March 2024) that resurveys are conducted to assess the correctness before waiver of amounts.

The Reply is not acceptable, as in the documents produced to audit where revision orders were passed by Government, no reasons or justification was recorded. Audit scrutinised two such cases and found that the revision orders passed were not justifiable. Further, Government did not provide the information related to speaking orders or resurvey reports for the revision cases.

Case Study 5

In the case of a miner¹¹⁸, the vigilance wing recommended the Department to recover the seigniorage fee, penalty and fine of ₹26.34 crore for illegal mining/transportation of 54,655 MT of Barytes from mining lease area of APMDC, under Rule 26(1) of APMMC Rules, 1966. Accordingly, ADMG issued (October 2019) demand notice for payment of the said amount. The lessee applied for revision and the revisioning authority *i.e.*, Government allowed (December 2020) the application and set aside the demand notice without recording justification.

In ADMG Kadapa, in case of a miner¹¹⁹, the Vigilance wing inspected (July 2018) the unit in Chakrayapet and found stock of 8,485 cum of road metal at the premises. The unit did not produce proof of payment of seigniorage fee along with dealer's licence. Hence, the vigilance wing requested ADMG to recover an amount of ₹37.86 lakh towards seigniorage fee, penalty along with additional penalty of ₹10,000 for not having the licence. The ADMG accordingly issued (March 2019) notice for payment of ₹37.86 lakh. The miner belatedly obtained dealer license in August 2018 and quarry lease in April 2019 *i.e.*, after the date of inspection by the vigilance wing and applied (April 2019) for revision application with the Government. The revisioning authority allowed (July 2019) the revision application and set aside the demand notice without any recorded reasons.

It is evident from the above that the Government not only waived the penalty imposed by the Department but also the entire seigniorage fee without any justification, thereby causing loss of revenue. Further, creation of such precedence could lead to demands for similar unjustifiable revisions of penalty in future.

4.3 Strengthening of Department functioning through technological interventions

Technology plays a vital role in the development of any sector. In the mining sector, technological interventions are of paramount importance from exploration of minerals to removal of minerals, timely accounting of revenue, real-time monitoring on vehicle movement and to curb any kind of illegal mining.

Over a period of time, the mining activities have drastically increased, and the availability of sufficient manpower along with technological interventions plays an important role in delivering of mining activities in an efficient and effective manner.

¹¹⁸ M/s Pragathi Minerals

¹¹⁹ M/s Shirdi Sai Crushers

4.3.1 Availability of manpower

In the Mines & Geology Department, the officials at various levels are entrusted with designated jobs *viz.*, administrative work, granting of mining leases, approving mining plans, carry out inspections, issue show cause notices, issue demand notices *etc.*, and coordinate with other Departments for speedy disposal of MCAs and to curb illegal mining activities.

Audit noticed that in the district offices, 104 posts (24 *per cent*) were vacant out of 421 sanctioned posts and 99 posts (53 *per cent*) were vacant out of 187 sanctioned posts in the office of DMG. In district and DMG offices, no person for the post of Assistant Director (Mines), Assistant Director (Survey), Assistant Chemist was appointed and there was shortfall (26 *per cent*) in the post of Royalty Inspector. In addition to this, in DMG office, no person for the post of Assistant Mines Officer was appointed.

The DMG replied that the Department had submitted (December 2017) the proposals to the Government for sanction of 131 additional posts in various cadres, however, no orders have been received from the Government.

During the Exit Conference, the Government stated (March 2024) that the issue is under consideration and would be sorted out.

Thus, the Department was working with lower strength of manpower despite the fact that it was given the responsibility of regulating mining activity. The proposals for sanction of posts were still pending with the Government for more than six years.

In view of insufficient manpower, implementation of technology is vital. Day-to-day administrative work including flow of information should be computerised to the extent possible, so that the MRAs, DCBs and other important registers are generated seamlessly with least or no manual intervention.

4.3.2 Technological interventions for prevention of illegal mining activities

Mining activities can be monitored using modern technologies. This may include development of Mining Surveillance System (MSS), use of Geographic Information System (GIS), use of Differential Global Positioning System (DGPS) survey, Vehicle Tracking Monitoring System (VTMS), installation of Closed-Circuit (CC) cameras, *etc.* The status of implementation of technological interventions in the State are discussed in the following paragraphs.

(a) Conduct of Differential Global Positioning System survey

As per Mineral Auction Rules 2015, the State Governments shall identify and demarcate the area where a mining lease is proposed to be granted through auction by using DGPS and classify the same into forests land, land owned or not owned by the State Government. The DGPS is essential for preparation of mining plan, scheme of mining, *etc.* It also helps in knowing the correct location of lease boundary pillars and identifying whether the mining activity is within or beyond the lease boundary.

The IBM instructed (April 2010) to use DGPS survey to prepare the Geo-referenced mining lease map that can be imported into any Global Information System¹²⁰ database and enable the user/Department to analyse real time data through remote sensing, drone technology, *etc.*

For major minerals, GoAP instructed (June 2017) to complete DGPS survey for existing mining leases at the earliest. Further, GoAP amended (March 2018) APMMC Rules and specified that DGPS is mandatory for survey and demarcation of areas granted for minor mineral mining leases.

Scrutiny of information furnished by the Department on the status of completion of DGPS survey of the leases in the State revealed that as of September 2022, out of total 174 leases of major minerals, DGPS survey was completed for 100 leases (57 *per cent*) while in respect of minor minerals, DGPS survey was completed for 2,836 leases (66 *per cent*) out of 4,290.

During the Exit Conference, the Government stated (March 2024) that more than 80 *per cent* of leases have been covered under DGPS survey and geo-tagging are also done. The information regarding DGPS survey and geo-tagging made would be furnished to audit.

The reply is not acceptable, as the Government did not furnish the details of DGPS survey completed along with geo-tagging made.

The shortfall in completion of DGPS survey for both major and minor mineral mining leases shows that the Department lagged behind in fulfillment of the objectives of DGPS survey. Non-completion of DGPS survey would be the key bottleneck for auctioning of minor mineral mining leases and hence auctioning policy of minor minerals may not be fruitful. Further, completion of DGPS survey is the basis for generation of automatic triggers through remote sensing, drone technology, *etc.*

(b) Implementation of Vehicle Tracking Monitoring System

The GoAP issued (November 2017) guidelines on implementation of Vehicle Tracking Monitoring System (VTMS) in the State which stipulate that all mineral carrying vehicles are to be registered with the Mines & Geology Department. Owners of mineral carrying vehicles are to be directed to design, develop, install and maintain a GPS based VTMS for mineral carrying vehicles. Further, VTMS has to be integrated with the existing e-permit system of the Department to ensure that e-permits are issued only to GPS enabled vehicles which are registered with the Department.

Further, Government directed (November 2017) the Department to take all necessary required steps¹²¹ to make it mandatory to register all mineral carrying vehicles on the website of the Department with installed GPS within 120 days from the date of issue of the notification, to curb the illegal mining, storage and transportation of minerals.

The VTMS was launched (August 2018) by the Department and as of September 2022, 1.03 lakh vehicles were registered with the Department for transportation of minerals. However, only 0.64 lakh (62 *per cent*) vehicles were equipped with GPS during the period 2018-22. Further, out of 66.83 lakh permits issued between August 2018 and March 2022, 27.30 lakh

¹²⁰ GIS is a software tool that allows users to create interactive queries, analyse the spatial information, edit data, maps, and present the results of all these operations. GIS technology is a tool to combine various maps and remote sensing information to generate various models, which are used in real time environment

¹²¹ as per G.O.Ms.No.149, Industries and Commerce Department (M.II), dated 01.11.2017

(40 per cent) permits were issued to vehicles not equipped with GPS.

During the Exit Conference, the Government stated (March 2024) that due to lack of funds the Department is unable to implement the Vehicle Tracking Monitoring System completely.

(c) Review of Triggers received from Indian Bureau of Mines

The Ministry of Mines, through Indian Bureau of Mines, has developed¹²² (October 2016) the Mining Surveillance System (MSS), a satellite-based monitoring system¹²³ to use space technology for curbing illegal mining activity. The MSS is a satellite-based monitoring system which aims to establish a regime of responsive mineral administration, through public participation, by curbing instances of illegal mining activity. The MSS is a transparent & bias-free system, having a quick response time and capability of effective follow-up. The deterrence effect of ‘Eyes watching from the Sky’ has been extremely fruitful in facilitating all State Governments in curbing instances of illegal mining. The MSS checks a region of 500 m around the existing mining lease boundary to search for any unusual activity. Any discrepancy, if found is flagged-off as a Trigger. A mobile app has also been developed and launched to facilitate detection of illegal mining. All State Governments have been advised to implement the MSS for minor minerals within their States.

The triggers generated in respect of a State by IBM are forwarded to the DMG who in turn forwards them to the concerned ADMGs under whose jurisdiction the location of the trigger falls. The ADMGs after inspection of the location submits the action taken report to IBM through DMG.

Audit noticed that only ADMG Kurnool had the data regarding the number of triggers received during 2020-21 and 2021-22, locations inspected, and cases of illegal mining noticed. Out of 24 triggers received, after inspection three¹²⁴ cases of unauthorised/illegal mining were noticed (as detailed in *Appendix XXVIII*). ADMG has issued demand notices to the concerned for payment of SF/penalties. The other ADMGs did not maintain the data.

Further, verification of trigger information furnished by DMG and IBM revealed the following mismatches as detailed in *Table 4.3*.

Table 4.3: Showing mismatch between number of triggers received and action taken

Year	Information given by IBM		Information given by Department	
	Number of triggers detected	Number of trigger information sent to the State Department	Number of triggers received	Number of illegal mining identified
2017-18	Nil	Nil	Nil	Nil
2018-19	8	8	20	Nil
2019-20	Nil	Nil	15	Nil
2020-21	Nil	Nil	NIL	2
2021-22	28	28	Nil	Nil
Total	36	36	35	2

Source: Information furnished by Department and IBM

Audit observed that the data was not matching in any of the years during 2018-22, which shows lack of coordination between these agencies. As per IBM, action taken reports on 30

¹²² as per clause 7 of note on illegal mining issued by IBM

¹²³ in coordination with Bhaskaracharya Institute for Space Applications and Geo-informatics, Gandhinagar and Ministry of Electronics and Information Technology

¹²⁴ Trigger No.: APR (02-2020), APR (06-2020), and APR (11-2020)

out of 36 triggers were received and as per DMG, action taken reports on 35 triggers were forwarded to IBM.

The IBM replied (November 2022) that the triggers are generated by MSS which were directly forwarded to the State Government. The IBM further stated that action taken report was received in respect of 30 triggers only.

As such, there was no reconciliation mechanism between the agencies to ensure that triggers identified were inspected promptly and suitable action taken to curb the illegal mining pointed out by IBM.

During Exit Conference, the Government stated (March 2024) that action taken reports are being submitted on the triggers noticed and wherever illegal mining is noticed, stringent action is being taken.

(d) Installation of Closed-Circuit cameras and Weighbridges

The Government¹²⁵ instructed (February 2016) Commercial Tax Department to establish integrated check posts in the State of Andhra Pradesh for effective monitoring of vehicular movement along with installation/ establishment of Closed Circuit (CC) Cameras, Weighbridges on priority basis in a phased manner.

The very objective of the installation of CC Cameras and weighbridges at appropriate places was to monitor the vehicular movements on a real time basis to curb illegal mining activities.

(i) Regarding functioning of CC cameras, the Department informed that it was proposed to install CC cameras at ten check-posts¹²⁶. As a part of pilot project, six¹²⁷ check posts were proposed for installation of CC cameras. However, CC cameras were installed at only four check posts¹²⁸ and the same were non-functional (destroyed by miscreants) as on the date of audit. Further, the agency deployed for the installation of CC cameras was not able to work after the warranty period due to repeated incidents.

Thus, CC cameras installed even at very limited locations were non-functional and this mode of technology to have a real time check on illegal mining did not materialise.

(ii) The permits issued to transport minerals by each vehicle should mention the weight of the mineral lifted/transported. During inspection, the Department should ensure volume/weight of mineral carrying vehicles as per permits.

To assess the installation and functioning of weighbridges, Audit requested to furnish information on installed location and serviceability of weighbridges.

The DMG replied (October 2022) that the Weighbridge Empanelment application for installation of weighbridges was developed, however, it was stopped as agencies did not come forward for registration.

During the Exit Conference, the Government stated (March 2024) that initially CC cameras were installed, however, due to resistance from the villagers the same could not be materialised. The Government further stated that now the Department is using bio-metric

¹²⁵ memo No. 685/14. II (2)/2015 dated 01.02.2016 from the Ind & Com (M II) Department

¹²⁶ Itchapuram, Kodikonda, Naraharipeta, Nagalapuram, Palamaneru, Pondugala, Tadukupeta, Tana, Tungbhadra Bridge and Tada

¹²⁷ Betamcherla, Bugga, Dhona, Ibrahimpatnam, Piduguralla and Tada

¹²⁸ Betamcherla, Bugga, Ibrahimpatnam and Tada

system. Further, a volumetric system of measurement is being followed which doesn't require weighbridges.

The reply of the Government that volumetric system of measurement is being followed is not acceptable as royalty is paid based on the weightage in respect of many minerals (Example: Limestone). In the absence of weighbridges, the effectiveness of inspections conducted by Inspecting authorities to ensure the correctness of quantities of the minerals transported cannot be guaranteed. The non-establishment of weighbridges shows the lackadaisical attitude of Department towards establishment of reliable methods to curb any kind of illegal mining.

Thus, in spite of shortfall in manpower required for continuous physical monitoring of minerals removed, the Department did not complete DGPS survey for both major and minor minerals, did not enforce for GPS based VTMS for mineral carrying vehicles. Further, CC cameras installed in limited locations were non-functional, thereby preventing a check on illegal mining.

This shows that the Department has not utilised the available technological interventions for monitoring mining activities in the State. As such, the monitoring mechanism put in place by the Mines & Geology Department was inadequate.

Recommendation 4.2: *The State Government shall ensure that DGPS survey of all mining leases is completed, all vehicles involved in transportation of mineral are registered and equipped with GPS and CC cameras are installed in all the designated places for effective monitoring and prevention of illegal mining.*

4.4 Case Study

As a part of the Performance Audit, Audit collaborated with technical team from the Indian Institute of Science (IISc), Bengaluru, and engaged (April 2022) them as a Technical Consultant for estimating the volume of Limestone mineral extracted from the mining leases in two mandals viz., Jaggaiahpet and Kolimigundla using remote sensing technology under the jurisdiction of two ADMGs (Nandigama and Banaganapalle). Detailed field investigation has been carried out across the mining sites along with the officials of Mines & Geology Department and Revenue Officers. Selection of limestone was based on the following criteria:

Basis for selection of limestone for study	
<i>Mineral and its economic importance</i>	Limestone contributed the highest revenues in respect of major minerals. Limestone contributed revenue to a tune of ₹1,780.89 crore (95.30 per cent) against the total major mineral revenue of ₹1,868.22 crore during the period of audit.
<i>Average extent of mine</i>	Limestone leases have huge extent. The average extent of each limestone lease is 180.85 hectares.
<i>Relative Completion of DGPS survey</i>	The DGPS survey in respect of limestone leases was completed up to 72 per cent.

(a) Objective of case study

The objectives of the endeavor were to ascertain the following:

- Land cover dynamics: Spatio-temporal changes¹²⁹ in land cover (using remote sensing data on temporal scale) and Patch dynamics¹³⁰ of land cover.
- Mapping of quarry pits (spatial extent and location) in the said Mandals.
- Overlay of authorised quarrying data with mapped details to (i) assess the extent of quarrying operations *vis-a-vis* approved Quarry Plan, (ii) identify unauthorised quarry locations.
- Assessment of threats due to escalating anthropogenic¹³¹ activities in the vicinity.
- Adequacy of Environmental safeguards measures undertaken by quarry leaseholders.

(b) Criteria for field investigation

Field investigations were carried out using precision GPS¹³² (pre-calibrated) and Clinometer¹³³. The remote sensing data of the respective study areas were procured from National Remote Sensing Centre (NRSC), Hyderabad. The data was used to assist the interpretation of different land use types from remote sensing data. Topographic maps provided ground control points to rectify remotely sensed data. Survey of India (SoI) topo sheets (1:50000 and 1:250000 scales) were digitised to identify various land cover types. Pre-calibrated GPS (Global Positioning System-Garmin GPS unit) was used for field measurements. Ground control points were used to geometrically correct the remote sensing data and verify the classified land use information.

Field investigation further provided valuable inputs such as other dumps, extractable quantities, dips, quality of



¹²⁹ Spatio-temporal, or spatial temporal, is used in data analysis when data is collected across both space and time. It describes a phenomenon in a certain location and time

¹³⁰ patch dynamics, in ecology, a theoretical approach positing that the structure, function, and dynamics of an ecological system can be understood and predicted from an analysis of its smaller interactive spatial components (patches)

¹³¹ Scientists use the word “anthropogenic” in referring to environmental change caused or influenced by people, either directly or indirectly

¹³² GPS is used to locate the position and to map the spatial extent of a mine

¹³³ a clinometer is used to measure the relative heights concerning a fixed station (base station) and involves measuring angles across various depths, which helps in generating the elevation profile (contours) of the extracted region.

limestone, and depth of pit and bed. The compiled information aided in developing a contour profile of a mine.

(c) Quantification of extracted volume of limestone

Volume of limestone extracted was quantified considering (i) inter contours volume computed and aggregated to get the total volume and (ii) considering difference of current terrain (Digital Elevation Mode) generated based on contours of field measurements) with the original terrain (based on contours of topographic map). The total quantity of mined material was computed considering mine volume and density (2600 kg/cum). Computed quantity at each location of quarry pits was compared to the quantity reported by the respective firm /agency.

4.4.1 Estimation of limestone extracted from the leases in sampled mandals

Quantification of limestone extracted at select mines of sampled mandals was carried out using temporal high resolution spatial data (Google earth), and latest (May 2022) remote sensing data¹³⁴ and SoI Topographic sheets. The Technical Consultant (IISc Bengaluru) identified that in Jaggaiahpet¹³⁵ and Kolimagundala Mandal, actual extraction and reported has a deviation up to 10 *per cent*. Technical Consultant suggested the deviation of the extracted quantity estimated by them as plus or minus five *per cent*.

Audit noticed from the report submitted by Technical Consultant that:



(a) The extracted quantity quantified by Technical Consultant was varying from the extracted quantity mentioned by the Department (excluding the margin of five *per cent*) in 11 limestone leases in both the mandals as detailed in the **Appendix XXIX (A)**. In respect of six cases, the extracted quantity estimated as per IISc was more (11.31 crore MT) than the quantity shown/recorded as extracted (11.06 crore MT) by the Department. As such, there was excess extraction of minerals of 25.73 lakh MT. This may indicate suspected excess extraction.

For any such cases, as per Rule 21(5) of MMDR Act, 1957, the State Government may recover penalty from such person for the mineral so raised, or, where such mineral has

¹³⁴ Sentinel 2A/B, acquired by the European Space Agency

¹³⁵ other than Ramco Cements at Survey number 367/P in Budawada

already been disposed of, the price thereof, and may also recover from such person, rent, royalty or tax, as the case may be.

In accordance with the rules mentioned above, Audit calculated the penalty on the differential excess extracted quantity in the above-mentioned six leases which amounts to ₹104.98 crore. Similarly, the royalty on the mineral amounts to ₹20.58 crore. Further, DMF and NMET worked out to ₹6.18 crore and ₹0.41 crore respectively (as detailed in *Appendix XXIX(B)*).

(b) Huge dumps of overburden¹³⁶ also known as mine spoil, were observed across the study sites, noticing absence of any protection measures. This drastically disturbed the system, was highly prone to erosion and could cause contamination of adjoining streams, rivers, and agricultural lands with substances that can leach out through rainwater. Environmental management was absent in most mines, and afforestation activities were observed to be poor across the sites. The agencies have poorly maintained the topsoil collected.

The IISc recommended to enrich the topsoil with organic matter to improve soil fertility. Regulatory agencies should ensure that post-production mine decommissioning and land reclamation activities are as per the proposal. Proper measures are to be implemented for storing overburden across the sites.

The DMG replied (June 2023) that the assessment made by IISc was approximate and the same could not provide the accurate quantity of mineral extracted and hence the method was not practical. Further, the Department replied that as per the amendments to Rule 34(A) of MCDR 2017, drone survey of major mineral mining leases was implemented, and the lessee should conduct (April or May) the drone survey and submit the survey report to IBM on or before 1st July every year and the drone survey was preferable. The Department also stated that in respect of four¹³⁷ cases the variation between the actual and the estimated extraction by the audit was 1.10 *per cent* only.

Further the Department contested (July 2023) that the method employed by Technical Consultant for estimation of the volume extracted is not prescribed in the rules and the action recommended may not be initiated.

During the Exit Conference, the Government stated (March 2024) that the findings and the methodology adopted by the Consultant (IISc) would be verified and a detailed reply would be furnished for the variation in data.

Audit's response is that the Remote sensing studies by technical experts, are reliable as a constructive tool, for assessing illegal mining situations. In this instance, the exercise has been useful in estimating the Limestone mineral extracted for the purpose of examining whether the quantity of mineral extracted was approximately as per the Mining Plan and facilitated detection of illegal mining activities. Further, the Department has not shown any data to contradict the finding of Technical Consultant and neither commented upon the details of the method employed nor furnished reasons as to how the same was not correct to

¹³⁶ overburden is physically, nutritionally, and microbiologically an impoverished habitat

¹³⁷ sl.no 2,4,5 and 6 in the Appendix XXIX (B)

ascertain the volume. Further, the Department is silent regarding the shortfall noticed by the Technical Consultant at mine site.

The objective of the audit through this case study was to show that the technology can be very helpful in detecting the extracted quantity from the mining leases and the prevention, detection and inspections can be made hassle free.

Recommendation 4.3: The State Government must encourage use of advanced technology such as remote sensing technology to assess actual quantity of minerals extracted to facilitate detection of any kind of illegal mining activities and Regulatory agencies should ensure that post-production mine decommissioning and land reclamation activities are as per the mining plan.

Vijayawada
The 03 May 2025


(SARAT CHATURVEDI)
Principal Accountant General (Audit)
Andhra Pradesh

Countersigned

New Delhi
The 07 May 2025


(K. SANJAY MURTHY)
Comptroller and Auditor General of India