

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH AT NEW DELHI

M.A. NO. 1027 of 2015&M.A. NO. 216 of 2015

In

O.A. No. 19 of 2014

IN THE MATTER OF:

DR. KASHMIRA KAKATI

...Applicant

Versus

Union of India &Ors.

...Respondents

INDEX

Sl. No	Particulars	Page Nos
1.	Reply/Objections to the Report filed by the Ministry of Environment and Forests and updated Compliance Report of the Respondent no. 4 i.e Coal India Ltd. along with supporting Affidavit	1-23
2.	Annexure A1 – Regional Wildlife Plan of Makum Coalfield prepared by Rain Forest Research Institute, Jorhat, in 2017	24-169
3.	Annexure A2- Notice of Closure of Ledo OCP mine dated 03.11.2022	170-171
4.	Annexure A3- The Notification dated 05.01.2022 by the Environment and Forest Department, Government of Assam	172-173
5.	Annexure A4- Notification published in the Assam Gazette dated 16.02.2022	174-176
6.	Annexure A5-	177-395

	A copy of the various reports prepared by the M/s GREENZONE, laboratory	
7.	Annexure A6- Office Memorandum dated 28.10.2022 issued by the Ministry of Coal	396-400
8.	Annexure A7- A Copy of The Consent to Operate Issued to the Tikak Colliery dated 05.04.2023	401-411
9.	Annexure A8- A Copy of The Consent to Operate Issued to the Tirap Colliery dated 06.05.2023.	412-421

DATE: 12.09.2023

PLACE: New Delhi

DRAWN AND FILED BY:



ISHAAN GEORGE & VISHNU T. MENON
Advocates for Respondent No. 4
A-62, First Floor,
Defence Colony, Delhi-110024
+9871637646 |
E: ishaan.george@gmail.com

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH AT NEW DELHI

M.A. NO. 1027 of 2015 & M.A. NO. 216 of 2015

In

O.A. No. 19 of 2014

IN THE MATTER OF:

DR. KASHMIRA KAKATI

...Applicant

Versus

Union of India & Ors.

...Respondents

**REPLY/OBJECTIONS TO THE REPORT FILED BY THE MINISTRY OF
ENVIRONMENT AND FORESTS AND UPDATED COMPLIANCE
REPORT OF THE RESPONDENT NO. 4 HEREIN**

TO,
THE HON'BLE CHAIRMAN AND
THE HON'BLE MEMBERS OF THE
NATIONAL GREEN TRIBUNAL

MOST RESPECTFULLY SHOWETH

1. That the answering Respondent herein is the Respondent No.4 i.e., Coal India Ltd (hereinafter referred to as "the Respondent" or "CIL" or "Coal India" as the context may require). It is submitted that Coal India Limited is the Country's largest state-owned coal mining corporate and contributes to 79% of total domestic coal production and 75% of total coal-based generation. CIL contributes to 55% of total power generation and meets 40% of the primary commercial energy requirements of the country.

2. That the Respondent No.4 began its operations by means of underground and opencast coal mines in Assam since the inception of the Coal Mines Nationalization Act, 1973. The operations then were from the coal seams of Makum coalfields which stretches along the Patkai range from Baragolai in the District Tinsukia under Margherita Sub-Divison, State Assam, on the south-eastern side of the National Highway 38 till the Assam-Arunachal Pradesh Border at Jagun.
3. That, some underground mines were being operated in Dibrugarh & erstwhile Sivasagar district of Assam from Jeypore-Dilli Collieries. However, these mines have been closed since 2001 and have as such been non-operational for the past 22 years.
4. It is pertinent to mention that before the Nationalization of Coal Mines in 1973, mines were being operated since 1884 by Assam Railways & Trading Company and certain other private companies in these coalfields and the mining leases of those were then vested with the Respondent herein.
5. That these leases became vested with the Respondent No.4 under the Coal Mines Nationalization Act, 1973. Further, the North Eastern Coalfields under Coal India Limited has been given the command area of the above mining leases for operating the mines continuing and in existence before nationalization. The right, title and interest of the mining

leases stood transferred to and vested in Central Government for a period of 30 years from 30th May, 1973 under Section 3 and 4 of the said Act.

6. It is submitted at the cost of repetition that the current operating mines of the Respondent No.4 are not located in any Reserve Forest and are located far away from the elephant corridors thereby, having no consequential impact on the elephant population. The nearest mine of Respondent No.4, i.e. Tikak OCP is about 13 km away from nearest Elephant Corridor being, Golai Elephant Corridor. It is pertinent to mention here that no movement or occurrence of elephant habitat has ever been seen near the vicinity of mining areas of Respondent No.4, nor has any man -animal conflict been recorded near the mines of the Respondent No.4. That the same was observed by this Hon'ble Court in order dt. 08.12.2017, wherein it had stated that Applicant herein, has not disputed this statement.

7. It is further submitted that in a study carried out in 2016 by the Rain Forest Research Institute, it was documented that no actual sightings of wild Asian elephants were observed throughout the study period, raising questions about their presence in the region and a Regional Wildlife Plan of Makum Coalfield was also prepared by Rain Forest Research Institute, Jorhat, in 2017. It is further reiterated that Respondent No.4 is not carrying out any mining operations in the Reserve Forest.

A copy of the Regional Wildlife Plan of Makum Coalfield prepared by the Rain Forest Research Institute, Jorhat, in 2017 is marked and annexed herewith as **ANNEXURE A-1**.

8. That it is reiterated as a matter of abundant caution that the Elephant Corridors, in and around Makum Coalfields, are already identified, demarcated and notified by the Forest Department of the Government of Assam. They are (i) Bogapani Elephant Corridor, (ii) Golai - Pawai Elephant Corridor and (iii) Kotha - Buri-Dihing Elephant Corridor. It is submitted that the aerial distance of these corridors from the nearest mine of Respondent No.4, i.e. Tikak OCP are about 26 Km, 13 Km and 21 Km respectively. It is also mentioned in the above report that the above-mentioned corridors will not be directly affected by mining in the coalfields of Respondent No.4.
9. It is further, respectfully submitted that the operational mines of the Respondent No.4 are situated beyond 10km of the co-sensitive zones of Dehing-Patkai Wild-life sanctuary.
10. It is respectfully submitted that it had been previously stated that the treated effluents are continuously subject to various tests in different approved laboratories of Pollution Control Board which have certified the same as harmless. Furthermore, no wastewater from coal mines are being discharged without recommended treatment procedure conforming to standards prescribed under the EP Act and Rules. The treated effluents

are continuously scrutinized by collection of samples and the same are analyzed in PCB, Assam approved labs on regular intervals. It is also necessary to mention that the discharges are treated with quick lime and soda ash to neutralize any toxic elements, if at all present in its discharge to the drain system. The small quantity of discharge is also neutralized with heavy water flow in the natural drainage system like rivers and nalas during monsoon period due to high natural water to mine discharge volumetric ratio.

11. Further, due to the location of mines in higher altitude, the treated discharge is carried by natural drainage away from the reserve forest to the low-lying plain areas which has no effect on plants and wildlife of the forest areas. There is no violation or incidences of harm to the aquatic life of the natural drainage system due to the discharge. Only treated water is released to surface drainage system which conforms to GSR 422(E) Notification dated 19thMay, 1993 and 31st December, 1993.
12. Pertinently, it is also humbly stated that the answering Respondent has in fact handed over the leasehold areas Jeypore & Dilli Mining Lease to State Government after proper reclamation, restoration, rehabilitation vis-a-vis protection of Water, Air and Land as per final mine closure plan under mine closure guidelines, 2009. This has been previously brought to the notice of the Hon'ble Supreme Court of India and is in compliance with the orders of this Hon'ble Tribunal.

PREVIOUS PROCEEDINGS WITH RESPECT TO RESPONDENT NO.4

13. That it is submitted that the Petitioner had filed an O.A 19 of 2014 under Section 14 read with Section 15 and 18(1) of the National Green Tribunal Act, 2010 with specific allegations against the Respondent No.4 alleging threat to wildlife from the yellowish- orange water/ toxic pollutant from Respondent No.4's abandoned coal mine within the Jeypore RF and Dihing-Patkai Elephant Reserve. It was also alleged that the Respondent No.4 has abandoned the coal mine but is unwilling to hand over the mine to the Forest Department, more specifically to the Wildlife Wing of the Forest Department, who is in charge of the management of the elephants in the elephant reserve.

14. That the Petitioner also filed a M.A 1027 of 2015 for staying the mining operations of Respondent No.4 herein, in the Makum Coalfields on grounds of alleged violations of the Forest (Conservation) Act, 1980 and the conditions of Environmental Clearance.

15. That the Respondent No.4 had replied to all the false and baseless allegations and averments of the Petitioner. That the Respondent No.4 states that:-

- a. That all the details of mining operations and mining leases have been provided by the Respondent No.4 in their preliminary submissions as well as uploaded on their website, as mandated.

- b. That after enactment of Coal Mines Nationalization Act, 1973, the Central Government took over all the mining leases and then renewed it till 2003 under the provisions of the Act. That since the mining leases were in operation before the enactment of FC Act, 1980, the provisions of FC Act did not apply.
- c. That the Respondent No.4 duly submitted all the applications for renewal/ clearance which were actively pursued by the Respondent No.4.
- d. That no mining is being done in the Reserve Forest Land as alleged by the Petitioner. That the Tipong underground mine in Tipong RF was started in 1924. Presently, no coal mining is being done.
- e. That the Tirap Colliery mining operations were in non-forest land. That the mining has been in operation since long before the enactment of Environment Protection Act, 1986. That the Consent to Operate is applied for and issued every year by Pollution Control Board, Assam. The mining operation is currently non-operational since June, 2020.
- f. That Ledo OCP mining operations were in non- forest land and was started in December, 2008 though a Project Report prepared by Central Mine Planning & Design Institute Limited and approved by Coal India Ltd. That the relevant Environment Clearance was issued on 10.12.2008. That the Consent to Establish was obtained

from PCB, Assam on 03.07.2008, and the Consent to Operate is being issued every year. It is pertinent to mention herein that the Notice of Closure of Ledo OCP mine was submitted on 03.11.2022.

A copy of the Notice of Closure of Ledo OCP mine dated 03.11.2022 is marked and annexed herewith as **ANNEXURE- A-2.**

- g. That Tikak Opencast Project was conceptualized over Baragolai Underground Mine which was started in 1909 and later the area was converted to Mining Lease by the then Provincial Government of Assam. The area of the Project was located in Saleki Proposed Reserve Forest, but the area under reference has now been converted to Government Revenue Land after notification of Saleki Reserve Forest on 05.01.2022 and notified in the Assam Gazette dated 16.12.2022 and the "Description of Boundaries (Schedule B)" mentioned in the afore-mentioned notifications do not include the mines of the Respondent No.4. Thus, it is exempted from the area declared to be a Reserved Forest. Notably, the EC was awarded by MoEF& CC in 1995, when the FC Act, 1980 did not apply in Nationalized leases.

A copy of the Notification dated 05.01.2022 by the Environment and Forest Department, Government of Assam is marked and annexed herewith as **Annexure A-3.**

A copy of the Notification published in the Assam Gazette dated 16.02.2022 is marked and annexed herewith as **Annexure A-4**.

- h. That the Respondent No.4 also submits that out of the mines of Respondent No.4,, Lekhapani Opencast Project has been foreclosed before starting of the mine operations due to an inter-state border dispute. Notice of Closure of Ledo OCP mine was submitted on 03.11.2022 and as mentioned above the mining operations in Tirap OCP are currently non-operational since June, 2020.
 - i. That Opencast mining is currently being carried out at one site only i.e., Tikak Extension OCP which is in non-forest Government Revenue Land. The copy of Environment Clearances etc. are being uploaded on the website <http://www.neccoal.co.in/environment.htm>.
 - j. That the Environment Monitoring done by Approved Laboratory every quarter are being submitted to PCB, Assam and the Regional Office of MoEF& CC at Shillong and uploaded on the website of North Eastern Coalfields. Further, the water quality of Buri-Dehing River is being monitored regularly by PCBA and is in public domain on the website of Central Pollution Control Board.
16. That the Hon'ble National Green Tribunal vide order dated 08.12.2017 passed various directions. That the directions with regards to Respondent No.4 are:-

“2) We direct registration of separate case against the Coal India Limited and Oil India Limited for further enquiry in the matter relating to adverse effect caused to the environment consequent to the act of commission and omission in respect of oil extraction and coal extraction in their respective mines.”

“8) We hereby direct Coal India Limited to prevent discharge of toxic pollutant i.e. yellowish-orange water flowing out of old mines, abandoned by it within Jeypore RF and Dihing-Patkai Elephant Reserve.”

“10) We direct the State of Assam to work out a viable solution for handing over of the abandoned Coal mine of the Coal India Limited to the Forest Department for its proper maintenance and to prevent harm to the flora and fauna.”

17. That Respondent No.4 Coal India Ltd. approached the Hon'ble Supreme Court by filing Civil Appeal No. 9710-11 of 2018 against the Impugned judgment dated 08.12.2017 passed by Hon'ble NGT, Principal Bench, New Delhi in OA 19/14 and M.A 1027/15 dated 08.12.2017.
18. The Hon'ble Supreme Court vide order dt. 27.04.2023 remitted the matter back to the Tribunal along with the compliance reports as a part of the record in O.A 19/2014 on the file of the Tribunal. The Court requested the Tribunal to give a fresh look to the matter and take further course of action in accordance with law, after affording opportunity of hearing to the respective parties. The Court also stated

that as far as the complaint made by the Appellant, therein, is concerned, it has become infructuous and since the compliance reports have been placed on record by the stakeholders, it will be open for the Tribunal to take a fresh look into the matter and proceed further after taking compliance reports on the part of record.

**OBSERVATIONS QUA THE COMPLIANCE REPORT FILED BY
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE**

19. That the Ministry of Environment, Forest and Climate Change (MoEF&CC) filed an inspection report/ compliance report in view of the order dated 10.08.2022 passed by the Hon'ble Supreme Court.
20. That the specific observations of the MoEF&CC with regard to Respondent No.4 areas under:-
 - a. *Waste water or seepage water from coal mines is in yellow colour due to presence of Pyrite (Iron Disulphide)*
 - b. *Natural seepage from Tirap coal mine is entering Ledo Pani Nalla and the Nalla flows into Buri Dehing River.*
 - c. *Even though wastewater collection pits, settling tanks and Effluent Treatment Plant (ETP) have been established, the said facilities are not operational.*

Coal India has not taken any steps to prevent discharge of the toxic pollutant flowing out of old mines.

In several abandoned mines, the structures/ houses constructed by Coal India were found intact. Further, these houses/ structures are occupied. It was the responsibility of Coal India to

remove these structures at their cost, restore the area to original status and physically hand over the abandoned coal mines, free of all encumbrances, to the Forest department.

Therefore, it has been concluded that this direction of the NGT is yet to be implemented.

RESPONSE TO COMPLIANCE REPORT OF MINISTRY OF ENVIRONMENT, FORESTS AND CLIMATE CHANGE

21. At the outset, the Applicant seeks to impress upon this Hon'ble Tribunal that the Analysis Reports annexed to the aforementioned MoEF & CC Reports as well as the conclusions drawn from the same ought to be discarded as the inferences drawn from the reports are completely incorrect and baseless.
22. It is submitted that while the MoEF& CC reports claims pollution due to the presence of Pyrite (Iron Disuplhide), and of the total 12 water analysis reports that have been filed, all of the individual reports clearly indicate that the water quality samples are well-within the parameters of pollution as per the report itself. Further, there are only two specific cases where there is a slight variation that needs to be noted, case being, the water sample from TC-01/21 i.e., water from Tikak OCP (Mining Pit/Void) and TC-07/21 (Stagnated water of Tirap OCP) which were found to be slightly acidic, all the other water samples were found within the Tolerance Limit and/or Below Detectable Limit.

23. It is imperative to mention at the outset that the MOEF&CC has in certain instances conducted inspections from untreated sources of water instead of conducting sample analysis from treated discharge water to effectively assess whether the wastewater treatment systems employed by the answering Respondent are effective or not. As such, the observations and findings of the MOEF&CC which merely note that there is a difference in the colour of the water without an effective analysis or report as to the location where the same was situated or what was the basis for such a conclusion are to be ignored, more so, since the water analysis reports which have been appended to this Report do not support the conclusion derived by the MoEF.
24. In reply to the observations of the MOEF&CC that waste-water or seepage water from coal mines is in yellow colour is due to presence of Pyrite (**Iron disulphide**), it is submitted at the outset that the discharges are treated with quick lime and soda ash to neutralize the toxic elements in its discharge to the natural drain system. It is also imperative to point out that the observations made by the MOEF&CC were not of the water that is released after necessary treatment but from the collection pits where the discharge water is entirely untreated and is in its raw form. It is submitted that the water which is collected in the collection pits has not undergone any of the treatment procedures that have been detailed in the various affidavits filed by

the answering Respondent and is the raw, untreated water which then proceeds to the settling tanks, undergoes necessary chemical treatments, then through the Effluent Treatment Plant and finally the remaining discharge is neutralized with heavy water flow in the natural drainage system like rivers and nalas during monsoon period due to high natural water to mine discharge volumetric ratio. Moreover, due to the fact that the location of mines in higher altitude, the treated discharge is carried by natural drainage away from the reserve forest to the low-lying plain areas which has no effect on plants and wildlife of the forest areas.

25. It is submitted that the MOEF& CC inspection and consequent report ought not to be relied upon as the same is clearly peripheral and comprises of conclusions which have been drawn from incorrect factual inferences. Notably, any analysis of the effectiveness of the answering Respondent's waste-water treatment systems would be unreliable and inconclusive if the same has been conducted on raw, untreated water which has been the case prevalent even for visual reports as well as water quality analysis reports. Unfortunately, given the fact that the original samples itself are unreliable to draw conclusions of any manner of pollution, the affidavit of the MOEF&CC ought to be rejected at the outset.

26. That in response to the contention that Natural seepage from Tirap coal mine is entering Ledo Pani Nalla and the Nalla flows into Buri-Dehring river, it is submitted that this mine is currently non-functional and the MOEF&CC has not placed on record any material to substantiate this allegation and there is no allegation of pollution. Further, in the absence of any supporting material to establish the finding that there is natural seepage, the answering Respondent seeks leave to submit any further response if at all required.
27. That in response to the contention that though wastewater collection pits, settling tanks and Effluent Treatment Plant (ETP) have been established, the said facilities are not operational, it is submitted that ETP facilities, at the currently operational mine of the Respondent No.4, are fully functional and the water analysis reports taken by M/s GREENZONE Laboratory, indicate that the waste water discharge is in consonance with the GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 Notification and as amended.
28. That further, M/s GREENZONE, laboratory recognised under by Pollution Control Board, Assam has conducted tests in different sites of Respondent No.4 and found that all the samples of Air, Water and Air were in consonance with the GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 Notification and as amended.

A copy of the various reports prepared by the M/s GREENZONE Laboratory is marked herewith as “**ANNEXURE A-5**”.

29. It is further noted in the report that in abandoned mines, the structures/ houses constructed by Respondent No.4 were found intact and that these houses/ structures are occupied and the Respondent No.4 is required to remove these structures at their cost, restore the area to original status and physically hand over the abandoned coal mines, free of all encumbrances, to the Forest Department. In response thereto, it is submitted that the dismantling of structures such as Service buildings, Residential building, industrial structures are considered as a part of the mine closure activity. As these underground mines were closed in 2001, prior to the mine closure guidelines 2009, 2012, 2013 issued by Ministry of Coal, dismantling of the permanent structures were not carried out at that time. That it is further submitted that Respondent No.4 do not have permanent or temporary structure in and around the Golai- Powai Elephant Corridors.

**COMPLIANCE AFFIDAVIT OF RESPONDENT NO.4 FILED BEFORE
THE HON'BLE SUPREME COURT OF INDIA**

30. That Respondent No.4 filed its compliance affidavit and stated categorically that the water coming out from the sealed mine entries of the abandoned/ closed mines of North Eastern Coalfields situated in Makum Coalfields and nearest natural stream in which mine water

has been discharged are monitored by taking sample and analysed it in the lab recognised by Pollution Control Board Assam or CPCB or MOEF&CC to confirm that the pollutants are within permissible limit. That the drains near the mine entries are regularly cleaned to prevent any water logging and change of water course. That lime and soda ash are used during cleaning as and when necessary.

31. That presently, North Eastern Coalfields, a body under the Respondent No.4 has only one operational mine i.e., Tikak Extension OCP of Tikak Colliery. There are 4 Nos of Settling tanks for settling of coal particles and soil particles carried in the water from coal stock yard. The dosing with soda ash and hydrated lime is done in settling tank to reduce the acidity within permissible limit. It has a mechanized ETP at the discharge point of settling tanks, where discharge from stock yard is treated using Lime, Alum and Bleaching powder, prior to discharge in natural stream. The treated effluent was tested in Pollution Control Board Assam or CPCB or MOEF&CC recognized laboratory, and the water quality is found to conform to permissible limit mentioned in GSR 422 (E) dated 19thMay, 1993 and 31st December, 1993 Notification and as amended.
32. That the discharge water of Tirap Colliery, a discontinued mine is passed through settling tanks for settling of coal particles and soil particles and dosing with Soda Ash and Hydrated lime is done to

reduce the acidity within permissible limit. The treated effluent was tested in Pollution Control Board Assam or CPCB or MOEF&CC recognized laboratory, and the water quality is found to conform to permissible limit mentioned in GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 Notification and as amended.

33. That the water quality report of the mine water from Baragolai Colliery, a closed/ abandoned underground mine, and water quality report of natural drainage around Tipong Colliery a closed underground mine the parameters are within permissible limit. The water quality report of natural drains near the mining area i.e., Road side drains of Tikak OCP area, Ledo Kaccha Nullah, Samukjan Nullah also shows that the water quality are well within the permissible limit. That the Dilli-Jeypore mines are closed underground mines, these mines were closed in the year 2001.
34. That the Respondent No.4 has surrendered the mining lease of Dilli-Jeypore to the Directorate Geology of Mining, Government of Assam vide letter NEC/L&R/44/613 dated 01.09.2021, and the same has been approved by the Government of Assam vide letter No. PEM.130/2003/166 dated 01.08.2022.
35. That the dismantling of structures such as service buildings, residential building, industrial structures are considered as a part of the mine closure activity. That as these underground mines were

closed in 2001, prior to Mine Closure Guidelines of 2009, 2012 and 2013 issued by Ministry of Coal, the dismantling of the permanent structures could not be carried out at that time. As mentioned above, the process is to be conducted as per the relevant rules and the answering Respondent is required to adhere to the rules stipulated therein.

36. That the North-Eastern Coalfields, Respondent No.4 do not have permanent or temporary structure in and around the Golai- Powai Elephant Corridors. That the nearest mine of Respondent No.4 i.e., Tikak OCP is 13 kms away from the Golai Elephant Corridor.

CURRENT COMPLIANCES AND PERMITS ADHERED BY THE RESPONDENT NO.4

37. The Ministry of Coal, Govt. of India vide its Office Memorandum No. MPS/02/2022-MPS dated 28.10.2022 issue guidelines for the Management of Mines Discontinued/ Abandoned / Closed before the year 2009. As per the section 1.3 of the guideline, closed mine are define as stated below –

“Closed Mines: Closed mines are those mines for which the owner/agent/manager has submitted notice of closure in the prescribed format (under CMR-2017, Reg.-5) to the Chief Inspector of Mines, Regional Inspector and District Magistrate and has also obtained the mine closure certificate from Coal Controller (As per mine closure guidelines-2020).

However, prior to the implementation of Mine Closure guidelines-2009, closed mines may be considered as those mines for which the owner of the mine has already submitted a notice to the Chief Inspector of Mines, Regional Inspector and District Magistrate about the closure in the prescribed format (Form-1 of Regulation - 6 of CMR-1957), and the extractable reserve as per mining plan has been exhausted.”

38. It is respectfully submitted that as per section 2.2.1, section 2.2.2, section 2.2.3 of the guideline dated 28.10.2022, final mine closure plan should be prepared as per the Guidelines for preparing the Mining Plan & Mine Closure. The final mine closure has to be approved by the company board and after the approval of the Company Board, the owner of mine will carry out mine closure activities as detailed in the Final mine closure plan within 5 years.

That the Office Memorandum No. MPS/02/2022-MPS dated 28.10.2022 issued by Ministry of Coal is marked and annexed herewith as **ANNEXURE A-6**.

39. That M/s GREENZONE, a Laboratory recognized by the Pollution Control Board, Assam in its Test Report from April to June 2023, had tested the Affluent Waters, Ambient Air Samples and Ambient Noise Level of different sites in Railway Siding Tikak Colliery and found that all the samples were within the permissible limit mentioned in GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 Notification and as amended.

40. That the following sites were also tested by the M/s Greenzone Laboratory: -
- i. Water, Air and Noise samples from Tikak Extension OCP
 - ii. Water, Air and Noise samples from Tikak OCP
 - iii. Water, Air and Noise samples from Railway Siding Tirap OCP
 - iv. Water, Air and Noise samples from Tirap OCP
41. That all these samples were also found to be within the permissible limit mentioned in GSR 422 (E) dated 19thMay, 1993 and 31st December, 1993 Notification and as amended.
42. That the Pollution Control Board, Assam Bamunimaidam, Guwahati vide No. PCBA/DIB/T-15/22-23/14, granted a Consent to Operate dated 05.04.2023, under section 25 of Water (prevention and Control of Pollution) Act, 1974 and Section 21 of Air (Prevention & Control of Pollution) Act, 1981 as amended, to M/s Tikak Colliery (Tikak OCP and Tikak Extension OCP), a unit of Respondent No.4.
43. That the Pollution Control Board, Assam Bamunimaidam, Guwahati vide No. WB/DIB/T-3926/08-09/279, granted a Consent to Operate dated 05.04.2023, under section 25 of Water (prevention and Control of Pollution) Act, 1974 and Section 21 of Air (Prevention & Control of Pollution) Act, 1981 as amended, to M/s Tirap Colliery (Tirap OCP), a unit of Respondent No.4.

A copy of the Consent to Operate issued to the Tikak Colliery is marked and annexed herewith as **ANNEXURE A-7**.

A copy of the Consent to Operate issued to the Tirap Colliery is marked and annexed herewith as **ANNEXURE A-8**.

44. That the answering Respondent accordingly seeks to submit that the present Original Application may please be dismissed and appropriate orders may be passed as this Hon'ble Court may deem fit.

DATE: 12.09.2023

PLACE: New Delhi

Through



ISHAAN GEORGE & VISHNU T. MENON
Advocates for Respondent No. 4
A-62, First Floor,
Defence Colony, Delhi-110024
+9871637646| 011.24372574

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH AT NEW DELHI
M.A. NO. 1027 of 2015 & M.A. NO. 216 of 2015

23

In

O.A. No. 19 of 2014

IN THE MATTER OF:

DR. KASHMIRA KAKATI

...Applicant

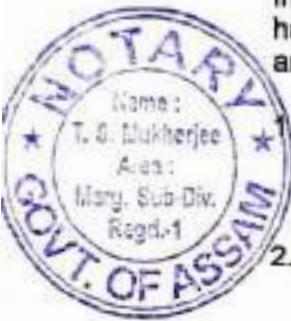
Versus

Union of India & Ors.

...Respondents

AFFIDAVIT

I, Saundaryya Prasad Dutta, General Manager, North Eastern Coalfields, Coal India Limited, Margherita, Assam and authorized signatory of Coal India Limited having Office at Kolkata being the Respondent No. 4, do hereby solemnly affirm and sincerely state as under:-



That I am the authorised signatory of the Respondent No. 4 in the above Original Application, I am conversant with the facts, records and circumstances of the case and as such I am competent to swear this affidavit.

2. I further state that I have gone through the accompanying Affidavit containing paras 1 to 44 at pages 1 to 22 which have been drafted by my counsel as per my instruction. I further state that all the contents stated therein are believed to be true and correct to the best of my knowledge and belief and nothing material has been concealed therefrom.

3. I state that the Annexure A-1 - to A-8 at pages 24 to 421 enclosed with the present affidavit are true copies of respective originals.

Saundaryya Prasad Dutta
General Manager
Coal India Limited
Margherita, Assam
NEC, CIL
Margherita, Assam

VERIFICATION

I, Saundaryya Prasad Dutta, the deponent above named do hereby verify that the contents of the above affidavit from paragraphs 1 to 3, which are derived from my personal knowledge and records of the case, are believed to be true and correct to the best of my knowledge and belief and no part of it is false and nothing material has been willfully concealed therefrom.

Verified at _____ on this the 9th day of Sept, 2023

Signed before me on oath

Saundaryya Prasad Dutta
General Manager
Coal India Limited
Margherita, Assam
NEC
Margherita, Assam

T. S. MUKHERJEE
NOTARY
Margherita Sub-Division
Govt. of Assam

Regional Wildlife Plan

for the Makum Coalfield in Assam



Rain Forest Research Institute
(Indian Council of Forestry Research and Education)
Jorhat-785010, Assam
www.rfri.icfre.gov.in
2017

Regional Wildlife Plan

for the Makum Coalfields in Assam

Under the Project: Preparation of Biodiversity Management Plan, Regional Wildlife Plan and Carrying capacity Study for the Makum Coalfields in Assam.

Funding Agency: North Eastern Coalfields, Coal India Ltd.



Rain Forest Research Institute

(Indian Council of Forestry Research and Education)

Jorhat-785010

Assam

www.rfri.icfre.gov.in

2017

Prepared by:

R. S. C. Jayaraj
Dhruba Jyoti Das
Ajay Kumar
Arun Pratap Singh
Dinesh Kumar Meena
Kuntala N. Baruah
N.D. Borthakur
Pratul Hazarika
Dhritiman Das
Abhijit Medhi

Preface

Coal is one of the prime sources of nonrenewable energy in India. Coal India Limited (CIL) is the largest coal producer company in the world, and contributes about 82% of coal production in India. North Eastern Coalfields (NEC) is a unit of CIL operating coal mines in Assam and Meghalaya. The Coalfields of Assam are situated in the biodiversity rich areas of Upper Brahmaputra Valley. Since mining has considerable impact on biodiversity, there is an urgent need for actions that promote the conservation and sustainable use of the region's natural resources, balancing the needs of conservation and development.

Rain Forest Research Institute was involved in the preparation of biodiversity management Plan for the Makum coal fields in Assam for the Assam Forest Department as stipulated in the "in-principle" approval for diversion of forest land at Tikak extension and Lekhapani open cast project of North Eastern Coalfields for coal mining, granted by the Ministry of Environment, Forest and Climate Change, Government of India as a prerequisite for providing stage II approval. The objectives also included preparation of a Regional Wildlife Management Plan for the region covering 10 km buffer zone of Makum Coal fields within Assam.

This Regional Wildlife Management Plan proposes actions that can enable different stakeholders to better protect and manage the surrounding forest as well as wildlife in and around coal mines, mainly focusing on the key species, viz., elephant, hoolock gibbon, and leopard. The forests around the mining sites are critical not only from biodiversity or wildlife perspective but also due to the fact that it regulates hydrological flows of nearby watersheds. Maintenance of life support systems is vital and the biodiversity management approach described here is based on ecological principles, and the underlying assumption is that all the major components of biodiversity and ecological processes, including the key wildlife species are likely to be maintained, if the suggested approach is followed.

(Dr. R. S. C. Jayaraj, IFS)
Director, RFRI

Acknowledgement

At the outset we would like to place our sincere gratitude to Director General, ICFRE for his continuous support and encouragement for successful completion of the Project. Mr. Jugal Kumar Borah, General Manager, North Eastern Coalfields, Coal India Ltd. is duly thanked for funding the project along with logistic and other support provided during the project tenure. Thanks are also due to the PCCF (HoFF) and PCCF (Wildlife), Assam Forest Department for their support.

The Director, Forest Research Institute, Dehradun is duly thanked for sparing the respective scientists for specialized study. The conservator of forests, Eastern circle, Jorhat and Divisional Forest Officer, Digboi Forest Division, Assam State Forest Department along with all their staffs are also duly thanked for their continuous support. Thanks are also due to all the Range officer and support staff of Lekhapani, Jagun and Margherita range for their assistance during the field visit. We sincerely thank Mr. S. P. Dutta, General Manager (Operation), Mr. Malay Das, Area Manager (EMLR), and Mr. S. Bhattacharjee, Area Manager (Env. & Forest), North Eastern Coalfields, Coal India Ltd. for the help they extended during the project period.

Thanks are due to Amity Institute of Wildlife Sciences, NOIDA for their valuable expert's comments and suggestions on fauna of Makum coal field area. We would like to thank Dr. A. P. Singh, Scientist E, and Dr. P. K. Verma, Scientist B, from FRI, Dehradun for their valuable inputs.

Thanks are due to Shri Bikram Kairi, IAS, SDO (C), Margherita, Shri M.K. Dhar, DFO (WL), Tinsukia Wildlife Division, Shri Ram Chandra Deori, BDO, Margherita, Mrs. Gitanjali Sonowal, President, Block Panchayat, Margherita, Dr. Dilip Chetry, Vice President, Aranyak, Guwahati, Dr. Runa Bhagabati, Assistant Professor, Margherita College, Margherita, Dr. Rajib Rudra Tariang, Assistant Professor, Digboi College, Digboi, Shri N. N. Deka, ACF, Digboi Forest Division, Shri Mridu Paban Phukan, Rainforest Conservation Education Centre, Naharkatia, Dr. Ranjita Bania, Jeeva Suraksha (NGO), Sibsagar, Shri Romesh Hatimuria and Shri Pabita Borgohain, Sanjivani- North East Socioeconomic Welfare Society, Shri Lek Bahadur Chetry, S.A. PWD Rural Road Sub-Division, Margherita, Shri Dhurba Dutta, Forest Range Officer, Margherita East Forest Range, Shri Dhimanshu Saikia, Forest Range Officer, Margherita West Forest Range, Shri Padum B.P. Guhain, Forest Range Officer, Jagun Forest Range, Shri Khargeshwar Konwar, Deputy Range Officer, Margherita East Forest Range, Shri Bidyadhar Sonowal, Forester, Lekhapani Forest Range, Ms. Kanika Dey, President, Ledo Gram Panchayat, Shri

Keshab Acharjee, President, Ledo Colliery Gram Panchayat, Shri Sukhdeb Sharma, Samukjan Gram Panchayat, Shri Ranjit Hazarika, President, Samukjan Gram Panchayat, Shri Raktim Khound, President, Bargoloi Gram Panchayat, Shri Ishwar Prasad Sharma, Secretary, Lekhapani Gram Panchayat, Ms. Sangita Deori, President, Jagun Gram Panchayat, Shri Bhupen Pegu, Ward member, Jagun Gram Panchayat for their valuable suggestions and active participation in the workshop cum consultative meeting on “Biodiversity Management plan and regional wildlife plan for Makum coal fields, Assam” organized by Rain Forest Research Institute, Jorhat at Conference Hall of Block Development Office, Margherita Block, Tinsukia District on 15 March 2017.

We are deeply obliged to the local people of Margherita, Lekhapani and Jagun and the villagers of the nearby area for their whole hearted cooperation and constant involvement during the entire field study without which the study would not have been possible. Last but not the least, the services rendered by all officers and staff of Rain Forest Research Institute are also acknowledged with thanks.

(Dr. R. S. C. Jayaraj, IFS)
Director, RFRI

Project Team

Team Leader

Dr. R.S.C Jayaraj, IFS

Director, Rain Forest Research Institute

Co-ordinator

Dr. Dhruba Jyoti Das, Scientist 'D'

Head, Ecology & Biodiversity Division

Rain Forest Research Institute

Team Members

Rain Forest Research Institute:

Dr. T.N. Manohara, Scientist 'D'

Dr. Kuntala N Baruah, ACTO

Mr. Rajesh Kumar, Scientist 'D'

Mr. Pratul Hazarika, STO

Mr. Ajay Kumar, Scientist 'C'

Dr. P. Hazarika, STO

Mr. Dinesh Kumar Meena, Scientist 'C'

Dr. Girish Gogoi, TO

Mr. Sandeep Yadav, Scientist 'C'

Mr. Jagat Baruah, TO

Dr. Dandeswar Dutta, Scientist 'B'

Mr. Abhijit Medhi, ST

Dr. N.D.Borthakur, Scientist 'B'

Mr. Chandan Borah, ST

Mr. H.R. Bora, Scientist 'B'

Mr. Dhritiman Das, Research Associate

Ms. Pinky Moni Bhuyan, JRF

Forest Research Institute, Dehradun:

Dr. Arun Pratap Singh, Scientist 'E' and

Dr. P.K. Verma, Scientist B

Amity Institute of Wildlife Sciences, NOIDA

Dr. N.P.S. Chauhan

Dr. Janmejy Sethy

Dr. Randeep Singh

Mr. Sushanto Gouda

CONTENTS

	Page No.
Preface	i
Acknowledgement	ii
Project Team	iv
Contents	v
List of tables	viii
List of figures	ix
List of annexures	x
Executive Summary	xi
Chapter 1: Introduction	01
1.1. General	01
1.2. Objective	02
1.3. Study Area	02
1.4. Statement of Significance	02
Chapter 2: Background Information	05
2.1. Reserved/Proposed Reserve Forest	05
2.2. Geology and Soil	05
2.3. Climate	07
2.4. Rainfall Pattern	07
2.5. Water Bodies	08
2.6. Forest types/Vegetation	12
2.7. Wildlife	13
2.8. Land use/cover	13
Chapter 3: State of Wildlife	16
3.1 Elephants	16
3.1.1 Survey Methods	17
3.1.2 Survey Results	18
3.1.3 Present Status	20
3.1.4 Status of elephant corridors in the region	21
3.2 Hoolock Gibbon	24

3.2.1 Survey Methods	24
3.2.2 Survey Results	24
3.2.3 Present Status	27
3.3 Leopard	28
3.3.1 Survey Method	28
3.3.2 Survey Results	29
3.3.3 Present Status	30
3.4 Avifauna	21
3.4.1 Survey Methods	21
3.4.2 Survey Results	31
3.4.3 Present Status	32
Chapter 4: Wildlife Conservation Strategies and their Evaluation	33
4.1 Habitat Management ISSUES	33
4.1.1 Fragmentation and Habitat Degradation	33
4.1.2 Illegal felling and Firewood Collection	37
4.1.3 Shifting Cultivation	38
4.1.4 Invasive Plants	38
4.1.5 Encroachment	40
4.1.6 Cattle Grazing	40
4.1.7 Unauthorized Mining	41
4.1.8 Degradation of Water Resources	41
4.1.9 Soil Erosion and Related Issues	42
4.2 Wildlife Related Issues	43
4.2.1 Poaching	43
4.2.2 Elephant Corridor	43
4.2.3 Monitoring of Wildlife Population	44
4.2.4 Emergency Wildlife Management	45
4.2.5 Wildlife Health Monitoring	46
4.2.6 Rehabilitation of Rescued/injured Animals	46
4.2.7 Lack of Information on Wildlife	46
4.3 Infrastructure and Manpower Related Issues	47
4.3.1 Lack of trained Manpower	47
4.3.2 Infrastructure for Protection Staff	48

4.3.3 Furnishing of Beat Offices/field Stations and Maintenance	48
4.3.4 Maintenance of Office and Residential Buildings	48
4.3.5 Quarters for Staff (duplex) and Maintenance	48
4.3.6 Provision of Four Wheeler and Motor Bikes	48
4.3.7 Capacity Building of Protection Staff	49
4.4 Socio-economic and other Management Issues	49
4.4.1 Participation of Stakeholder in Planning	49
4.4.2 Dependence of People on Forest	50
4.4.3 Human Wildlife Conflict	50
4.4.4 Lack of Awareness among Local People and Field Staff	51
4.5 Eco-Development	52
4.5.1 Formation of Eco-development Committees (EDCs)	53
4.5.2 Preparation of Micro Plans	53
4.5.3 Entry Point Activities	53
4.5.4 Capacity Building/Vocational Training for Villagers	53
4.6 Monitoring and Evaluation	56
4.6.1 Constitution of Monitoring Committees at F. Range Level	56
4.6.2 Indicative Parameters for Monitoring Plan	57
4.6.3 Research and Further Studies	58
4.7 Budget for Wildlife Management Plan	58
References	59
Annexures	61
Photographs	100

LIST OF TABLES

	Particulars	Page No.
Table 2.1	RF wise area under each Land use/cover	15
Table 3.1	Sighting of Hoolock Gibbon in Tipong RF	25
Table 3.2	Gibbons call count in Tipong RF	25
Table 3.3	Gibbon call count from Saleki PRF	26
Table 3.4	Sighting of Hoolock Gibbon in Tirap RF	26
Table 4.1	Human-wildlife conflict cases in Digboi forest division during the last 5 years	51
Table 4.3	Suggested micro enterprises based on local forest resources	54

LIST OF FIGURES

	Particulars	Page No.
Fig. 1.1	Location map of study area	4
Fig. 2.1	RF/ PRF in the study area	6
Fig. 2.2	Rainfall pattern in the study area	7
Fig. 2.3	Year wise Rain fall	8
Fig. 2.4	Month wise rain fall in different years	8
Fig. 2.5	Drainage Map in Study Area	9
Fig. 2.6	Digital Elevation Model of Study Area	10
Fig. 2.7	Land use/ cover map of the study area	11
Fig. 2.8	Area of each Land use/ cover	14
Fig. 3.1	Distribution of Asian Elephant in the study area	19
Fig. 3.2	Population Structure of elephants	21
Fig. 3.3	Map of Upper Dihing East - Upper Dihing West Block Corridor	22
Fig. 3.4	Map of the Upper Dihing East- Upper Dihing West Block corridor at Bogapani	23
Fig. 3.5	Map of the the Kotha-Burihiding Corridor	23
Fig. 3.6	Pugmark of leopard	28
Fig. 3.7	Prey biomass available for leopards in intensive study area	30
Fig. 4.1	Status of degradation of habitat in different RF/PRF	35
Fig. 4.2	Two scenario of existing and proposed model showing development of corridor activity to restore the mined area through remediation	36
Fig. 4.3	Uncovered OB dumps and resulting soil erosion	42

LIST OF ANNEXURES

	Particulars	Page No.
Annexure I	Checklist- Avifauna	61
Annexure II	Checklist of major herpetofauna	66
Annexure III	Checklist of insects	67
Annexure IV	Checklist of butterflies	68
Annexure V	Fish diversity of Patkai Lake and Mota Beel	71
Annexure VI	Phytoplankton groups recorded in the study area	72
Annexure VII	Diversity of zooplankton in Patkai Lake and Mota Beel	73
Annexure VIII (A)	List of the tree species	74
Annexure VIII (B)	List of the Shrub species	80
Annexure VIII (C)	List of the herb species	83
Annexure IX	Species recommended for reclamation of degraded sites	86
Annexure X	Dates of visits of consultants and experts	91
Annexure XI	Proceedings of stakeholder consultation	92

Executive Summary

Regional Wildlife Management Plan provides the appropriate framework and guidelines for conservation of wildlife population of a region. Preparation of Regional Wildlife plan has been made for the region covering 10 km buffer zone of Makum Coal fields falling within the state of Assam, with a baseline study on key flora and fauna. Wildlife management requires periodic monitoring of flora, fauna and environment. Monitoring generally does not need to update the full data set gathered during the baseline studies. In most cases, management is concerned with trends rather than absolute values and similar attempts were made in the present study.

Bio-geographically, Makum coal fields is situated in the Eastern Himalayan province, the richest bio-geographical province of the Himalayan zone and also falls in one of the biodiversity hotspots of the world. Makum Coal field area and its 10 km buffer zone falls in Digboi Forest Division, Assam covering an area of 484.8 km². Wholly or partly, 16 reserve/proposed reserve forests belonging to four ranges, namely Lekhapani, Jagun, Margherita East and Margherita west, fall in this buffer zone. A number of water bodies including two major rivers namely, Burhi Dhing and Tirap flow through the study area. The forest of the study area predominantly comes under under-Type IB/C1 Assam Valley Wet Evergreen Forest (Champion and Seth, 1968) or more commonly known as Upper Assam *Dipterocarpus–Mesua* formation with interspersed Tropical Semi-evergreen Forests and bamboo brakes. The common species includes *Dipterocarpus retusus* (Hollong), *Artocarpus chama* (Sam), *Shorea assamica* (Mekai), *Tetramelia nudiflora* (Bhelu), *Terminalia myriocarpa* (Hollok) etc. Situated at the confluence of the Indo-Malayan, Indo-Chinese and Indian bio-geographical realms, the region is unique in providing a profusion of habitats, which features diverse biota with a high level of endemism.

The study area was categorized under major land use/cover classes. 52.3% of the area is coming under forest cover. Moderately Dense Forests with an area of 16,256 ha covers the maximum area followed by Open Forests (7,049 ha) and Very dense forests (2,070 ha). Among the other land uses, Agriculture with an area of

10,373 ha is the dominant land use followed by Scrub land (2994 ha) and Tea gardens (2,941 ha).

Historically, the area was reported to be habitat of Capped langur (*Trachypithecus pileatus*), Hoolock gibbon (*Hoolock hoolock*), Leopard (*Panthera pardus*), Leopard cat (*Prionailurus bengalensis*), Barking Deer (*Muntiacus muntjak*), Small Indian civet (*Viverricula indica*), Wild boar (*Sus scrofa*), Indian flying fox (*Pteropus giganteus*), three striped squirrel (*Funambulus palmarum*) and Hoary bellied squirrel (*Callosciurus pygerythrus*). The present population status and habitat occupancy of target mammalian species (Elephant, Leopard and Hoolock Gibbon) and avifauna along with other prey species were estimated based on standard methodology (direct and indirect signs and camera trapping etc.).

The study on density and distribution of Asian elephant was carried out in 15 transects of 3-4 km each in various Reserve/proposed Reserve Forest. Block count method was used exclusively as direct count method, and line transect method for both direct and indirect methods of estimating population density in the study areas. The survey work revealed that there were no elephants permanently residing in these forest areas but as this area is a part of Dihing Patkai Elephant Reserve, Elephants are found using some of Reserve forest as their part of migratory corridors. There are three elephant corridors in Digboi Forest Division, namely Golai-Pawai, Bogapani and Kotha-Burhidihing elephant Corridor.

For leopard and other larger animals camera trapping effort of an average of 21 trap nights in different Reserve Forests was done. However no photos of leopard could be captured. Various indirect evidences (hoof mark and pellets) were collected other prey bases including ungulates. The relative significance of wild ungulates in the study area was calculated using a regression model that related prey biomass and leopard density to estimate the ecological carrying capacity of the forested area. Prey sign encounter rate were calculated from Transect walk and the available prey biomass for leopard was estimated 37.2 kg/km². It was estimated that based on survey results on prey abundance, the available prey biomass in the forest is very low and can support only 3-4 leopards in the study area. However, since there are reports of man-leopard conflict in the area, and indirect evidence of presence of a larger number,

it can be assumed that the leopards are dependent not just on the forest prey, but also on the domestic animals, which is a potential reason for conflicts.

For Hoolock Gibbon, modified line transects method in a stratified random manner was followed for the survey, depending on the habitat and the forest condition. Call-count method was followed and collection of secondary information relevant to the study was done. Not less than 14 groups of Hoolock Gibbon were found in various forests of the study area.

The bird population was recorded using the belt transect method where the observer recorded data on the sightings of bird species, number of individuals sighted at perpendicular distance of 20 m from the line at which the species was sighted. A total of 168 bird species were recorded in the study area, 5 of which were found endemic to northeast India, 54 species are 'breeding residents' in the study area while one species is a breeding 'summer migrant' and 8 species are 'altitudinal winter migrants' from adjoining hills of Arunachal Pradesh. One species, the Common Hill Myna (*Gracula religiosa*) is listed in Schedule I Part III of the Indian Wildlife (Protection) Act, 1972.

The result shows that besides the presence of major species (Elephant, Leopard, Hoolock gibbon and avifauna), 27 major reptile species were found in the study area along with 6 amphibians. A total of 144 butterfly species were also recorded. The survey also recorded floral species of 220 trees, 102 shrubs, 122 herbs, 37 orchids, 32 Pteridophytes, 65 bryophytes, 34 macro-fungi and 23 lichens.

The major Wildlife Conservation issues along with their mitigative strategies and recommendations are summarized below:

- Fragmentation and habitat degradation: Most part of the study area, forest fringe areas in particular, were found undergoing tremendous habitat degradation resulting in forest fragmentation. Afforestation/ reforestation in degraded areas along with maintenance and strengthening of existing corridors is required to be done with immediate effect.
- Illegal felling and Firewood collection: Provisions for alternate energy sources for the local communities should be made and plantation of fuelwood species in homesteads and agriculture lands as well as the use of alternate energy sources should be promoted

- Shifting Cultivation: Awareness programme among the tribes regarding ill effect of shifting cultivation along with popularization of feasible alternative livelihood options should be encouraged
- Invasive plants: Invasive weeds should be eradicated and removed from the natural forests in a phased manner by mechanical or manual uprooting followed by immediate sowing of grasses.
- Encroachment: A Wildlife Task Force (WTF) may be created with close association and participation of the local people and forest department.
- Unauthorized mining: Action should be taken to tackle unauthorized mining through strengthening the law and order machinery and through creating awareness among the local people.
- Soil and water related issues: Site specific remedial measures like check dams, rock fill dams, gully plugging, planting of native grass species etc. should be implemented.
- Poaching: Poaching areas should be identified and checklist of habitual offenders should be prepared.
- Infrastructure and manpower related issues like lack of trained manpower, insufficient infrastructure for protection staff and the need for their capacity building are discussed at length in the report.
- Socio-economic and other management issues like participation of stakeholders in planning, dependence of people on forest, human wildlife conflict, lack of awareness among local people and field staff, and formation of Eco-development Committees are also discussed at length.
- The budget of the regional wildlife plan was merged with Biodiversity Management plan as many of the activities are overlapping in nature.

Chapter 1

Introduction

1.1 General

A well-developed and managed forest area offers a number of Ecosystem goods and services to the society. Forests play a significant role in the social and economic development of rural society and contribute to the quality of life of the people. Planning and management of protected areas was accorded its due status in scientific forest management since the time of its inception in India. One of the main objective of the region specific management plan is to protect, conserve and improve the habitat attributes for survival of the endangered and threatened faunal species such as Hoolock Gibbon, Asian elephant, Leopard, Clouded Leopard etc. and other animals along with plants, and to develop eco-tourism in and around the protected areas to engage a part of the forest fringe population to earn their livelihood. The plan also accommodates priority areas for infrastructure development along with research on the floral and faunal diversity for better management of wildlife and its habitat. It also ensures suitable conservation measures for significant flora and fauna of ecological importance for that region.

Active management of habitats to benefit wildlife populations is a fundamental concept of wildlife biology and a Regional Wildlife Management Plan is of great importance in this regard. Regional Wildlife Management Plan provides the appropriate framework and guidelines for conservation of Wildlife population of a region. The ecological baseline framework serves as a benchmark against which management-induced changes can be identified and measured. However, it is important to note that future monitoring generally does not need to update the full data set gathered during the baseline studies. In most cases, management is concerned with trends rather than absolute values. Absolute values (total number

of species, densities, etc.) are generally not needed on a day-to-day basis. Changes in relative indices of these parameters (trends) will provide the information that would be the initial baseline for any future management endeavor. For fulfilling these objectives, the current status of Key wildlife species of Makum Coal field areas i.e. Elephant, Hoolock Gibbon, Leopard and Avifauna were enumerated from primary and secondary data/ information sources.

1.2 Objective

The objective of the present venture is preparation of Regional Wildlife Plan for the region covering 10 km buffer zone of Makum Coal fields falling within the state of Assam.

1.3 Study Area

The leasehold area of North Eastern Coalfields (NEC) covers forest and non-forest areas amongst hilly terrains within Digboi Forest Division. Within these areas lie different coal mining sites. Coal mining activities of NEC, Coal India Limited (CIL) are at present confined to Makum Coalfield in Tinsukia district of Assam. NEC with its head office at Margherita is running six coal mines i.e. Baragolai, Tipong, Ledo, Tirap, Tikak and Ledo in Assam. The Coalfields cover an area of 2688.16 hectares under mining leases of Lekhapani-Tipongpani Mining lease (1158.46 Ha), Tirap Coal grant (238 Ha), 4 square-mile mining lease (1034.34 Ha), Namdang Coalgrant (156.36 Ha) and Ledo OCP mining lease (101 Ha). Baragolai Coal mine is one of the oldest underground mines operating under the Makum Coalfields of NEC, Margherita, Assam. The Tirap, Tikak and Ledo open cast mines are at present the only coal producing open cast mines in Makum Coalfields.

1.4 Statement of Significance

The Wildlife of the study area must have been rich both in diversity and number as the area forms a part of the larger Dihing Patkai Landscape, but currently not as rich as it once used to be. Faunal elements reported in the past include the species of Chinese sub-region of the Oriental Zoo-Geographical region and also the elements of the Indian Sub-region (Kakati, 2009). This area also has record of a large variety of migratory birds which breed in the North of the Sino-

Himalayan area. The area was rich with wide variety of Herbivores like Sambar, Hog deer, Barking deer, Wild Boar etc. Over the years, unfortunately their numbers have dwindled due to illegal hunting, expansion of human habitation and clearance of forest areas for settlement and other purposes. However, wildlife is still there, though their numbers have dwindled considerably.

Bio-geographically, the study site is situated in the Eastern Himalayan province, the richest bio-geographical province of the Himalayan zone and also falls in one of the biodiversity hotspots of the world. The Eastern Assam is at the junction of the Palaearctic, Indo-Chinese and Indo-Malayan Bio-geographic Regions. Biotic elements from all these regions occur in this area making it very rich in floral and faunal resources. In Jeypore RF, which is situated at an aerial distance of more than 20 km from the Makum coalfield, Kakati (2009) has recorded the presence of 26 species of mammals. Also in the same study five large carnivores (tiger, leopard, clouded leopard, wild dog and Malayan sun bear) and three species of elusive small cats (golden cat, marbled cat and leopard cat), were recorded. The Jeypore Reserve Forest now holds the distinction of being the only location in northeast India where the sympatric presence of all of these eight charismatic carnivores has been confirmed. As, Jeypore Reserve Forest is situated at an aerial distance of more than 20 km from the Makum Coalfield, may not be impacted by mining activities.

The study area includes Makum Coalfield area and its 10 km buffer zone that belongs to Digboi Forest Division, Assam. The area of the buffer zone is approximately 484.8 km² (Fig. 1.1). The back ground information along with description of study site is given in the subsequent chapter.

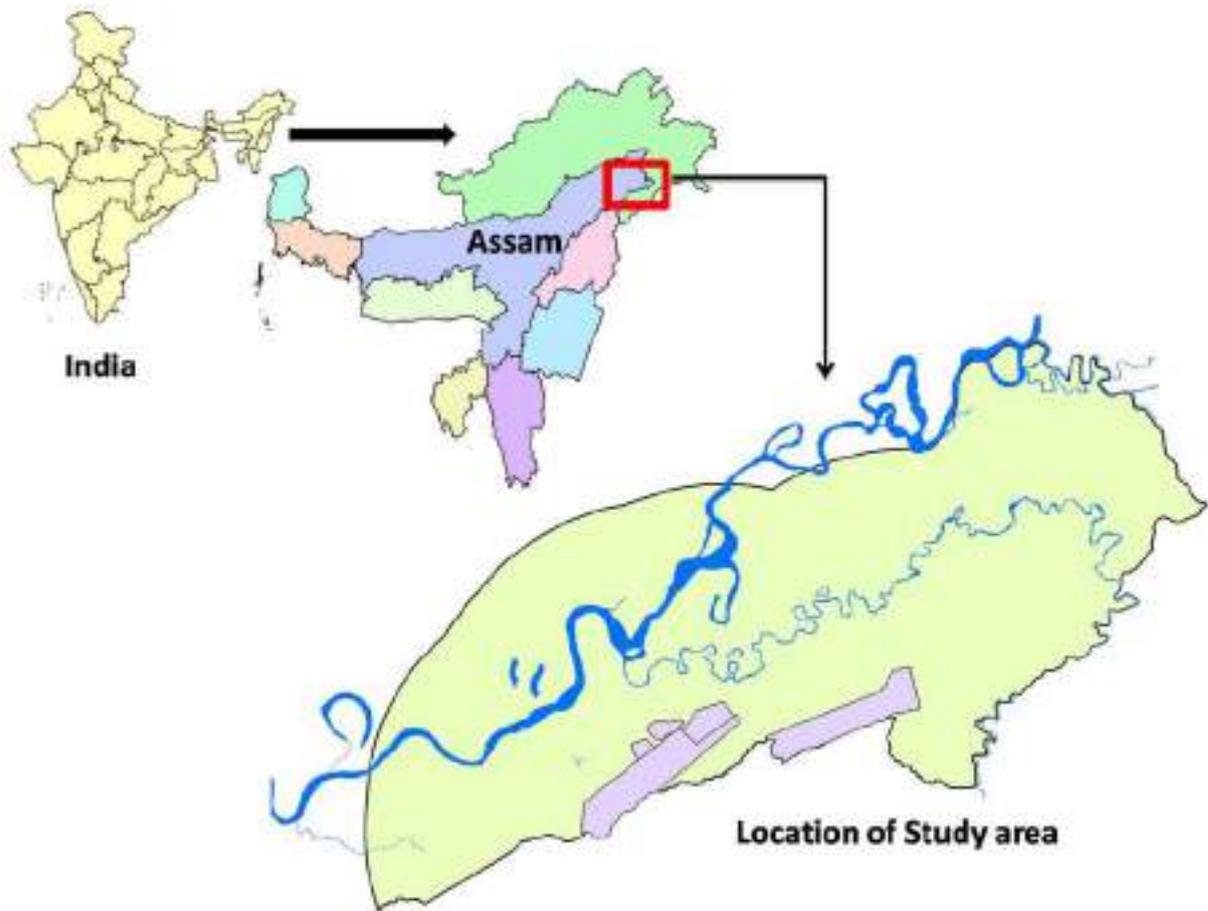


Fig. 1.1. Location map of Study Area

Chapter 2

Background Information**2.1 Reserve/Proposed Reserve Forest**

The extent of the study area is roughly from 95° 36' 12" E to 96° 01' 55" E and 27° 12' 20" N to 27° 26' 27" N and the area is approximately 484.8km². Wholly or partly, 16 reserve/proposed reserve forests (RF/PRF) belonging to four ranges fall in this buffer zone (Fig. 2.1) namely:

- Lekhapani Range: Tipang RF, Tirap PRF, Dalai PRF, Paharpur RF, Saleki PRF, Tirap RF, Tipong PRF, Lekhapani RF.
- Jagun Range: Namphai RF, Kotha RF, Tinkopani RF, Namphuk RF
- Margherita East Range: Dirak RF, Upper Dihing RF (East), and Makumpani RF,
- Margherita West Range: Upper Dihing RF (West),

The current survey of wildlife was primarily confined to these 16 Reserves/proposed Reserve Forests.

2.2 Geology and Soil

The Study area is located in the Digboi Forest Division and in the foothills of Patkai range, consisting of upper tertiary rocks with tipam sand stone. The alluvial deposits of the Dihing River are characterized by their coarse nature, reddish colour and sandy clay. The soil is acidic in nature with considerable depth. The altitude ranges from about 140-715 m above mean sea level. The hilly terrain of the study site predominates with moderate to steep slopes. A number of streams pass through the study area.

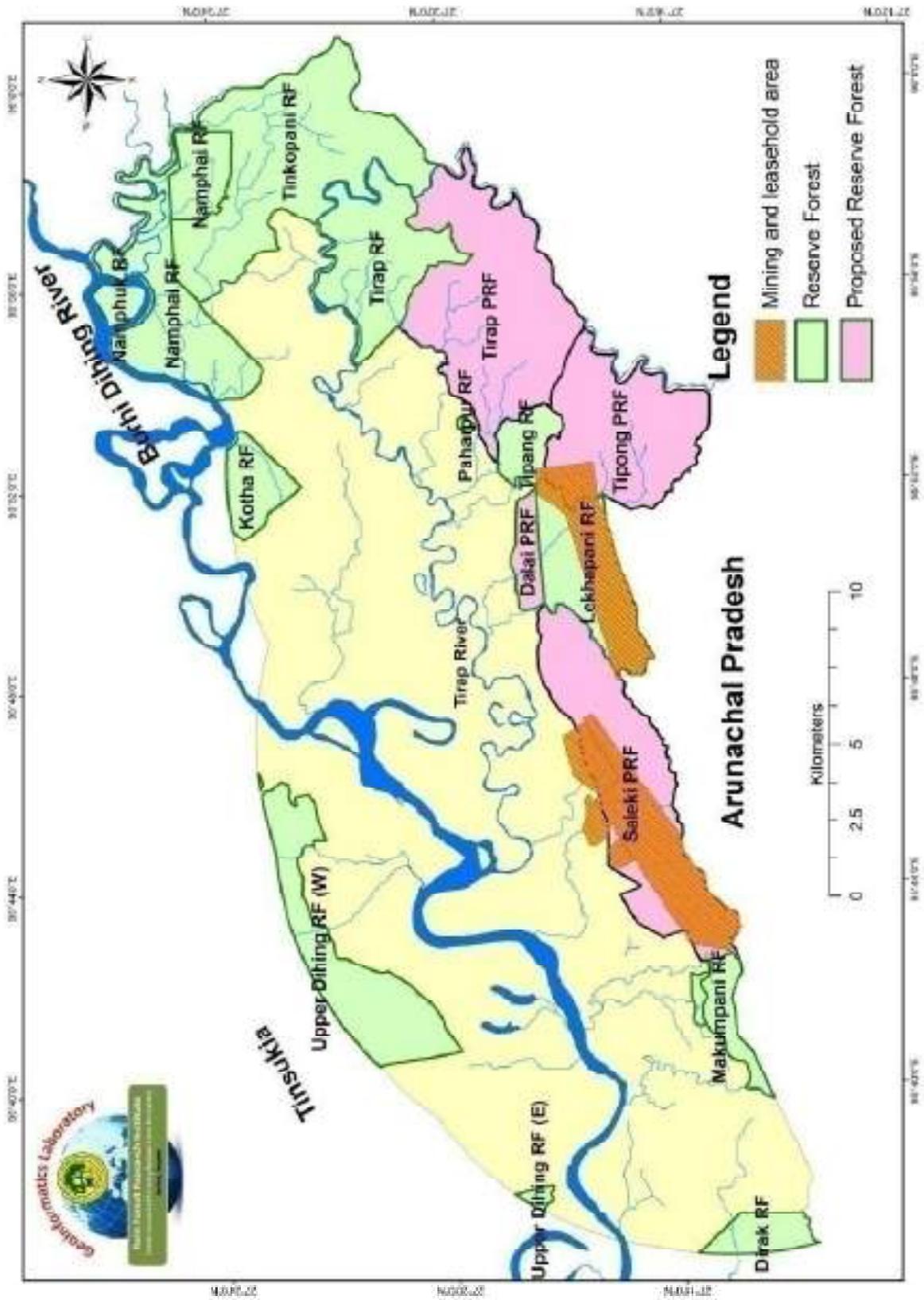


Fig. 1.1. RF/ PRF in the Study Area

2.3 Climate

The Study area falls under humid zone, characterized by high precipitation. High humidity and heavy rainfall are significant features of evergreen forests in this region. The period from November to February can be termed as dry season. June to September is the hottest period whereas December and January are the coldest. During the cold season mist in the early morning and evening is frequent. During December and January heavy dewfall is seen. The relative humidity is generally high during most part of the year, touching about 90 percent during monsoon.

2.4 Rainfall

Heavy downpour takes place during the monsoon months of May, June, July & August and flattens towards the end of the rainy season. The average rainfall recorded from 2010-11 to 2016-17 in this region shows that highest rainfall occurs during the month of July (428.86 mm) whereas the lowest average rainfall was recorded during November (17.11 mm) (Fig. 2.2). During the period from 2010-11 to 2016-17, the highest rainfall was recorded during 2010-11 and lowest during 2014-15 (Fig.2.3). The month wise rainfall data from 2010-11 to 2016-17 is given in Fig 2.4.

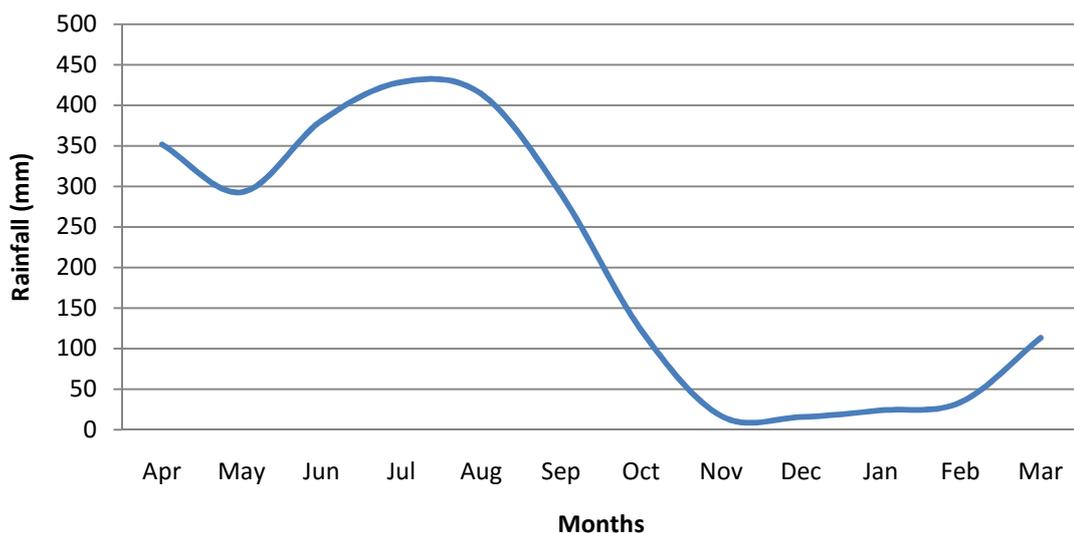


Fig. 2.2. Month wise average rainfall pattern in the Study Area

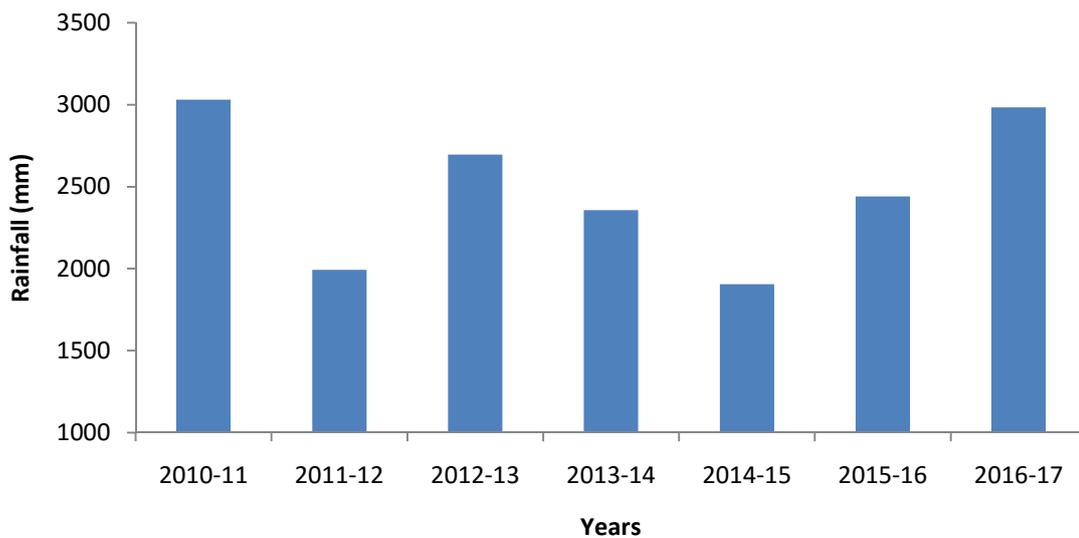


Fig. 2.3. Year wise rain fall pattern

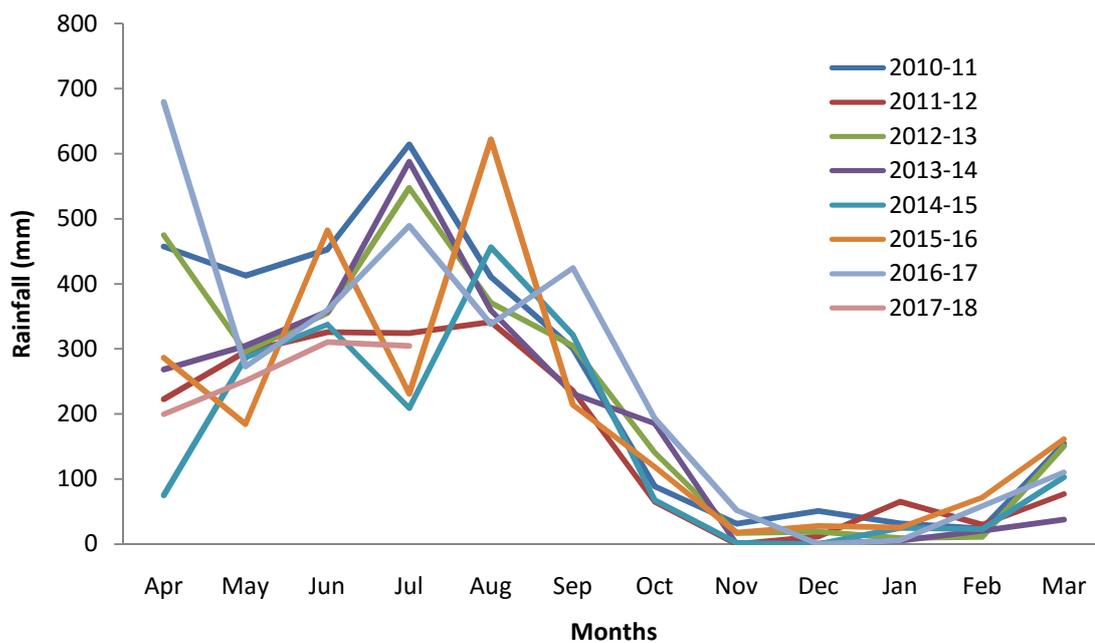


Fig. 2.4. Month wise rain fall in different years

2.5 Water Bodies

There are a number of water bodies in the study area. Two major rivers namely, Burhi Dhing and Tirap flow through the study area and their drainage systems support and regulate hydrological functions of the forest and habitat in the region.

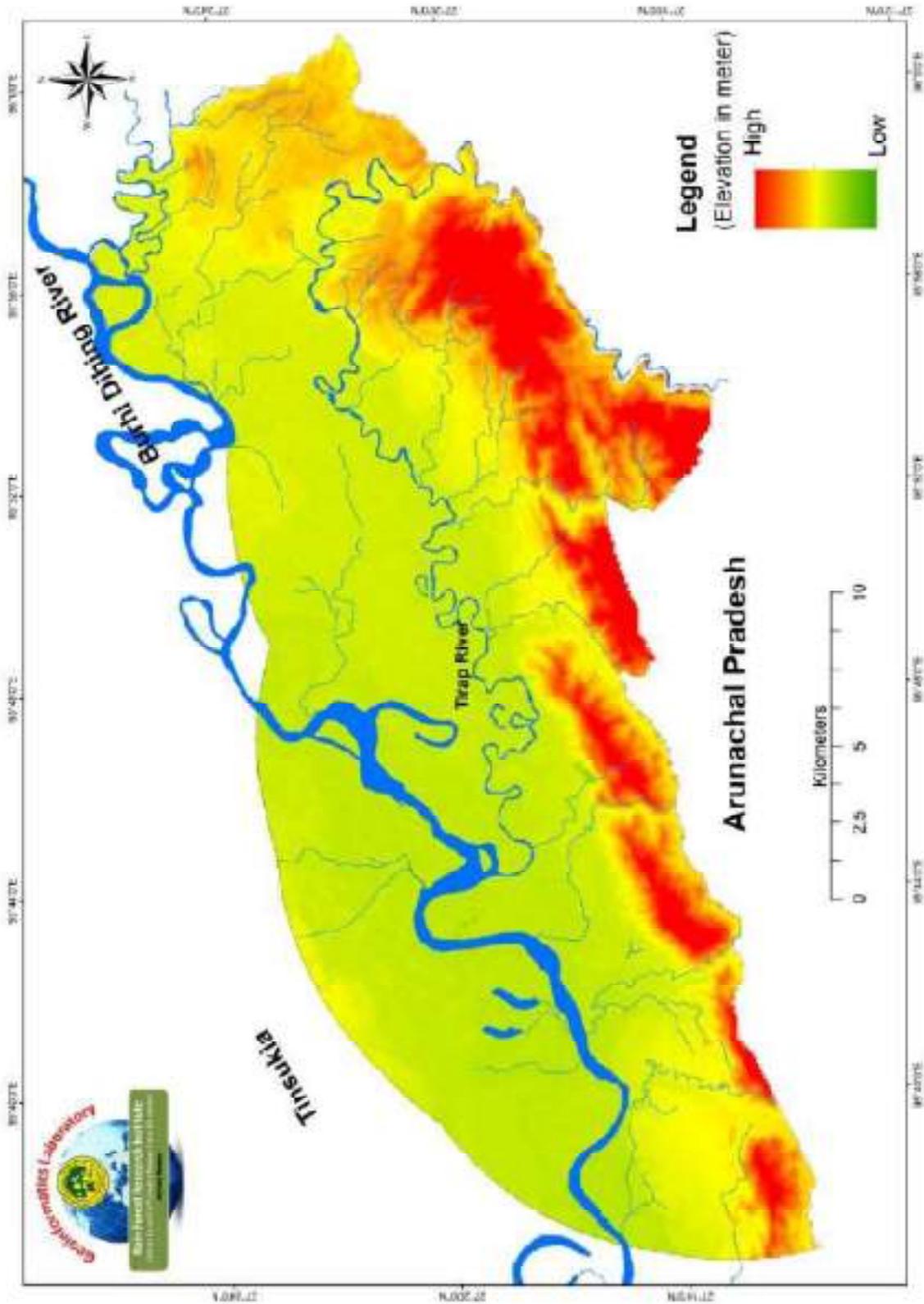


Fig.2.6. Digital Elevation Model of Study Area

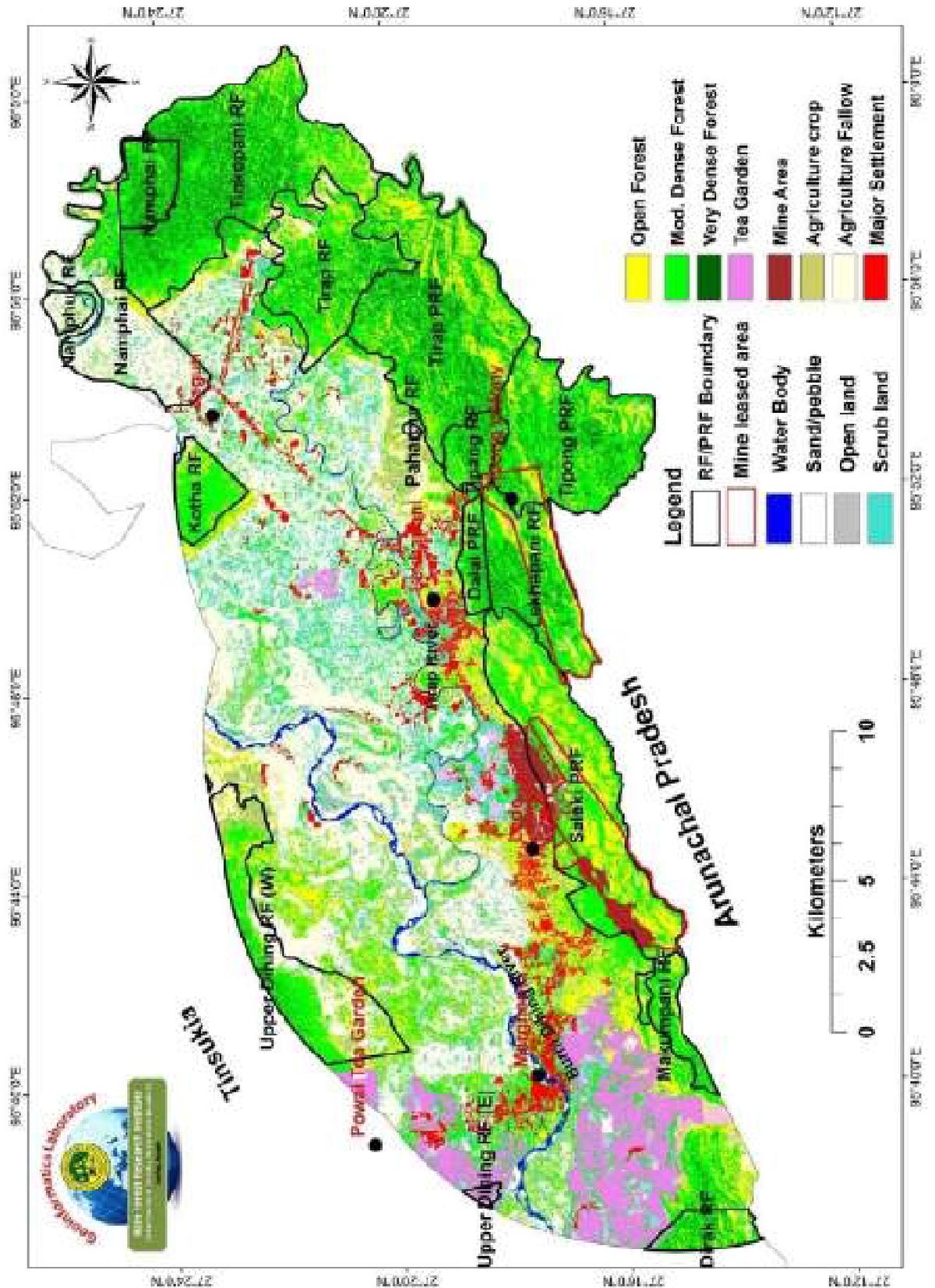


Fig.2.7. Land use/ cover map of the study area

2.6 Forest Types/Vegetation

The forest of the study area falls under IB/C1-Assam Valley Wet Evergreen Forest Type (Champion and Seth, 1968), or more commonly known as Upper Assam *Dipterocarpus*-*Mesua* formation. Being in a unique ecological location, this landscape is very rich in terms of flora and fauna. The peculiarity of this Assam Valley Lowland Tropical Forest is the three tier vegetation structure. The top tier looms over the rest and consists of isolated, tall, evergreen or deciduous trees which grow to a height of even up to 35-40 m. The common species are: *Dipterocarpus retusus* (Hollong), *Artocarpus chama* (Sam), *Shorea assamica* (Mekai), *Tetrameles nudiflora* (Bhelu) and *Teminalia myriocarpa* (Hollok). Each of these grows tall and handsome with spreading branches and abundant foliage. *Dipterocarpus retusus* occurs gregariously on the well-drained high level alluvial plains in the foothills while at higher elevations and on the ridges, it is replaced by *Shorea assamica* which occurs in more or less pure patches on comparatively dried & gravelly soils. Other species which are found to occur in the top canopy sporadically are *Michelia champaca* (Sopa), *Canarium resiniferum* (Dhuna), *Altingia excelsa* (Jutuli), *Amoora wallichii* (Amari) and *Ailanthus grandis* (Barpat). The middle tier consists of several medium sized trees growing up to a height of about 25 m. like *Mesua ferrea* (Nahor), *Cinnamomum glanduliferum* (Gonsoroi), Khokan (*Duabanga grandiflora*) etc.

Arenga pinnata, *Caryota urens*, *Livistona jenkinsiana*, etc. are few of the palms that occur in these forests. The epiphytic flora is very rich and some of the common epiphytic ferns are the species of *Aerides*, *Cymbidium*, *Eria*, *Pholidota*, *Dendrobium* etc. Along the hill slopes wild species of *Musa* comprising *Musa acuminata*, *M. balbisiana* and *M. rosacea* form thickets which are the prominent feature of the vegetation.

Trees are heavily plastered with lichens and festooned with climbers and epiphytes of the numerous lianas like *Pericampylus glaucus*, *Stephania elegans*, *Parabaena sagittata*, *Mimosa himalayana*, *Combretum acuminatum*, species of *Bauhinia*, *Derris*, *Entada*, *Gnetum*, *Hodgsonia*, *Piper*, *Raphidophora*, etc. The ground tier consists of shrubs, climbers, orchids and ferns. The ground flora is mainly represented by herbaceous elements such as *Phrynium* sp., *Begonia roxburghii*, *Floscopa scandens*, *Rhynchoglossum* sp., *Abacopteris lakhimpurensis*, etc.

Because of the existence of quite close canopies in the overhead and resultant accumulation of thick humus on the forest floor, different species of herbs, ferns and grasses constitute rather a thick ground cover.

2.7 Wildlife

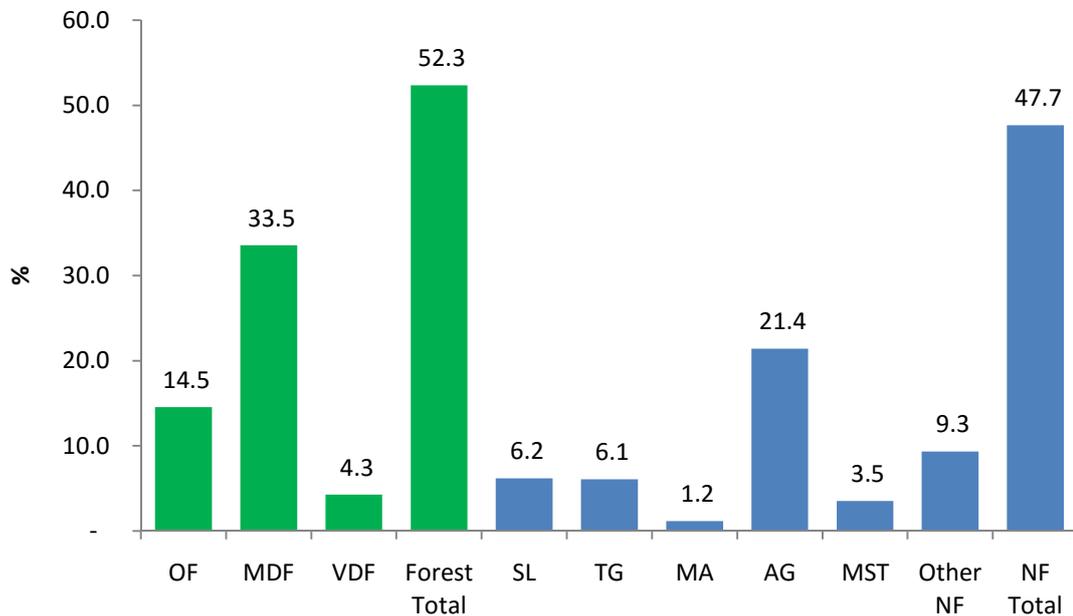
Bio-geographically, the study area falls under the North-East Brahmaputra Valley province 9 (A). The vegetation forms an ideal habitat for non-human primates. Till date, 46 species of mammals, 71 species of reptiles and amphibians, 70 species of fishes and nearly 40 species of dragonflies and 276 species of butterflies have been listed from this region. The recorded major mammal species from this landscape are – Hoolock Gibbon, Slow loris, Pig-tailed Macaque, Stump-tailed Macaque, Capped Langur, Asian Elephant, Tiger, Black Panther, Leopard, Gaur, Chinese Pangolin, Himalayan Black Bear, Himalayan Squirrel, Leopard Cat, Clouded Leopard, Porcupine, Crab Eating Mongoose, Sambar, Malayan Sun bear, Binturong, Barking deer, Golden cat, Marbled cat, Fishing Cat, Civet etc. (Anon. 2016)

The reptiles here include Burmese Rock python (*Python molurus*), Bamboo pit viper (*Trimeresurus gramineus*), King cobra (*Ophiophagus hannah*), Asian leaf turtle (*Cyclemys oldhamii*), and Water lizard/monitor (*Varanus salvator*). There are 13 globally threatened species here viz., the Slender-billed Vulture, White-winged Duck, Greater Adjutant, Greater Spotted Eagle, Lesser Adjutant, Beautiful Nuthatch, Marsh Babbler, Tawny-breasted Wren Babbler, White-cheeked Hill Partridge, Great Hornbill, Brown Hornbill, Oriental Darter and Painted Stork. At least 10 of the bird species are listed in Schedule-I of Wildlife (Protection) Act, 1972 including the state Bird of Assam-White-winged Wood Duck (Anon. 2016).

2.8 Land use/ cover

The study area includes Makum Coal field area and its 10 km buffer zone that falls under Digboi Forest Division. The area of the buffer zone is 484.8 km². The study area was categorized under major land use/ cover classes. 52.3% of the area is coming under forest cover. Moderately Dense Forests with an area of 16256.1 ha covers the maximum area followed by Open Forests (7043.8 ha) and Very dense forests (2070.4 ha). Among the other land uses, Agriculture with an

area of 10373.4 ha is the dominant land use followed by Scrub land (2994.1 ha), and Tea gardens (2940.5 ha) (Fig. 2.8).



[OF (Open Forest), MDF (Mod.dense Forest), VDF (Very Dense Forest), SL (Scrub land), TG (Tea Garden), MA (Mine Area), AGC (Agriculture crop), and MST (Major Settlement)].

Fig. 2.8. Area of each Land use/ cover

It was found that most of the areas (59.1%) of the study site are outside the reserve forest/ proposed reserve forest, whereas 40.9% are inside. The dominant land cover almost in every RF/PRF is Moderately dense Forest except Paharpur RF. Tinkopani RF and Tirap PRF found to have the highest cover of Very dense forests whereas, Saleki and Tirap PRF are found to possess highest open forest cover. Tea gardens are mostly found in Upper Dihing RF (E) and Dirak RF. Namphuk RF, Upper Dihing RF (E), Namphai RF, Paharpur RF, Upper Dihing RF (W) and Saleki PRF seem to be the most disturbed among all that comes with 10 km buffer area of Makum coalfields as the percentage of non-forest land use in those RFs/PRFs are 88.08 %, 86.09%, 75.05%, 68.15%, 37.61% and 16.99 %, respectively. The percentage area of Very dense forests also ranges from 0 to 1.3 %. The details are given in table 2.1.

Table 2.1: RF wise area under each Land use/cover

Land use/cover	OF	MDF	VDF	SL	TG	MA	AG	MST	Other NF	Grand Total
Tipang RF	24.1	282.6	77.5	0	0	0	0	0	0.5	384.8
Tirap PRF	714.3	1839.1	494	0	0	0	1.7	0	22.4	3071.5
Dalai PRF	41.7	205.8	30.2	0.3	0	0	0.7	3.6	14.5	296.8
Paharpur RF	6	1.2	0	0	0	0	13	0	2.3	22.5
Saleki PRF	968.8	1301.3	12.1	0	0	309.7	0	15.4	142.2	2749.6
Tirap RF	308.8	963	152	1.1	0	0	69	0	62.6	1556.5
Tipong PRF	353.5	1396.5	276.9	0	0	0	0	0	24.3	2051.2
Lekhapani RF	253.8	808.8	165.8	0	0	0	0	0	39.6	1267.9
Namphai RF 1	13.7	349.6	128.1	0	0	0		0	2.4	493.8
Namphai RF 2	89.1	296.9	5.9	93	0	0	930.6	9.1	146.2	1570.9
Kotha RF	94.2	389.6	1.9	2.3	0	0	7.7	0	10.2	506
Tinkopani RF	393.2	2162.1	552.1	0	0	0	14.6	0	57.1	3179.2
Namphuk RF	0	21.3	0	11.5	0	0	129.8	0	16.5	179.1
Dirak RF	66.3	238.7	45.6	0.6	17.6	0		0	13.4	382.2
Upper Dihing RF (E)	0	7.9	0	1.2	46.9	0		0	0.9	56.9
Makumpani RF	95.9	301.6	30.2	0	0	0		0	5.6	433.4
Upper Dihing RF (W)	330	668.9	20.5	40.4	0	0	395.2	0	179.1	1634
Inside PA/PPA	3753.6	11235	1992.8	150.4	64.6	309.7	1562.3	28.1	739.9	19836.5
Outside PA/PPA	3290.2	5021.1	77.5	2843.7	2876	258.5	8811	1676.9	3790.5	28645.3
Total	7043.8	16256.1	2070.4	2994.1	2940.5	568.2	10373.4	1705	4530.3	48481.8
%	14.5	33.5	4.3	6.2	6.1	1.2	21.4	3.5	9.3	100.0

Chapter 3

State of Wildlife

The population status and habitat occupancy of target mammalian species (Elephant, Leopard and Hoolock Gibbon) and avifauna along with other prey species were estimated based on standard methodology (direct and indirect signs and camera trapping etc). For some faunal species, recent literature and report were also consulted. It is here to be mentioned that for a detailed complete study and precise estimation of population, at least 2 years time frame including all seasons is required.

However, study was carried out within the given timeframe and status of wildlife in and around Makum coalfield area was attempted to be estimated. Besides, the major species (Elephant, Leopard, Hoolock gibbon and avifauna), 27 major reptile species were found in the study area along with 6 amphibians. 144 butterflies species were also recorded (the full list is given in the Biodiversity management Plan). The habitat was mainly composed of floral species of 220 trees, 103 shrubs, 121 herbs, 37 orchids, 32 Pteridophytes, 65 bryophytes, 34 macro fungi and 23 lichens.

Elephant, Leopard, Hoolock gibbon and avifauna are the four targeted species for conservation in the present Regional wild life plan, the general status and distribution of which are given below.

3.1 Elephants

According to Choudhury (1999), there is a sizable population of elephant found in this landscape. This population extends from the base of the Mishmi Hills through Lohit Valley, Dapha Bum range, plains of upper Assam to the foot of the Naga-Patkai ranges. While a few gaps have already developed within the range, the elephants are still managing to move through tea plantations and cultivation. By district, this population covers Dibang Valley, Lohit, Changlang and Tirap in

Arunachal Pradesh, Tinsukia, Dibrugarh, Sibsagar, Jorhat and Golaghat in Assam and Mon, Tuensang, Mokokchung and Wokha in Nagaland.

As Reserve forest of Digboi division falls in Dihing-Patkai Elephant Reserve which constitutes an area of 937 km², all the sites are considerably used by elephants. In the study site, cases of human-elephant conflicts were reported. Being wide-ranging animals, elephants travel long distance in search of food and water and are threatened by many human activities. For elephants, large scale conversion of forests to monoculture plantations, croplands, and developed areas, has drastically reduced and fragmented the available habitats. This has resulted in compression of elephant herds in protected areas causing escalation of human-elephant conflict in the adjoining human-dominated landscapes.

The presence and distribution of Asian elephants in different protected areas of Digboi forest division covering Tipong and Tirap Reserve Forest, Saleki Proposed Reserve Forest and Lekhapani Reserve Forest was studied to determine the population structure of the Asian elephant.

3.1.1 Survey Methods

Block count method was used exclusively as direct count method, and line transect method for both direct and indirect methods of estimating population density in the study areas. Line transect sampling, based on the probability density function theory (Burnham et al., 1980), is considered practical, efficient and relatively inexpensive for many species. This method has been extensively used in different habitats for estimating densities of a variety of vertebrate taxa, and is a very ideal approach to count elephants directly or indirectly (Karanth and Sunquist, 1992; Varman and Sukumar, 1995; Varma, 2000). The study area was stratified based on different habitat types or elephant density. In each stratum, or elephant density zone, the number of transects of known distances was marked out, and vegetation modifications on transects was kept minimum to avoid attracting or repelling the animals. For elephants, a 3-4 km transect is considered to be an ideal length for sampling which were walked at a uniform pace. Density of groups (D) was calculated using the following equation:

$$D = nf(0)/2L$$

where, n is the number of animal sighted along the transect, L , the length of transect, and $f(0)$ is the probability density function $f(x)$ (Anderson *et al.*, 1979).

The density of elephants was calculated using the program DISTANCE (5.0). To estimate the animal density, the density of groups will be multiplied by the mean group size. By following Goodman (1960) the standard error (SE) of the mean estimate can be arrived at, and 1.96 SE can be used to calculate 95% confidence interval.

$$\{SE(D)\}^2 = \{Y^2 \times (SE(Z))^2\} + \{Z^2 \times (SE(Y))^2\}$$

Where, SE = Standard error, Z = Density of groups/km², Y = Mean group size D = Density of individuals/km².

3.1.2 Survey Results

The study on density and distribution of Asian elephant was carried out between July-October, 2016 and a total of 15 transects of 3-4 km each were walked in various Reserve Forests and proposed Reserve Forests of Digboi forest division, namely, Tipong, Tirap, Lekhapani, Makumpani RF, Dalai Proposed RF and Saleki Proposed RF. Each transect was walked 2-3 times for collection of direct and indirect evidences of elephants. During the transect survey, dung and foot marks of elephants were recorded in Saleki Proposed Reserve Forest and Tirap Reserve Forest. GPS coordinates of all the indirect evidences were also recorded as shown in the map below. Calls from elephants herd were also recorded in Tirap Reserve Forest and Tinkopani Reserve Forest. During the study period, it was observed that most of the dung samples were found along road sides. It was also noticed that elephants were domesticated in the area and were used for pulling logs of large timber and for other purposes. As no direct encounter could be made during the study period confirmation on presence of wild Asian elephant could not be made as domesticated elephants are also present in the region. Indirect evidences collected can only confirm the presence of elephant but cannot distinguish between domesticated and wild elephant. Photos of domesticated elephant within the study area are presented. However, reports on presence of wild elephants were recorded from Tinkopani Reserve Forest both through indirect evidences and random questionnaire sampling with local people.

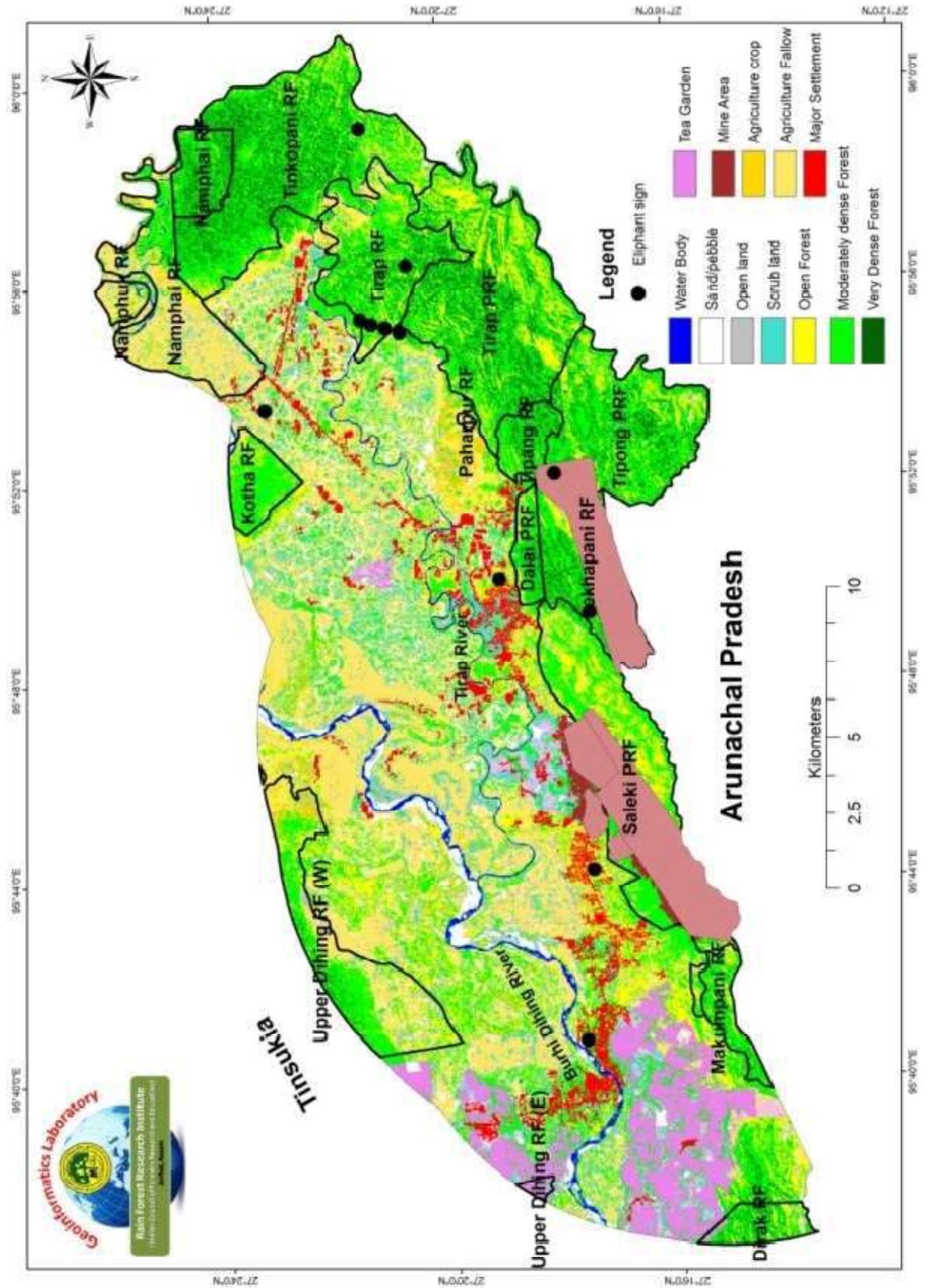


Fig. 3.1. Distribution of Asian Elephant in the study area

Direct and indirect evidences collected from fields and also information gathered from public consultation reveals that as the study area falls within Dihing Patkai Elephant Reserve, Elephants have been using some or the other part of Reserve forest as their migratory corridors. The map (fig.3.1) shows spatial distribution of Elephants signs encountered during the survey.

3.1.3 Present Status

During this short span of study time it was not possible to come up with any figure of elephant population in the study site. What best that could be done is gathering direct and indirect evidences of presence-absence of elephants which was done as shown in the above mentioned map. However, existing information base like Dihing Patkai Wildlife Sanctuary Management Plan (2011-2012 to 2015-2016) prepared by DFO, Digboi Division, Assam Forest Department was consulted and it was found that till now six enumerations were conducted for estimating elephant populations in Digboi Forest Division. The estimated population of Asian Elephant during 2011 was 204. The year wise estimation of elephants is given in the following graph (Fig. 3.2). The method adopted here for estimating the elephant population was total count followed by 15% sample check.

The pre-eminent threats to the Asian elephant today are habitat loss, degradation, and fragmentation, which are driven by expanding human population, and in turn leading to increasing conflicts between humans and elephants when elephants eat or trample crops. Elephants require much larger areas of natural habitat than most of the other terrestrial mammals and therefore, they are one of the first species to suffer the consequences of habitat fragmentation and destruction. Because of its gigantic size and large food requirement, the elephant cannot co-exist with people in areas where agriculture is the dominant form of land use. In extreme cases, elephants have been confined as so called 'pocketed herds' in small patches of forest in landscapes dominated by human beings. Poaching is a major threat to elephants although reliable estimates of the number of elephants killed and the quantities of ivory and other body parts collected and traded are scarce.

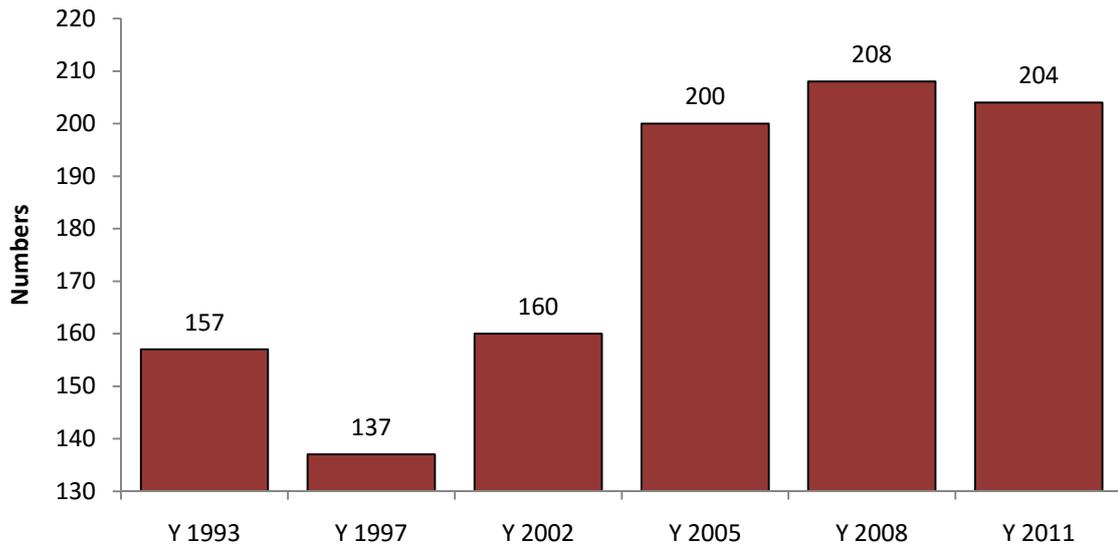


Fig. 3.2. Population of elephants

3.1.4 Status of elephant corridors in the region

As per the Wildlife Trust of India's report "Right to Passage-Elephant Corridors in India-2017", there are the following three elephant corridors in the entire Digboi Forest Division:

1. Upper Dihing East-Upper Dihing West Block between Golai-Pawai: This is situated at an aerial distance of about 13 km from the proposed Tikak Extension OCP. The corridor connects Upper Dehing Forest (East) to Upper Dehing Forest (West) including the areas of Golai Gaon No. 1, 2, 3, 4 & 5 villages and Borpowai Tea Estate. A major part of the corridor is devoid of natural vegetation and passes through tea gardens, human settlements, agricultural and degraded lands. This corridor has witnessed crop depredation by elephant resulting in discontinuation of cultivation by the adjacent villagers. In the recent past, new settlements have started coming in this 3 km long and 0.5 km wide corridor and human population in and around the corridor area has increased substantially. As a result, use of this corridor by wild elephants and other animals reportedly has reduced over the years. Margherita town is situated between this corridor and Makum coalfields. This corridor, apparently, will not be affected by the extension of Tikak OCP, the nearest proposed mine (Fig 3.3).

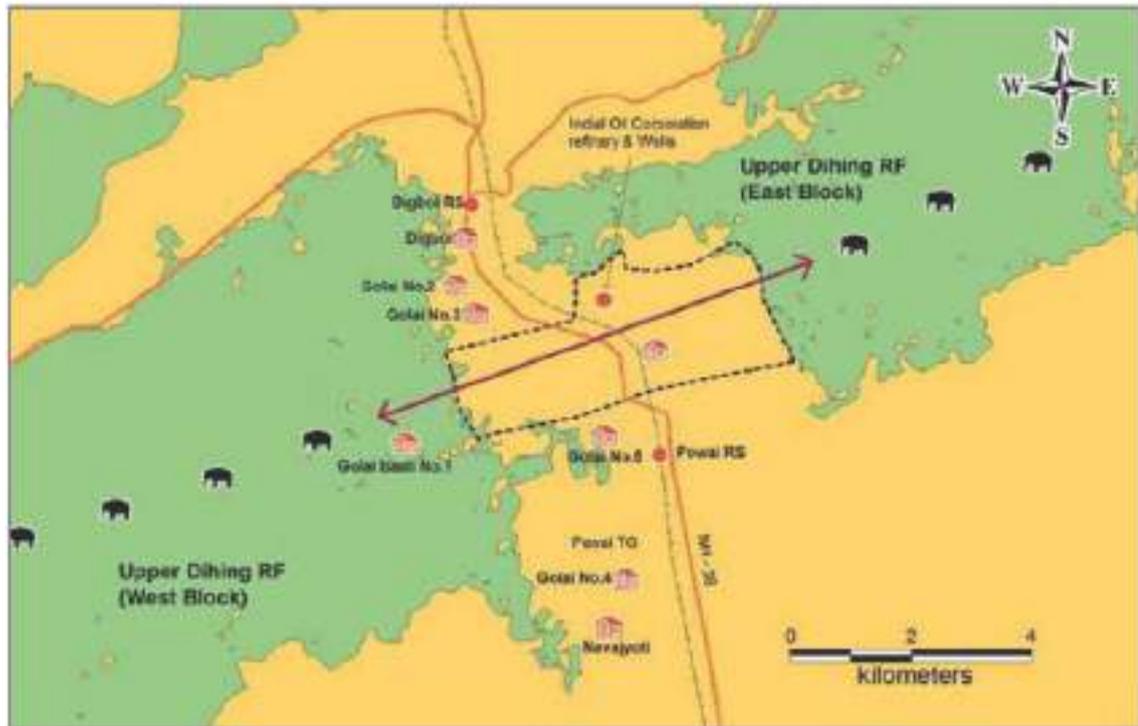


Fig 3.3: Map of Upper Dihing East - Upper Dihing West Block (source: WTI, 2017)

2. Upper Dihing East-Upper Dihing West Block at Bogapani: The corridor lies between the East and West blocks of Upper Dehing Reserve Forests and passes through Bogapani tea estate and a few settlement areas. This 2.5-3 km long and 0.5-1 km wide elephant corridor constitutes of Reserve Forest and some forest land which are leased to tea gardens and patta land. Bogapani, Panbari, Borbil-1 and 2 are the major settlements falling in this corridor. The aerial distance from the Makum coalfield is about 20 km and Digboi and Margherita towns are situated between this corridor and Makum coalfield. Frequency of usage of this corridor by elephants is regular (Seasonal; September to February). This corridor too, it seems, will not be affected by the extension of Tikak OCP (Fig 3.4).

3. Kotha-Burhidihing Elephant Corridor: This corridor connects the Kotha Reserve Forest and Burhidihing Reserve Forest of Doomdooma Forest Division, thereby maintaining a linkage with the Terai Reserve Forest, Kakojan Reserve Forest and Nalani Reserve Forest. Elephants cross the Burhidihing River near the Kotha Kakharani settlement and pass through small tea gardens and agricultural land to enter Burhidihing Reserve Forest. Length of the corridor is 3 km. and width is 1-1.5 km. This corridor is situated at about 12 km aerial

distance from the Makum coalfield lease areas. Direct impacts of mining activities in proposed Lekhapani OCP seems to be quite unlikely; however, as the vehicular movement will increase in the area after opening this mine, it may pose some disturbance for elephants in this area (Fig 3.5).

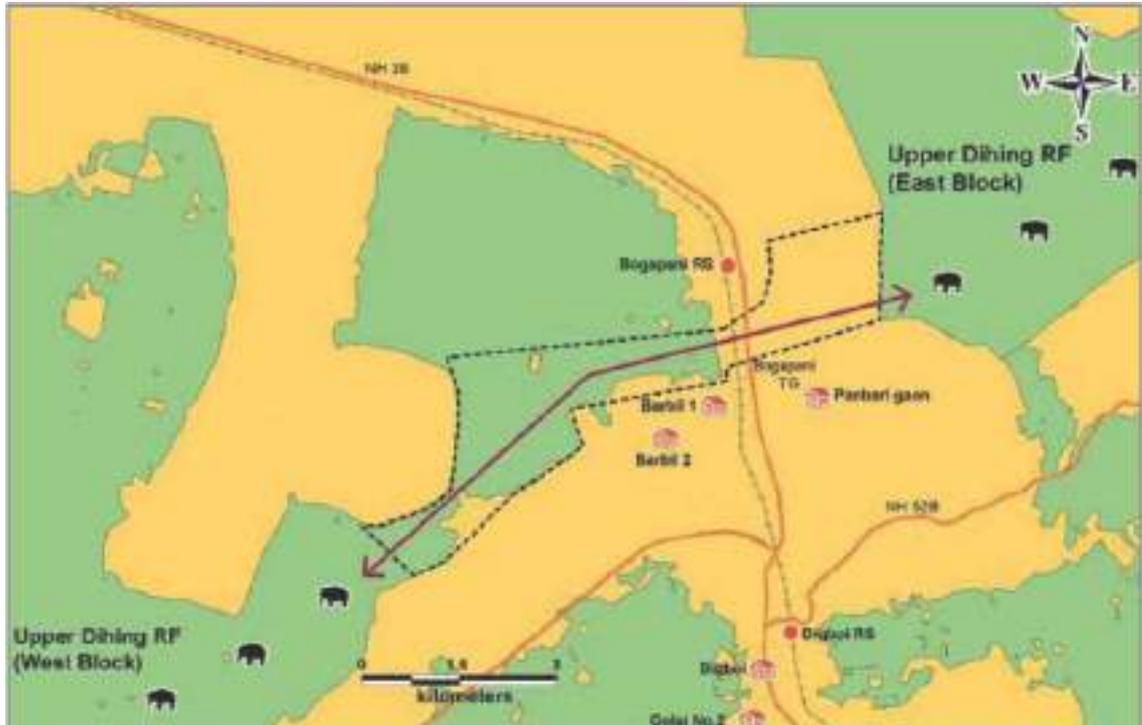


Fig 3.4: Map of the Upper Dihing (E)- Upper Dihing (W) Block at Bogapani (source: WTI, 2017)

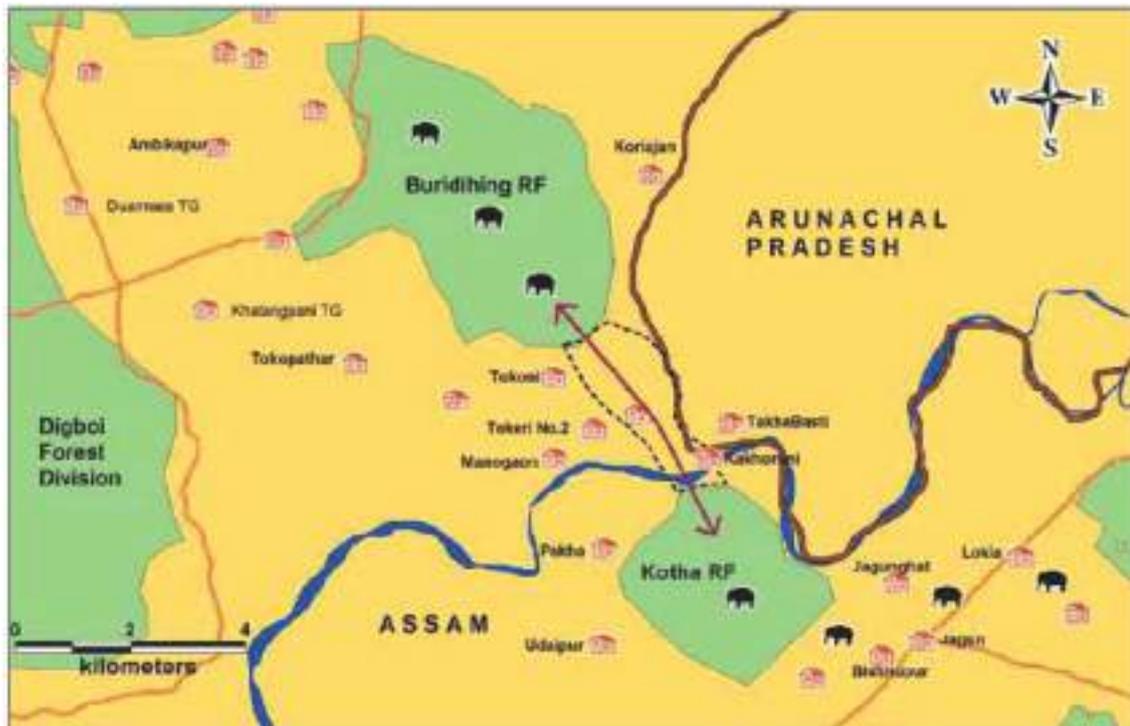


Fig 3.5: Map of the the Kotha-Buridihing Corridor (source: WTI, 2017)

3.2 Hoolock Gibbon

3.2.1 Survey Methods

During the initial phase of the survey, different areas were selected for transects walk based on local interview and call of Hoolock gibbons.

- **Direct sightings:** Modified line transects method (Burnham et al., 1980) was followed for the survey, depending on the habitat and the forest condition. Transects were laid in a stratified random manner to cover all representative areas (Mueller-Dombois et al., 1974; Kent et al., 1994). The total length of transects was 28 km. Three observers walked randomly through existing forest trails and occasionally forest tracts without trails covering an average of 6–8 km/day. Transect walks were initiated in the morning (0600h) and terminated in the evening (1300h). The observers walked slowly along the transect pausing at regular intervals of 500m. On sighting the gibbon, the Global Positioning System location, the group structure and individual details, such as age, sex and number of individuals, were recorded. At 500m intervals, and at each location where the gibbon was encountered, the observers estimated tree height and canopy cover within an area of 10 m radius and also took note of the evidence and degree of grazing and logging in the study area.
- **Indirect evidence method:** Call-count method: This involved recording calls of hoolock gibbon; whenever calls were heard, in the absence of sightings, the distance of the call was estimated and recorded along with time, direction, duration and GPS co-ordinates of the observers.
- Secondary information relevant to the study, such as information about hunting and traditional beliefs, through informal interaction with forest field staff, local guides and elderly people were also recorded.

3.2.2 Survey Results

The study was carried out in Tipong Reserve Forest, Tirap Reserve Forest and Saleki Reserve Forest during July to October 2016. Surveys and transects walk were conducted to determine the occurrence, population status and distribution of Hoolock Gibbon in the reserve forests located in the vicinity of Makum coal mining areas. A total of 14 groups were recorded which were found to be distributed in different habitats from thick dense tropical forest to bamboo forest and fragmented forest land. The canopy cover in some of these areas was over 95%

comprising of bamboo forest, monkey jack (*Artocarpus lakoocha*), Chaplash (*Artocarpus chaplasha*), Indian drooping fig (*Ficus semicordata*), false hemp tree (*Tetrameles nudiflora*), Indian wild pear (*Pyrus pashia*) and false banyan (*Ficus actissima*). The degree of disturbance in areas of occurrence of Hoolock gibbons was found to be high. Disturbances included vehicular movement, human settlement, cutting and felling of trees, hunting etc. During the study period it was observed that Hoolock Gibbons were mainly confined to a few restricted forest patches. Therefore proper management plans are essential for the conservation of the species. The details of the survey are given below:

- **Tipong Reserve Forest:** The population surveys were mostly concentrated in and around Makum coal mining sites. Two troops comprising of six individuals of Hoolock Gibbons were found in the tropical evergreen forest of Tipong reserve forest. They were located in different tree associations and were observed at varying altitudes. The group composition, GPS position and time of observation are shown in Table 3.1. During the study period, Gibbons calls were recorded in nine different locations (Table 3.2).

Table 3.1: Sighting of Hoolock Gibbon in Tipong RF

SN	Location (GPS point)		Altitude (m)	Time	Adult male	Adult female	Infant/ unidentified	Total
	Latitude (N)	Longitude (E)						
1	27°17'24.36"	95°48'54.76"	256	08.00	1	1	2	4
2	27°17'37.09"	95°48'66.39"	376	09:30	1	1	-	2

Table 3.2: Gibbons call count in Tipong RF

SN	Location (GPS point)		Altitude (m)	Duration in minutes
	Latitude (N)	Longitude (E)		
1	27°17' 24.36"	95°48'54.76"	385	10 min
2	27°17' 24.36"	95°48'54.76"	385	8 min
3	27°17' 25.40"	95°48'56.23"	376	15 min
4	27°17' 25.40"	95°48'56.23"	376	5 min
5	27°17' 37.09"	95°48'66.39"	359	8 min
6	27°17' 40.12"	95°48'66.30"	357	8 min
7	27°17' 38.54"	95°48'71.39"	345	10 min
8	27°17' 38.54"	95°48'71.39"	345	10 min

Gibbon sightings were recorded mainly during the early hours from 0600 hours to 1000 hours and from 1600 hours till the sunset. Most of these sightings were just after sunrise between 0600 hours and 0800 hours. Generally, there were no gibbon sightings during the period from 1000 hours and 1400 hours.

▪ **Saleki Proposed Reserve Forest:** Hoolock gibbon population survey was mostly conducted in the buffer zone areas of the reserve forest. Some studies were also done in the core zone. Gibbons calls were recorded from two different locations in the tropical evergreen forest of the reserve forest. The occurrence of Assamese macaque was also recorded in the study area and perhaps is in sympatric relation with Gibbons. The habitats in Saleki Reserve Forest were found fragmented and adjoining with number of tea estates.

Table 3.3: Gibbon call count from Saleki PRF

S. No.	Location (GPS)		Altitude (m)	Duration in minutes
	Latitude (N)	Longitude (E)		
1	27° 17' 34.36"	95° 48' 54.76	279	12 min
2	27° 17' 41.47"	95° 48' 53.07	273	9 min

▪ **Tirap Reserve Forest:** A total of seven individuals were sighted in three groups in different locations in Tirap Reserve Forest. During the survey, a total of 21 km of transects were covered in different parts of the reserve forest and Hoolock Gibbons were found within an altitudinal range of 100–200 m. Of the three groups sighted directly, sighting time of one group was 0815 hours; another group was at 0940 hours and the third group was 0930 hours on different days. Gibbon calls of these groups were also recorded and average duration was 5 minutes; calls ranging from 1 to 5 minutes.

Table 3.4: Sighting of Hoolock Gibbon in Tirap RF

SN	Location (GPS point)		Altitude (m)	Adult male	Adult female	Infant/ unidentifed	Total
	Latitude (N)	Longitude (E)					
1	27° 21' 28.21"	95° 54' 52.07"	194	1	1	-	2
2	27° 21' 57.90"	95° 58' 03.70"	171	1	1	1	3
3	27° 21' 41.27"	95° 21' 53.03"	245	1	1	-	2

▪ **Dalai Reserve Forest:** The area was mostly inaccessible due to dense vegetation and steep hilly terrain. In some forest patches, however, there were signs of high disturbance. Twenty two kilometers of transects were laid and walked to know the presence of Hoolock Gibbon in three different areas of Dalai Reserve Forest. In these forest areas, no evidence of presence of gibbons was found. Survey was conducted in the morning time from 0600 hours to 1300hours and then in the evening time from 1600 hours until the end of sunset. No gibbon sightings were recorded in this area. There were signs of heavy anthropogenic

pressure in the reserve forest near Makum coal mining sites of Lekhapani Reserve Forest. Local people reported the occurrence of Hoolock gibbons in Lekhapani Reserve Forest, but neither direct sightings of gibbons nor any indirect evidences or call sound were noticed.

3.2.3 Present Status

Based on the sighting record, two groups of two individuals each and third group of three individuals were located in Tirap Reserve Forest. In two groups adult male and female both were sighted, whereas in the third group, there were one adult male and female along with their infant.

Anthropogenic pressure was recorded in the reserve forests near Makum coal mining sites. Evidence of hunting and poaching were recorded in all six surveyed forest areas; there was no timber logging and agricultural activities. Hunting, illegal fishing and trapping of wild animals by local inhabitants, particularly the Naga tribe for bush meat and their body parts, was very common. Livestock grazing and human settlement were also recorded in and around these reserve forests. Encroachment in forest land for the commercial cultivation of tea, orange and ginger was quite evident in the areas, which is a serious threat to the gibbon population as it reduces total available quality habitat and fragmenting the forests. Loggings of timber and bamboo forest were also posing a serious threat for population of Hoolock gibbon in the study area.

Impacts of forest fragmentation on Hoolock Gibbon

Forest fragmentation will have numerous effects on Hoolock Gibbon. Small populations of gibbon dependent on irregular resources are highly vulnerable to changes in locality factor attributes or random fluctuations in the environment. They prefer sweet and juicy fruits, because of their simple digestive system. Apart from fruits they take leaves, young stems, flower buds, flowers, insects as well as climbers of upper canopy level for their food. Due to the seasonal availability of food, their movement in search of food in different seasons may vary up to several kilometers and are thus expected to be more seriously affected by habitat fragmentation. Any obstacle in their path like mining activity, habitations and roads/railways affects their movements, due to which the human-gibbon conflict arises.

3.3 Leopard

3.3.1 Survey Methods

- **Pugmark of leopard:** Leopards are predominantly solitary (except when mating or with offspring) and are capable climbers, leaving scratch marks on trees while climbing. Leopards walks in an alternating gait; zig-zag pattern when walking normally and leaves a rounded but asymmetric (especially hind foot) pugmark with a metacarpal pad or heel pad that has a trilobate posterior edge (three lobes or double indentation) and is often distinctly bilobate on the leading edge of metacarpal, particularly on the hind paw (Fig. 3.6).

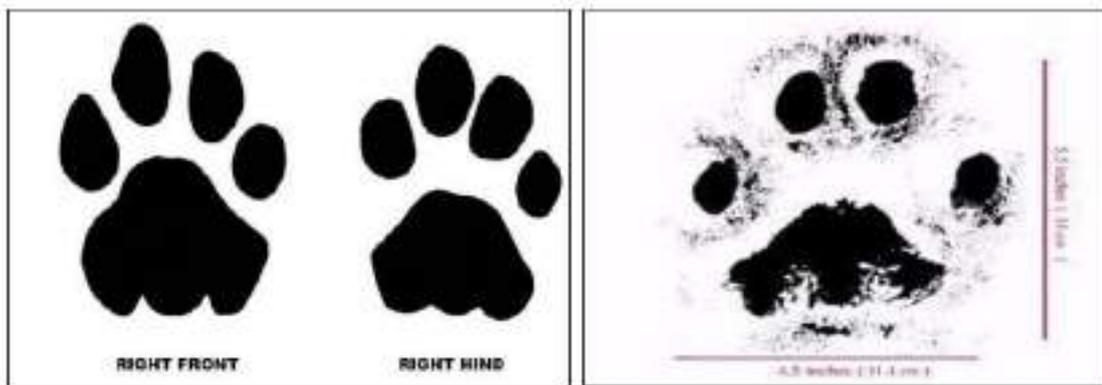


Fig. 3.6. Pugmark of leopard

The measurement of leopard pugmark is one of the most important tools used to study variations in individuals through measurement of Total length, Total width, and pad width of leopard pugmark. Identifying the species that deposited the faeces is a convincing indirect method as faeces are also long lived, especially in areas with little rain and minimal insect activity. Faeces may be solitary or in clumps typically, left on a shape pile or within a metre of a scrape but along or next to a trail. Scats of felid like leopard are often visible and easy to find large sample per unit effort. For estimation of population density of leopard in the study, line transects, trail walking method and camera trapping were used. The study area was divided into grids of 4x4 km and signs for presence of leopard were extensively searched. Leopard sign types were recorded using GPS (geo-coordinates) and additional field measurements to characterize the site and same were later added in GIS environment.

- **Camera trapping:** Camera-traps (self-activating cameras placed close to a bait or other attractant or on a frequently used path) were used to detect presence-

absence of species or to collect an index of abundance to record the presence of leopards. Camera trapping has been an excellent method for determining the population and status of felids in forest areas that are difficult to access. Carbone et al., (2001) demonstrated the method with theoretical foundations in capture-recapture sampling studies that estimated the densities of cryptic animals like tigers using cameras and analyzing the result using software programme CAPTURE. Specific sites for camera trapping such as walking trails, water bodies were selected and cameras were placed on trees at a height of 1-2m. The cameras were active for the whole study period with a 5 seconds gap between two consecutive photographs.

3.3.2 Survey Results

From July to October 2016, extensive surveys in Tipong, Tirap, Dalai, Dirak RF and Saleki PRF and were conducted and direct and indirect evidences were collected to assess the status and distribution of leopard. Local people were also interviewed to know occurrence of leopard in various fringe areas. In order to assess the awareness of local people on mammalian diversity in the study area and to verify it with camera trapping results, interviews and informal discussions were conducted with local people in 5 villages viz; Tipong colliery, Lekhapani, Lalpahar Sumi village, Hollong Pathar and Jagun Forest village, all residing in and around the reserve forests. The interviews were conducted in about 38 households which included *Gaonburas* (village heads), farmers, livestock herders, former hunters, wildlife guards and tracking guides. The respondents were shown photographs and drawings of the mammalian species and their knowledge on species occurrence and distribution were recorded. We focused on mainly leopards and conducted interviews and informal discussions about leopards. The respondents mentioned about killing of livestock by leopard in Dalai, Tipong and Tirap areas during August and September months.

Besides, camera traps were used in different strategic locations for photo-capture of leopards. A combined trapping effort of an average of 21 trap nights in different Reserve Forests (July–October, 2016) was done. During the transect survey, no direct evidence or presence of leopards and other felid species in the study area were observed. Extensive field work was also carried out in walking

trails and near water bodies to collect information on leopards; however no such evidence was found. Trees were also observed for claw marks of leopards but no signs were found. Camera traps were set for photo-capturing of wild animals, but except a few ungulates and civets, no photograph of leopards could be captured. Based on the survey work and camera trap results, it can be concluded that there might be a very small population of leopard and to know the exact population size more detailed study is required.

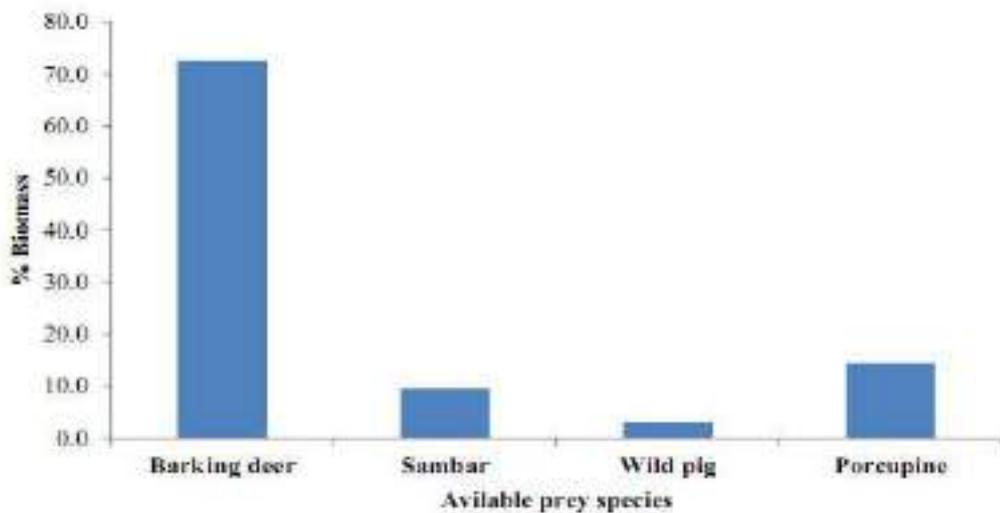


Fig. 3.7. Prey biomass available for leopards in intensive study area

3.3.3 Present Status

The relative significance of wild ungulates in the study area was calculated using a regression model that related prey biomass and leopard density to estimate the ecological carrying capacity of the forested area. A total of 15 transects were walked, with the lengths of approximately 2.0 km each. All transects were walked up to three times during the sampling period covering a total length of 90 km. A total of 203 indirect signs (hoof mark and pellets) were recorded for four different prey species (barking deer -169, sambar- 3, wild pig- 4, porcupine-27) in transect. Higher encounter rate of barking deer were reported as compared to other prey species which suggests that the small bodied barking deer are more resilient to hunting pressure. The estimated unit weight of the sambar was 120 kg, barking deer was 15 kg, wild pig 30 kg and porcupine was 18 kg in the study area. These unit weights are representing the actual population structure for each prey species in the study area. Based on prey sign encounter rate, the

available prey biomass was calculated as 37.2 kg/km. Based on Carbone and Gittleman's (2002) model, it was estimated that available prey biomass present in the forest areas, can support about 3-4 leopards in the study area. However, based on the reports published in the various local news papers on human-leopard conflict and the records of local forest division, the presence of more leopards in the study area covering both forest and non forest seems to be more likely and reasonable. Further, in such a fragmented landscape leopard is likely to develop avoidance behavior and therefore sighting becomes more difficult.

Leopard is an endangered species in India. It has wide distribution and its habitat is continuously encroached upon and degraded by the human beings. In Tipong, Tirap, Dalai, Lekhapani RF, and Saleki PRF forests are highly fragmented and interspersed with due to human interventions including shifting cultivation, mining activities (both legal and illegal), agriculture etc. Leopard seems to have developed avoidance behavior and consequently, the conservation efforts for the leopard are adversely affected.

3.4 Avifauna

3.4.1 Survey Methods

The bird population was recorded using the belt transect method (Cunningham et al., 2006). During transect walk, the observer recorded data on the sightings of bird species, number of individuals sighted and perpendicular distance from the line at which the species was sighted. Only those observations lying within 20m of either side of the transect line were recorded. The survey was conducted during the morning (between 07:00–09:00 hours) or evening time (between 16:00-18:00 hours) when there is maximum bird activity (Simons et al., 2006). According to Sutherland (2006), point count is the most efficient method of estimating avian density. This method entails the observers remaining at one point for a fixed time and recording the birds seen by the observers. Distances were recorded in terms of concentric zones around the point (50 m, 100 m) up to some limit beyond which the birds are not identifiable.

3.4.2 Survey Results

During the present study a total of 168 bird species belonging to 50 families and 106 genera were recorded. The maximum species were recorded from

Muscicapidae family (n=15), known as Old World flycatchers, followed by Columbidae, Scolopacidae, Picidae, Cuculidae, Corvidae, Pycnonotidae, Accipitridae, Nectariniidae, Ardeidae, Alcedinidae, Campephagidae, Dicruridae, Motacillidae, Psittacidae, Strigidae, Cisticolidae, Estrildidae, Saturnidae and Turdidae families. Twenty seven families were represented by less than two species each as recorded during the study period. Species wise distribution of 168 species is given below in the graph (Annexure-I). These species are recorded mainly in Tipong, Tirap, Dalai, Lekhapani, Makumpani RF and Saleki PRF.

Muscicapidae family, known as Old World flycatchers, are forest birds and are mainly small arboreal insectivores. The second dominant family was Columbidae which represents Pigeons and doves. Other dominant family was Scolopacidae which represents- Snipes and sandpipers.

3.4.3 Present Status

In Tipong, Tirap, Lekhapani, Makumpani RF, Saleki and Dalai PRF, there are many conservation problems, which might be adversely affecting overall biodiversity including avian fauna. Habitat destruction and modification is the major and irreversible threat. Another most important threat is unsustainable exploitation of natural resources. This includes illegal felling, firewood collection, poaching etc. Disturbance to birds in the form of trapping and poaching are seen in most of the sites. Expansion of agricultural fields and degradation of natural vegetation along with slash-and-burn (jhuming) cultivation, excessive firewood collection are some other problem which is also of major concern.

Chapter 4**Wildlife Conservation issues
and Strategies**

Regional wild Life plan provides the appropriate frame work and road map for wildlife conservation of a given region. The objectives of the management are focused on the key species of the region, namely Asian Elephant, Hoolock Gibbon, Leopard and avifauna. The objectives include:

- To protect, conserve and improve the habitat attributes for Hoolock Gibbon, Leopard, Asian Elephant and other keystone species
- To restore and maintain habitat integrity for sustaining floral and faunal diversity.
- To create mass awareness and draw public attention and support for fulfillment of the above objectives.

The various problems and issues pertaining to wildlife conservation that was observed during field visit, literature survey, and in consultation with people are summarized below along with their strategies:

4.1 Habitat Management Issues**4.1.1 Fragmentation and Habitat Degradation**

Makum coalfield area falls in biodiversity rich tropical evergreen and semi-evergreen forests of upper Assam, which is also form a part of Dehing-Patkai Elephant reserve. The soil quality of the study area is found quite good which is one of the reasons for the area to have historically supported substantially good forest cover. Even after considerable amount of deforestation and forest degradation over the last couple of centuries, the study area (10 km buffer area of

Makum coal field) is having 52% forest cover, 33.5% of which comes under moderately dense forests followed by open forest (14.5%) and dense forests (4.3%). The ecosystem diversity of the area still seems to be good and serve as a natural refuge for a range of biodiversity. However, most part of the study area, forest fringe areas in particular, were found going under tremendous habitat degradation process resulting forest fragmentation. Namphuk RF is having 88.1% of its area coming under land uses other than forests followed by Upper Dihing RF (E) (86.1 %), Namphai RF (75.1 %), Paharpur RF (68.1 %), Upper Dihing RF (W) (37.6 %) and Saleki RF (17%). As far as open forest is concerned Saleki PRF and Paharpur RF with 35.2% and 26.5% area respectively are the most degraded areas (Fig. 4.1).

The main reason of forest fragmentation in the study area are authorized and unauthorized mining, extension of tea gardens, population growth, shifting cultivation, illegal felling, logging etc. Once a continuous landscape dominated by dense forest cover, the present study area was an important elephant habitat and also home of other 'resident' wildlife including Hoolock Gibbon, deer, Capped langur, Wild boar, Indian flying fox, etc. The reduction of effective habitat, alteration of micro climate and isolation of wild lives are some of the immediate outcome of forest fragmentation. Changes in the micro climate can lead to changes in the radiation fluxes disrupting the energy balances of the habitat, wind patterns and hydrological cycle. Tremendous habitat fragmentations coupled with other anthropogenic pressures, however, force the wildlife to frequently come out of their habitat resulting human-animal conflict in this region. The animals either adopts in a fragmented habitat or forced to migrate to the newer locations with predictable adverse implications or perish in case of new mining ventures like the proposed Lekhapani OCP.

▪ **Connecting Fragmented Areas**

The fundamental aim of conservation is to manage a wildlife habitat in an ecologically sensible way so as to allow free movements of animals. Traditional movement of large animals especially elephant get tremendously hampered by fragmentation. Small mammals, however, favours forested landscapes and do not

venture into open farmlands. Usually they use strips of wooded habitat to traverse agricultural landscapes (Merriam 1988).

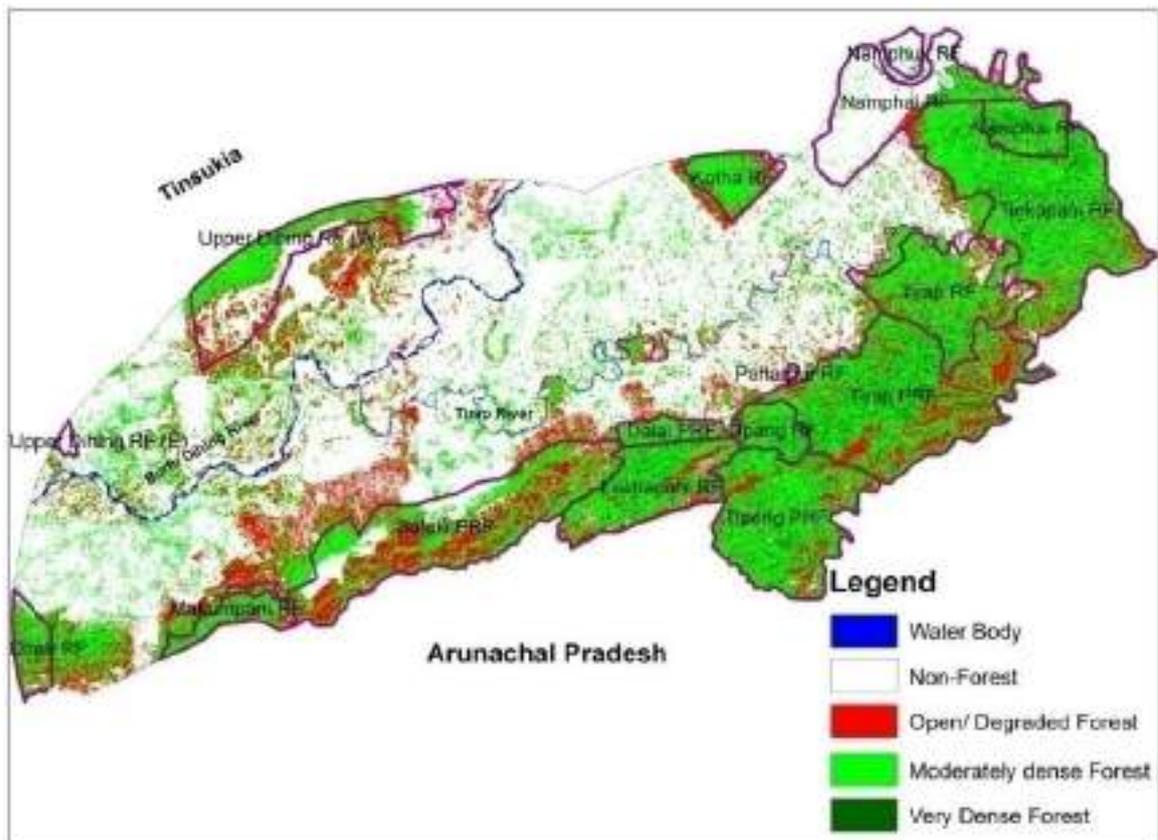


Fig. 4.1. Status of degradation of habitat in different RF/PRF

To ensure the unaffected dispersal and free home range movements of animal's, ecologists advocate **the idea of linking the fragmented areas of natural ecosystem with corridors or strips of protected land**. Fragmented ecosystems may be best protected corridors if they are surrounded by semi-natural ecosystems where a moderate amount of the natural biodiversity is maintained. Given the choice between having two natural ecosystems separated by a corridor through a highly disturbed forest land (Fig. 4.2) and two patches separated by a wide corridor of semi-natural ecosystems, the latter would help in better protecting the wild life movement under most circumstances (Hunter, 1997).

Considering the recent raise in the process of habitat fragmentation due to coal mining and allied activities the present home range of the elephants seems to be insufficient. However, to reduce the impact of mining it is proposed to undertake gap plantation with indigenous fodder species around the mine lease

area to protect the wild life habitat. It is also suggested that **waste should be dumped in such a way that the dumps should not create further obstruction for smooth movement of wildlife. It is recommended that the barrier created by dumping of 'over burden' should offer the opportunity of free movement by animals beyond visual contact of human beings, dumping should ensure the wild life movement passage to other parts of their home range.** Once the barrier is created, no activity should be allowed to take place within. Such simple solutions will ensure survival of the elephant movement and continued use by other wild animals and discourage fragmentation of important wildlife holding areas and blocking of migratory paths.

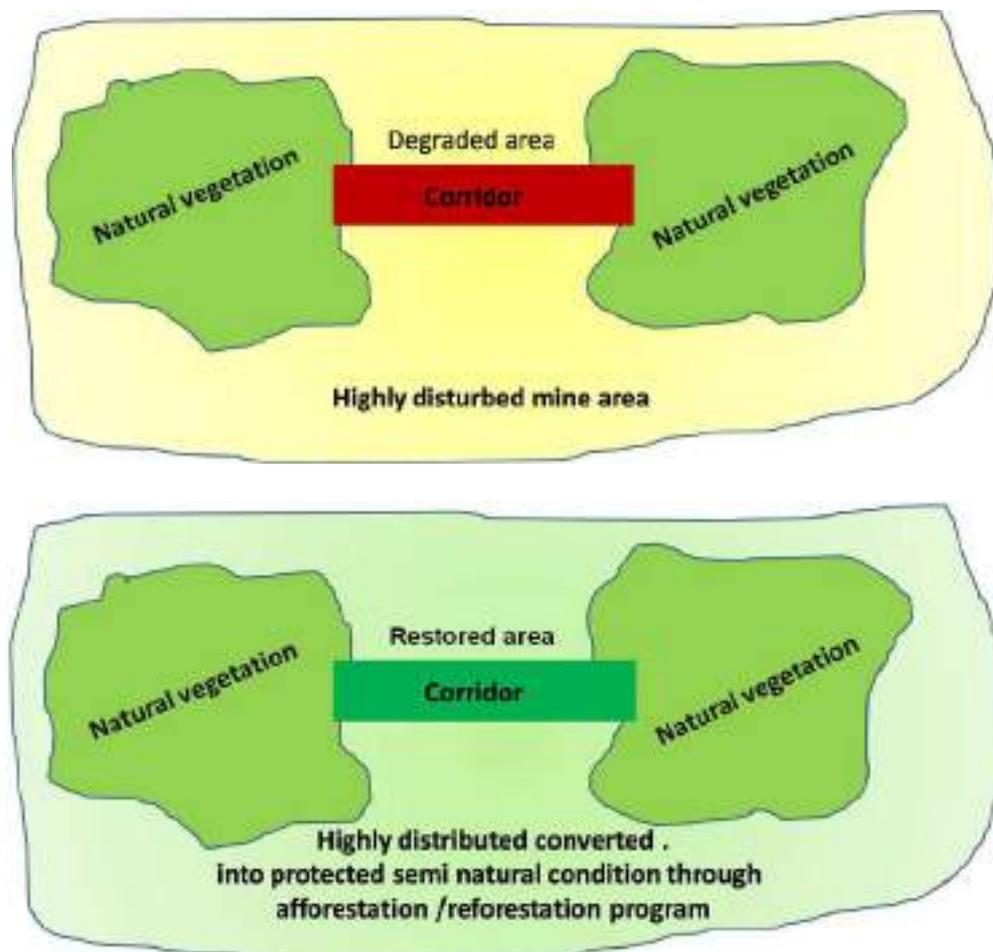


Fig.4.2. Two scenario of existing and proposed model showing development of corridor activity to restore the mined area through remediation

The restoration activities like afforestation/ reforestation programme in the fragmented areas by planting suitable native species especially food, fodder and shelter species (as suggested in the Biodiversity Management

Plan) may be started immediately and the protection of forest area by stopping or retarding illegal felling, grazing and conversion of natural forests for other purposes may be ensured. The broad framework for afforestation/reforestation programme is already given in the Biodiversity Management Plan, however, for further specification and identification of appropriate locations a rapid assessment for identifying the potential sites of the habitat that need to be forested in different parts of Digboi forest division may be conducted and the suitable plant species prevalent in the area may be planted. The planting materials may be prepared by the NEC in its own nursery or may be purchased from JFMCs, other reputed nurseries. The species which may be planted to improve the habitat are listed in Annexure-IX. Mass awareness programme among communities, regular patrolling, fragment monitoring programmes are some of the other remedial measures in this regard.

The natural regeneration of some of the native species was found hampered as evident from the less number of seedlings and saplings of species in many of the reserve forests especially nearby the coal mine and forests fringe areas. The dust from the coal mines and transports were also causing problems as it gets deposited on the nearby vegetation thereby retarding their growth, which may affect the reproduction.

Some of the important native species which should be used for afforestation/reforestation/plantation programme to improve the quality of habitats are given in Annexure-IX.

4.1.2 Illegal Felling and Firewood Collection

Illegal felling is primarily because of increased human population; forests are cleared to create more space for shifting as well as settled agriculture. The lowland forests are particularly affected by illegal felling which are evident in some of the protected areas too. No straight forward statistics is available as far as illegal felling is concerned; however in the present study area incidents of illegal felling seems to be very high.

Many of the study sites were found under severe pressure from the local people as they collect firewood from the adjacent forests on almost day to day basis. In many instances this collection goes beyond subsistence level which

hampers the cause of ecological conservation and result unremitting habitat degradation. The same was echoed by various participants in the stakeholder meeting. The SDO, Margherita informed that illegal felling is a serious issue in the region and offenders do the felling by using not only axes and even also by using the chain saws. It is suggested that **provisions for alternate energy sources for the local communities should be made and plantation of fuelwood species in homesteads and agriculture lands as well as the use of alternate energy sources should be promoted to reduce the illegal feeling and lopping of forests for fuel wood. To check the illegal felling watch and ward should be increased in the specific hotspot areas and felling camps should be established in specific areas.** Awareness programme to promote alternate energy sources and wildlife conservation should also be organized regularly. NEC may provide financial support to the forest department to deploy additional manpower from project affected people to increase watch and ward in the forest.

4.1.3 Shifting Cultivation

Shifting cultivation is the most common type of agricultural practiced in North East India, which has become a serious environmental issue. Shifting cultivation is prevailing in the southern part of the study area especially towards the Tipong colliery and proposed Lekhapani OCP. Shifting cultivation becomes unsustainable when practiced in a short cycle and results deforestation and degradation of forests. There are a few villages inhabited by Naga tribes who are traditionally practicing shifting cultivation over the years. Some time forest fire also occurs due to the burning of forest for preparation of new *jhum* land. **Mass awareness programme among the tribes regarding ill effect of shifting cultivation along with popularization of feasible alternative livelihood options should be encouraged which would ultimately ensure quality habitat for the wild life in this part of the area.** Shifting cultivation with long cycle (10-15 years) and Terrace cultivation may be encouraged in these localities for preventing degradation from short cycle *jhum* cultivation. Some other alternative means of livelihood options should also be encouraged.

4.1.4 Invasive Plants

The fringe areas of forests, even some parts of open and degraded forests

were found to be invaded by number of invasive species viz. *Mikania micrantha*, *Lantana camara*, *Chromolaena odorata*, *Eichhornia crassipes*, *Alternanthera philoxeroides*, *Bidens pilosa*, *Hedyotis auricularia*, *Hyptis suaveolens*, *Heliotropium strigosum*, *Mimosa pudica*, *Triumfetta rhomboidea*, *Urena lobata*. These alien species spread very fast and encroach the area of native species which results in a loss of native floral diversity. Invasive alien species also harms the regeneration process of important palatable species through competition for resources and through secretion of allelochemicals which results in scarcity of food and fodders in a forest area. Severe invasion of alien species was observed specifically in Selaki, Tirap, Namphai and Tinkopani forest area.

Consultation with local people also reveals that the number of invasives and their extent are increasing day by day which is a matter of concern for the overall health of the forests ecosystem as presence of invasive species actually indicates increasing disturbance in the system. It is recommended that these **invasive weeds should be eradicated and removed from the natural forests in a phased manner by mechanical or manual uprooting followed by immediate sowing of grasses. For uniform growth of grass and to prevent seeds being washed away, grass seed pellets can be sown. Pellets can be made by mixing powdered clay and farm yard manure in a 6:1 ratio and adding grass seeds into it. The mixture should be made into balls of 2 cm dia and Sun dried in summer to be sown soon after eradication of invasive species.** During the stakeholder meeting and baseline survey it was observed that local communities are not aware about the ecological impacts of invasive plant species. Communities should be sensitized about the ill effects of these invasives through a series of awareness programmes.

Eradication should be done by mechanical means and well before formation of seed so that the removed material can be used for mulching on OB dump areas. In addition, the non-woody material which cannot be used as mulch may be used in vermi-composting for use in the nursery. Possibilities of briquetting of woody material of the invasive species by mixing coal dust can be thought of as a source of revenue for the local people. In the eradication process of the invasive species care should be taken to replenish the native food plant sources of wildlife because

many of the invasive species have now become the food source for some wild animals.

4.1.5 Encroachment

Encroachment of forest area was observed in many places of study area. Most part of Paharpur reserved forest, for instance, is almost totally converted into tea gardens which are gradually extending towards the Tirap PRF.

Appropriate administrative and legal measures should be taken by Forest department so that further encroachment activities can be stopped. Alternate livelihood generation programme along with mass awareness programme should be taken for the improvement of the situation. The forest boundary should be clearly demarcated by sign boards, stone pillars, fencing etc. and periodic monitoring programmes through modern techniques like remote sensing, GIS and GPS based ground survey should be done. **A Wildlife Task Force (WTF) may be constituted by the Forest Department with close association of NEC and participation of the local people to combat such problems.**

4.1.6 Cattle Grazing

One of the main sources of income of villages of the study area is cattle rearing, many of the households have cattle and milk is sold in nearby towns. Due to the shortage of fodder in agriculture field or community lands, these cattle enter the forest area and graze over there which results in reduction of quality and quantity of both as well as vegetation cover and ultimately reduces the ability of the area to support herbivore wildlife.

Regular Training programme on fodder cultivation with active collaboration with National level institutes like Indian Institute of Fodder Research (Jhansi), ICAR Regional Centers, agriculture universities, research organizations etc may be conducted to promote and enhance the production of fodder species in agriculture or community lands. The State Animal Husbandry Department may be roped in for monitoring the cattle diseases and vaccination of all the cattle to avoid spread to the wild. The villagers may be sensitized on this matter on regular basis.

4.1.7 Unauthorized Mining

During the field visit it was found that a number of unauthorized mining and subsequent smuggling of coal are going on in the study areas especially in the Tinkupani, Lekhapani and Seleki reserve forests, which need to be addressed. People clear the forest vegetation for making path and site clearing for these mining. These unauthorized mining inside the reserve forest, in dense and moderately dense forest patches results in further fragmentation which is of great ecological consequences. **Action should be taken to tackle this unauthorized mining through strengthening of the law and order machinery and creating awareness among the local people.**

4.1.8 Degradation of Water Sources

A number of streams and rivulets are originating from the hilly terrains of these reserve forests. In other words, these reserve forests falling within the study area function as catchments for all the streams, rivers or other water bodies. Some of the rivulets and rivers that pass through coal fields are: Namdang river (flowing besides Tikak OCP and Baragolai colliery, Ledo pani nallah flowing besides Ledo OCP, Lekhapani and Tikak river flowing besides proposed Lekhapani OCP and Tipong river flowing besides Tipong underground mines. The mining activities at Tikak, Ledo and Baragolai colliery have been reported to have affected a number of first and second order streams in the area feeding the Ledopani and Namdang rivers. **Protection of the rest of the streams especially the remaining Ledopani and Namdang rivers and Lekahpani River** in case of operation of proposed Lekhapani OCP is important for watershed protection and protection of natural aquatic systems available around the mines of NEC.

Creation of Water bodies: As mentioned above there are few water bodies created during the mining and backfilling exercises but these water bodies are insufficient to arrest the mine discharge and rain fall water. Therefore it is recommended that **more water bodies should be created** near to the natural water streams. **Sufficient number of salt licks should be placed around the water holes, which will supplement the nutritional requirements of the wild animals.** These measures have to be periodically evaluated and reported to the concerned authority for further improvement.

4.1.9 Soil Erosion and Related Issues

During the field visit it was observed that in most of the cases, the OB dump was not managed properly. The OB dumps were kept exposed for a long time which would result in heavy erosion during rainy season. The loose and sandy texture of coal OB dumps does not retain water for longer time and also becomes prone to soil erosion by rainwater which finally flows as runoff. The study area comes under heavy rain fall zone with average annual rainfall of above 2400 mm (as discussed in the previous chapters) and therefore the risk of severe soil erosion becomes even more. During the stakeholders meeting cum workshop and even during field survey the issue was reported by the project affected people around the mining sites. The effects of erosion are quite apparent in many of the nearby villages and it was observed that most of the low lying areas and streams are blocked by eroded OB dump soil. Erosion also results in release of acidic and toxic trace elements leached from coal and OB dumps which subsequently reaches streams and nearby agriculture fields. Soil erosion also results in tremendous increase of suspended and dissolved solid in the nearby water bodies which ultimately affect the aquatic flora and fauna by reducing opaqueness, changing the temperature regime and so and so forth.



Fig. 4.3 Uncovered OB dumps and resulting soil erosion

Mulching with shrubs, especially weeds and invasive plants removed from the nearby degraded habitat and forests may be done to minimize the impact of rain on loose soil and subsequent runoff and soil erosion. The added advantage of these mulching is that after decomposition, this material will mix up with soil and increase the organic matter content which again will make the soil porous, and act as a good soil binder, thereby reducing soil erosion. Moisture is the major component of the soil in relation to plant growth which not only provides water but also works as solvent for salts present in the soil, an essential component for

plant growth. Mulching conserves moisture, reduces the need for frequent watering, helps in better root growth, increases the infiltration of water, improves the water holding capacity of the soil and helps in increased microbial activity in the soil. The increased organic matter provides an ideal environment for growth of earthworms and other beneficial soil organisms. The mulching should particularly be done on the slopes which are subject to more soil erosion.

It is suggested that a detailed study for the soil erosion due to mining activities in the Makun Coalfield area should be conducted and mapping and prioritization of the soil erosion prone areas should be done. Site specific remedial measures like check dams, Rock fill dams, gully plugging, planting of native grass species etc should be implemented.

4.2 Wildlife Related Issues

4.2.1 Poaching

Poaching is a major problem for wildlife protection in North East Indian forests and the reason behind is manifold. Some of them are lack of awareness among the tribal population, complex topography, inaccessible areas, and cultural background. The present study area is inhabited by many tribes is not an exception either. As observed, most of the poaching is done for meat and other commercial purposes.

Poaching areas should be identified and a checklist of habitual offenders should be prepared. To check the poaching watch and ward should be increased in the specific hotspot areas and anti poaching camps should be established in specific areas for regular patrolling. Mass awareness programme to promote wildlife conservation should be organized regularly. NEC may provide financial support to the forest department for deployment of additional manpower. **Opening of outlet for low cost alternative animal protein like poultry and piggery** are some of the remedial measures in this regard.

4.2.2 Elephant Corridor

Elephants require large area for its survival and move across forests in search of food & fodder and also for breeding purpose. The core habitat of elephant was found divided into fragments in the present study area. The

fragmented patches of forests were surrounded by a matrix of non-forests land uses dominated by agriculture, human habitation, tea gardens etc. This has made migration/movement of elephant difficult in the study area.

Generally, wildlife corridors are created and managed to counter this problem of fragmentation in a landscape. As discussed in the previous chapter, Wildlife Trust of India (WTI, 2017) has identified 3 potential elephant corridors in the Digboi Forest Division and all of these elephant corridors fall beyond the 10km radius of Makum coal fields. Two corridors namely Upper Dihing East - Upper Dihing West Block Corridor at Golai-Powai and Upper Dihing East- Upper Dihing West Block corridor at Bogapani connect the east and west block of Upper Dihing Reserve Forest pass through the tea garden, paddy fields, roads, railway line and habitations. Kotha-Burhi Dihing corridor connects Kotha RF of Digboi Forest Division to Burhi Dihing RF of Doomdooma Forest Division. The direct impact of proposed and existing mining activities on these corridors seems to be limited. However, the corridors should be managed and restored in such a way that elephants do not stay there for long and only use the corridor as connecting routes to the adjoining forests. If there are obstacles in these corridors, elephant may choose another path for their movement and a situation of human animal conflict may arise. These corridors should be managed properly to avoid the chances of elephant straying into the coalfield areas from nearby forests.

4.2.3 Monitoring of Wildlife Population

The study area is situated adjacent to the Assam-Arunachal Border and the forest patches, in most of the areas, is part of a continuous landscape. The movement of wildlife, therefore takes place across the border. The estimation of population structure, abundance, distribution and monitoring of wildlife hence require joint approaches. Coordination among top officials along with ground staff is essential for effective estimation, monitoring and overall management of wild lives in this landscape. The forest in the study site is comes under two states Assam and Arunachal Pradesh, the estimation of population structure, abundance, distribution and monitoring of wildlife needed joint approaches of these state but the coordination between these states is very poor. Another main reason behind the lack of monitoring is insurgency of local militant groups inside the forest area.

Joint action teams comprising of members from Assam and Arunachal forest department and representatives of local fringe village communities may be constituted to monitor the wildlife population across the interstate border. The modern methodologies like remote sensing; Radio-transmitters, Camera traps, pugmark analysis, molecular marking etc. may be used for wildlife population monitoring. The training on census, management, use of modern instruments and monitoring techniques of wildlife must be provided to joint action teams and front line staffs of forest department by the National agencies like Wildlife Institute of India, Wildlife Trust of India, State wildlife cells, Universities etc.

4.2.4 Emergency Wildlife Management

Emergency Wildlife Management is an important component of any wildlife management plan. Makum coalfield is located within forest areas and since these forest areas are in continuation with other biodiversity rich areas, emergence of small and large wildlife in the coalfield area cannot be ruled out. Although the survey work revealed that there is no evidence of the presence of elephants continuously residing in the whole study area but the elephants may pass through these forests during their migration and the possibilities of elephant straying into the coalfield area from nearby forests of Digboi Forest Division cannot be ruled out. NEC Management should be having an emergency backup plan to face such crisis and any drifted wild animal whether it is **elephant, leopard or gibbon should effectively be rescued without harming the animal. This emergency backup plan should be prepared** in consultation with the Digboi Forest Division and the wildlife wing of local forest department. **An emergency crisis management team should also be constituted** by the NEC management and this team should be able to perform the following task:

- Timely inform forest, veterinary and district administration in case wildlives stray out into adjacent villages or mining areas.
- It should prevent the killing of wildlife (especially Leopard and snakes) by villagers/labourers/staff until the stranded wildlife is rescued.
- There should be a designated wildlife rescue vehicle team along with cages with this team for the capturing of wild animals straying into coalfield areas

or adjacent villages and subsequent release of these animals into other wildlife rich areas.

- Forest department may organize mock training drills to the proposed emergency crisis team to test their efficacy to deal with the wild animal straying situations.

4.2.5 Wildlife Health Monitoring

Vaccination of the grazing cattle is very much important to prevent any disease in cattle and subsequent transmission to the wild animals. Regular vaccination camps with the help of animal husbandry department should be organized in the forest fringe villages.

4.2.6 Rehabilitation of Rescued/Injured Animals

The rehabilitation of rescued and injured animals should be done with immediate effect. The rescue procedure involves capture of severely injured/sick animal, handling them for investigations, temporary shelter for recovery and release at the same site of capture or another suitable site. The detailed procedures for Rescue and Rehabilitation of animals is mentioned in the IUCN and MoEF & CC guidelines. These have to be strictly followed and monitored. The forest department and wildlife wing are to be equipped with proper veterinary facilities. It is proposed that atleast one well equipped mobile veterinary unit should be stationed at Lekhapani or Jagun range. **Training on rescue and rehabilitation and post-mortem procedures may be imparted to the staff of joint action team and selected villagers/EDC members.** The veterinarians may also be given refresher training to update their knowledge on wildlife health monitoring.

4.2.7 Lack of Information on Wildlife

An up-to-date database on biodiversity, phytosociology, population structure, abundance, distribution of individual species of study site is required for planning and management of the concerned area. However, information available for the present study area is limited to the Working Plans of various periods and EIA/EMP Reports prepared for various projects of the NEC and Assam Electricity department. Most of these reports are confined to a list of species with no

information on the status and distribution, which are prerequisites for developing management strategies. The problem was attempted to be addressed by preliminary survey of selected flora and fauna and a baseline data was prepared for Makum Coal field area. However, as it was mentioned earlier also, a detailed study of each species is required to know the exact population status and their distribution. The entire area should be covered to record the floral and faunal diversity along with information on the associates, abundance status and distribution using appropriate techniques. Thus, long term projects encompassing various seasons should be started. Short term studies may be followed to fill the gaps. The modern techniques of radio transmitters, camera traps etc may be utilized for population studies and monitoring purpose of fauna. Geographical Information System aided by GPS technology would definitely help in this regard. The database should be updated periodically and on a regular basis.

4.3 Infrastructure and Manpower Related issues

4.3.1 Lack of Trained Manpower

The area including Reserve and Proposed Reserve forests in and around Makum Coalfields is managed under 4 Ranges under Digboi Forest Divisions. There is a shortage of frontline protection staffs in Digboi Forest Division. The total sanctioned post of frontline protection staff includes 55 Foresters and 77 Forest Guards, but there are 23 posts of foresters and 47 posts of forest guards laying vacant. It is clear from the table that during the year 2005 only 27 posts were vacant but the number of vacancies has since increased to 80. It is also clear from the table that the 4 forest ranges which are managing the area in and around Makum coalfield are having the minimum number of frontline staff as these ranges are not in the priority list of the forest department for wildlife protection. Most of the available staff is engaged in the protection work in Dehing-Patkai wildlife sanctuary and elephant reserve. Shortage of the protection staff is one of the major hurdle in protection and conservation of the wildlife and biodiversity of forest area and enforcement of forest laws in the protected areas.

More man power will be required to implement the suggested biodiversity and wildlife management programmes successfully. In addition, it is important to have more man power in the form of forest watchers/trackers on contract/daily

wage basis to assist the staff in protection and management. **It is recommended to have provisions for requisite number of trained forest staffs for the implementation of biodiversity management plan and regional wildlife plan up to the end of the project period.** The investment on man power, increasing their capacity to face new challenges and equipping them with infrastructural facilities may be done by NEC.

4.3.2 Infrastructure for Protection Staff

There are 12 beat offices in all four forest ranges. These offices are not sufficient to monitor and protect the whole area. At least 2 more field patrolling stations are suggested to be established at each range to ensure the presence of uniformed frontline staff in almost all the areas. At least one field station should be in the form of watch tower in each range. The forest department may decide the locations and can also change the required numbers of these field stations.

4.3.3 Maintenance of beat offices/field stations

It is important that adequate facilities should be provided in the beat offices and proposed field stations to assure continuous stay of the staff in these stations. Keeping in view, proper maintenance of beat offices and field stations are proposed.

4.3.4 Maintenance of Office and Residential Buildings at Range Office

It is recommended to renovate/ maintain the existing office and residential buildings in the all 4 Ranges. Range offices should be furnished with standard furniture for seating and also for storage of files.

4.3.5 Quarters for Staff (duplex) and Maintenance

Residential facilities need to be improved and it is proposed to construct eight new duplex quarters (2 in each Range) to accommodate the staff with family. Construction of these quarters should be completed in first two years of the project. Locations of these can be decided by the respective range officers.

4.3.6 Provision of Four Wheeler and Motor Bikes

It was observed during the field study and was also informed by the officials of forest department that the infrastructural facilities in the field are not good enough. As per the information provided by the range officers, there is only

one four wheeler (Jeep/bolero) available in each range office which are not in good condition. Vehicle of Lekhapni range is being used for many other purposes also. **All the Range Officers have to be provided with four-wheeler vehicles and the foresters with motor bikes. Frontline staff should be provided with GPS and cell phones** to facilitate better communication in case of emergencies.

4.3.7 Capacity Building of Protection Staff

- **Insurance of frontline staff:** There are chances of injuries and deaths in the forest areas while performing duties and there is no separate insurance cover for the daily wage workers or protection staff. It is suggested to insure the staff against accidents and injuries on field.
- **Regular training of protection staff: Capacity of the frontline staff should be enhanced by the means of trainings of field techniques, biodiversity management, GPS handling and legal aspects of various Forest Acts.** Assistance from reputed organisations like Rain Forest Research Institute, Jorhat may be taken for that. The staff could also be motivated by providing them with field kits consisting of sleeping bag, ruck sack, compass, first aid kit, field shoe etc. There may be provision of rewards and incentives for good performance for different level of staff of forest department as well as the common public.

4.4 Socio-economic and Other Management Issues

4.4.1 Participation of Stakeholder in Planning

Wild life management plan should include people's participation and views of people should be given adequate weightage as they are the biggest and the most important stake holders. Accordingly, informal interviews were taken during survey of the present work and finally a formal stakeholders meeting cum workshop was organized at Margherita on 15 March 2017. It was expressed by the participants of workshop that there is a lack co-ordination and conviction between North Eastern Coal field, and major stake holders (Forest Department and the people of the region).

It is therefore suggested that before formulation of any plan or performing any activities related to conservation, dumping site selection, new construction,

developmental and CSR activities etc. there should be a meeting/workshop involving local communities and various other stakeholders including forest department, conservationists, elected representatives of gram panchayats and subject matter experts. The views and requirement of people should be given due importance. To reduce this interaction gap it is suggested that the **regular (at least annual) stakeholder consultation meetings should be organized** at Margherita sponsored by the NEC. These meetings will help in building confidence and thereby help in proper implementation of wildlife management plan in this region. The activities should be ecologically, socially and culturally viable to the communities and adequate participation of locals should be ensured in implementation of such plan/activities with guidance from the forest department or outside personnel/agencies.

4.4.2 Dependence of People on Forest

For any Biodiversity and Wildlife management plans it is necessary to know the dependence of the fringe villages on the forests. In absence of which, it is very difficult to involve people in the implementation of such plans. No information on dependence of fringe population on forest is available for the present study area. It is therefore suggested that there should be a detailed study on dependency of fringe villages on forest. The work has to be entrusted to some Institute of repute that deals with social issues and the report should have feasible strategies for reducing the dependence with alternative livelihood possibilities.

4.4.3 Human Wildlife Conflict

Data on the human wildlife conflict in the present study area is not available with Digboi Forest Division. However, the cumulative data for whole division including Dehing-Patkai Wildlife Sanctuary and Dehing Patkai Elephant Reserve shows that atleast eight persons were killed, six persons injured and many hectares of agriculture crops of nearby villages destroyed by the wild animals during the last five years. During the survey it was found that there is very less number of watch towers, patrolling staff, sound creating instruments, tranquilizer etc. to keep the wildlife away from human habitat.

During the stakeholder consultation meeting it was stated by some of the participants that there are much more cases of human wildlife conflict than actually reported. There are incidences, which have not been reported and claims have not been made due to the meager amount of compensation and its cumbersome procedure.

Table 4.1 Human-wildlife conflict cases (deaths and injuries) in Digboi forest division during the last 5 years

Sl. No.	Year	No. of Wildlife conflict case reported	Remarks
1.	2012-13	7	5 deaths and 2 injuries
2.	2013-14	3	1 death and 2 injuries
3.	2014-15	5	details not available
4.	2015-16	6	details not available
5.	2016-17	4	2 deaths and 2 injuries

The following measures are suggested for dealing with human-wildlife conflict:

- Forest department should collect each and every information from the villages on the occurrence of any human wildlife conflict like crop or property damage, attack on human by wild animals, visit of wild animal without damage also as well as the current methods of avoidance of wildlife and their effectiveness.
- A corpus fund should be created specifically for the timely payment to the human wildlife conflict affected persons.
- Priority areas for the human wildlife conflict should be identified. These mitigation measures should be socially accepted as well as ecologically sound and should not alter or prevent normal movement pattern of wildlife and specially should not hamper the elephant corridors.
- It is suggested to organize consultative awareness workshops to formulate site specific strategies and implement in each forest fringe gram panchayat. Respective gram panchayats should be made responsible for the regular maintenance of the structures made for the conflict mitigation.

4.4.4 Lack of Awareness among Local People and Field Staff

The awareness among locals and even frontline staff of forest department and NEC pertaining to various components of biodiversity in the region including RET, endemic flora & fauna, invasive and exotic plant species, keystone species etc

are lacking. During the stakeholder meeting it was further emphasised by some of the experts and participants and suggested to arrange awareness programme. Awareness campaign with the help of conservation organizations like NGO, educational and research institutes and Forest Department should be carried out and literature in the form of pamphlet, poster and calendar, etc. should be generated and freely distributed among the local folks. The local people should be included and the medium of communication should be in local languages. It is better if the trainer/ resource person is selected from the community itself which will ensure free interaction among the people. These awareness programmes can be organized in every six month and on the occasion of special days like World Environment Day, Forestry Day, Biodiversity Day etc. in each gram panchayat and townships. Various GIS based maps indicating the location of critical habitats, hydrological units, catchment area, exact mining site and OB dumps should also be generated with the help from reputed experts/organizations.

4.5 Eco-Development

The number of settlements and enclosures within the surrounding areas bring a lot of pressure on the wildlife habitat. A socio-economic survey of villages and settlements may be done to assess their dependence on forest resources and to understand their needs. The village communities may be encouraged to have their own cattle grazing blocks and cultivation of fodder species. Various programmes may be initiated and funded by NEC. Alternative energy source, such as solar light or chulhas may be supplied to the villagers to reduce pressure on adjacent forests. More employment may be generated for the people in the surrounding areas.

Addressing local social issues and ensuring people's participation in the management activities is important in case of a wild life management plan. Efforts to mitigate issues related to livelihood options of the people subsequently reduce their dependence on the forest. People's participation and enhancement in their living standard by the process of eco-development also ensures support of the locals for conservation. Keeping in view of the benefits of eco-development, it is suggested to have the Eco-development Committees (EDC) in every gram panchayats in the study area. There are ten gram panchayats in the buffer zone of

the Makum coalfields, within 10 km radius, and they can be encouraged to form EDCs.

4.5.1 Formation of Eco-development Committees (EDCs)

One EDC at Gram Panchayat level is proposed to be formed in consultation with GP Chairmen and forest department. EDCs must include members from each hamlet and with proper representation of each community. The EDC members as well as other villagers should be briefed on the purpose of EDC formation and their respective role and responsibilities. The EDCs will work under direct supervision of the Forest Department.

4.5.2 Preparation of Micro Plans

Micro planning is a strategic empowering process that helps EDCs to learn more about themselves, their resources, issues and challenges, strength and weakness, and further to plan their own development and sustainable resource management. The EDCs are to prepare a micro-plan through a participatory process involving all the members, forest department, local NGOs and other stakeholders. The micro plan should be socially acceptable, have livelihood options, women empowerment and conforming to the existing rules and regulations. The dependence of the villagers on the natural resources, their socio-economic status and education level should be considered. Involvement of these EDCs in forest and wildlife protection, biodiversity conservation and mitigation of conflicts is also suggested.

4.5.3 Entry Point Activities

There is a tendency in villagers to expect immediate benefits from any of the programme and for the benefit to the community by addressing one of the most immediate demands of the people entry point activities are suggested. Start up funds or seed money for the initial support and for entry point activities can be provided by the NEC.

4.5.4 Capacity Building/Vocational Training for Villagers

It is important to make the villagers self sustainable through programmes under eco-development. Vocational training on various skilled based activities and entrepreneurship may be provided to the interested people. It is hoped that the

increased entrepreneurship, education and consequently employment opportunities coupled with extension programmes will lead to better awareness of biodiversity and wildlife and reduced pressure on natural resources, thus augmenting the cause of conservation.

The identified areas for creation of natural resource related employment opportunities, market availability and possible source of technology in Assam are given in Table 4.3. At least one training programme every six months can be organized with about 20 participants.

Table 4.3 Suggested micro enterprises based on local forest resources

S. No	Name of the Profile	Market availability	Source of Technology
1.	Bamboo handicraft making	Bamboo handicrafts are in great demand in the state as well as throughout the country. It can be adopted as cottage industry for substantial income.	RFRI, Jorhat
2.	Lac cultivation	Lac cultivation can also be introduced in this part of Assam. Market linkage can be identified for the same.	RFRI, Jorhat
3.	Mushroom collection and cultivation	Mushroom cultivation is increasing in the north eastern state. Canned products have good market potential though out the country.	RFRI, Jorhat
4.	Sericulture	Muga silk is a common practice in the state of Assam. With a minimal training any of the interested local can start muga silk cultivation. It also has very good market potential in the state.	CMERTI, Jorhat
5.	Epiculture	Honey is has great demand in India and abroad. The rural entrepreneurs can start a honey bee rearing unit as it has good marketability.	SBEC Guwahati
6.	Livestock based entrepreneurship	Piggery, fishery, hatchery based entrepreneurship may be developed.	Animal husbandry and fishery department
7.	Eco-Tourism	Makum coalfield area is surrounded by well known ecotourism spots like Namdapha TR, Dehing-Patkai ER, Tea gardens, Joypur Rainforests, etc. Coal mine visit also has a good ecotourism potential.	Tourism department, Govt. of Assam

8.	Medicinal plant cultivation	This is an era of herbal medication. Medicinal plant cultivation is having huge market potential in every place of country	RFRI, Jorhat
----	-----------------------------	--	--------------

Highlights of Species specific strategies

Elephant:

- Restoration of elephant population through conservation of the elephant's habitat and maintaining habitat connectivity by securing corridors.
- Management of human-elephant conflicts as part of an integrated land-use policy that recognizes elephants as economic and ecological assets from which local people should be benefited or at least should not be suffered.
- An integrated approach combining ecological, social and administrative means should be adopted to ensure protection of the species. Proper law enforcement, enhanced field patrolling, and regulating/curbing trade in ivory and other elephant products should be done.
- Monitoring of conservation interventions is also needed to assess the success or failure of the interventions so that midterm necessary adjustments can be made.
- Reliable estimation of population size and trends along with periodic updates should be done.

Hoolock Gibbon:

Wildlife in general and Hoolock Gibbons in particular get tremendously affected by forest fragmentation especially when the population size is comparatively smaller. Small populations of gibbon dependent on irregular resources are highly vulnerable to changes. As they are totally arboreal in nature, they prefer continuous patch with closed canopy. Gibbons prefer sweet and juicy fruits along with seasonally available young leaves, stems, flower buds, flowers, insects as well as climbers of upper canopy level as their food. Movement of gibbons therefore vary up to several kilometers as their food habits are seasonal in nature and as a result expected to be more seriously affected by habitat fragmentation.

- As habitat loss and destruction are the most important factors responsible for the decline of hoolock populations, a firm action is urgently needed for habitat protection and restoration.
- Tipong Reserve Forest, Tirap Reserve Forest and Saleki Reserve Forest areas are suitable habitats for the Hoolock Gibbon. These areas may be declared as wildlife sanctuaries, conservation reserves or community reserves for enhancing the protection status and for the development of eco-tourism with community involvement. These areas should be better protected, with increased staff, anti-poaching camps and regular patrolling. Measures should be taken to check encroachment in these forest areas and also control jhum cultivation as well as hunting.
- Education and awareness programmes should be conducted for local communities to promote conservation measures, and programmes should be set up for the regular monitoring of the gibbon populations in these areas.

- Detailed systematic research on re-assessment of Hoolock Gibbon status, ecology, population dynamics, assessment of habitat quality, habitat mapping using GIS, habitat fragmentation, gap analysis, genetic study, disease aspects, conservation threats to Hoolock Gibbon, education and awareness for different target groups in Gibbon habitat, especially in the protected areas, is essentially required.
- Well planned and long-term habitat restoration programmes should be initiated immediately for degraded Gibbon habitats.

Leopard:

- Improve Prey base through better protection by regular patrolling and monitoring.
- Develop a compensation mechanism against cattle depredation.
- Awareness Program for minimizing Human Leopard conflict.
- Enhancing local community support towards leopard conservation through orientation and capacity building initiatives.

Avifauna:

- Better protection from poaching
- Reduction of Use of pesticides in tea gardens through collaborative effort of various stakeholders.
- Awareness generation among local people and develop an eco-tourism perspective from Birding point of view.

4.6 Monitoring and evaluation

4.6.1 Constitution of Monitoring Committees at Forest Range Level

The activities proposed in the wildlife management plan will be carried out in the area under the overall guidance of the Assam Forest Department but for the proper implementation and monitoring of the various works done by the NEC for the management of wildlife and biodiversity in the Makum Coalfields area, a monitoring mechanism needs to be framed. A monitoring committee at block level in this case is suggested to be formed. The NEC shall constitute a committee at each Forest Range Level under the chairmanship of Divisional Forest Officer, Digboi Forest Division to monitor and review the progress of implementation of scheme/plan of wildlife and biodiversity management in and around the Makum Coalfields area.

The Monitoring Committee constituted as above shall *inter-alia* include as one of its members: -

1. Divisional forest Officer, Digboi Forest Division,
2. Range Officer of respective ranges;

3. President or his nominee of each gram panchayat falling in the respective Forest Range;
4. A subject matter expert from local colleges;
5. A representative of the local NGO working in the field of wildlife/biodiversity conservation
6. A scientist from reputed Research organisation like Rain Forest Research Institute, Jorhat, Assam (as expert consultant).
7. Representative of NEC.

Each committee will examine and monitor the progress of implementation of wildlife and biodiversity management plan on half yearly basis. Committee member will visit the site of interventions and check the work on site and will assess the success or failure of the interventions so that adjustments can be made as necessary. Expenditure occurring in each monitoring will be borne by the NEC Ltd. This committee will work for five years from the start of implementation of management plans.

4.6.2 Indicative Parameters for Monitoring Plan

The entire management and development plan is to be implemented, monitored and evaluated by involving local community on well defined Criteria and Indicators. Base line data shall be generated through experts in respect of:

- Population status of key wildlife species (Elephant, Gibbon, Leopard and avifauna): periodical survey
- Vegetation Status: biodiversity indices, habitat evaluation- periodical survey
- Status of Water resources- Quality and quantity- periodical survey
- Animal health and diseases- periodical survey
- Improvement level of income of Forest dependant local community
- Level of public awareness with respect to biodiversity conservation

Besides the above baseline data, information on the following shall also be collected:

- Cases of wildlife as well as forest offences in the area
- Regularity and effectiveness of community meetings in a year

- Quality Implementation of Annual Plan of Operation (APO)
- Periodic financial audit
- Periodic Social Audit of the Management Plan
- Regular Monitoring of status of health of animal species

4.6.3 Research and Further Studies

There are four proposed reserve forests in the study area. The status of these forests needs to be reviewed and for the better protection and conservation their status may be upgraded to reserve forest. By declaring these forests as reserve forest, encroachment of forest land, poaching and illegal felling and logging can be checked. Remaining biodiversity rich area may also be included in Dehing-Patkai elephant reserve.

Detailed systematic research on re-assessment of Hoolock Gibbon status, ecology, population dynamics, assessment of habitat quality, habitat mapping using GIS, habitat fragmentation, gap analysis, genetic study, disease aspects, conservation threats to Hoolock Gibbon, education and awareness for different target groups in Gibbon habitat, especially in the protected areas, is essentially required.

4.7 Budget for Wildlife Management Plan

A comprehensive time bound Biodiversity Management Plan focusing also on watershed protection and protection of natural aquatic systems available around the mines of NEC through a detailed impact study of surrounding area for extensive and intensive habitat management for targeted species (Elephants, Hoolock Gibbon, Leopard and Avifauna) and flora diversity has also been prepared simultaneously based on the data used in this plan. As wildlife management has been covered in Biodiversity Management Plan, therefore no additional budget is proposed specifically for the wildlife management plan.

References

- Andersons, D.R., Laake, B., Crain, B and Burnham, K. 1979. Guidelines for transect sampling of biological population. *J. Wildlife Management*, 43 (1): 71-79.
- Anon. 2016. Dehing-Patkai Wildlife Sanctuaries.
http://assamforest.in/NP_Sanctuaries/wls_dPatkai.php
- Burnham, K.P., Anderson, D.R and Laake, J.D. 1980. Estimation of density from line transect sampling of biological populations, *Wildlife Monograph*, 72, 1-202.
- Champion H.G., and S.K. Seth. 1968. A revised survey of the forest types of India. The Manager of Publications, Delhi-6.
- Choudhury, A. 1996. Surveys of the White-winged Duck and the Bengal Florican in Tinsukia District and Adjacent Areas of Assam and Arunachal Pradesh. Guwahati: The Rhino Foundation.
- Choudhury, A.U. 1997. The distribution and status of small carnivores (Mustelids, Viverrids, and Herpestids) in Assam, India. *Small Carnivore Conservation*, 16, 25-26.
- Choudhury, A.U. 1999. Mustelids, Viverrids, and Herpestids of Northeastern India. Status Report 2. *ENVIS BULLETIN*. December 1999. pp. 43-47
- Choudhury, A. 1999. Status and conservation of the Asian elephant (*Elephas maximus*) in north eastern India. *Mammalian Review*, 29, 141-171.
- Carbone, C and Gittleman, J.L. 2002. A common rule for the scaling of carnivore density. *Science*, 295: 2273-2276.
- Carbone, S., Christie, K., Conforti, T., Coulson, N., Franklin, J.R., Ginsberg, M., Griffiths, J., Holden, K., Kawanishi, M., Kinnaird, R., Laidlaw, A., Lynam, D.W., Macdonald, D., Martyr, C., McDougal, L., Nath, T., O'Brien, J., Seidensticker, D.J. L., Smith, M., Sunquist, R., Tilson, W.N and Shahrudin, W. (2001). The use of photographic rates to estimate densities of tigers and other cryptic mammals. *Animal Conservation*, 4, 75-79.
- Cunningham, M.A., Johnson, D.H. and Svingen, D.N. 2006. Estimates of Breeding Bird Populations in the Sheyenne National Grassland, North Dakota. *The Prairie Naturalist*, 38(1), 50-67.
- Goodman, L.A. 1960. On the exact variation of product. *Journal of American Statistic Association*, 708-713.
- Kakati, K. 2004. Impact of forest fragmentation on the hoolock gibbon in Assam, India. Unpublished PhD dissertation. University of Cambridge, U.K.

- Karant, K.U and Sunquist, M.E. 1992. Population structure, density and biomass of large herbivores in the tropical forests of Nagarhole, India. *J. Tropical Eco.* 8, 21-35.
- Kent, M and Coker, P.1994. *Vegetation Description and Analysis: - A practical Approach.* John Wiley and Sons, Ltd., Chichester, 363pp.
- Mueller-Dombois, D and Ellenberg, H.1974. *Aims and methods of vegetation ecology.* John Wiley and Sons, New York, 547 p.
- Sharmah, A.C. 2015. *Working Plan for the Digboi forest divisions 2005-2006 to 2014-2015.* Forest Department, Assam.
- Simons, T.R., Shriner, S.A and Farnsworth, G.L. 2006. Comparison of breeding bird and vegetation communities in primary and secondary forests of Great Smoky Mountains National Park. *Bio. Cons.* 129, 302-311.
- Sutherland, W. J. 2006. *Ecological Census Techniques.* Cambridge University Press, U.K.
- Tiwari, S. K., Kyarong, S., Choudhury, A., Williams, C., Ramkumar, K. and Deori, D. (2017). Elephant corridors of North-Eastern India. In: *Right of Passage: Elephant Corridors of India [2nd Edition]*. Menon, V, Tiwari, S K, Ramkumar, K, Kyarong, S, Ganguly, U and Sukumar, R (Eds.). Conservation Reference Series No. 3. Wildlife Trust of India, New Delhi.
- Varma, S. 2000. Bird's diversity in the campus of Indian Institute of Science: An evaluation of two methods of estimation. *J. Indian. Inst. Sci.* 80, 511-518.
- Varman, S.K and Sukumar, R. 1995. The line transect method for estimating densities of large mammals in a tropical deciduous forest: An evaluation of models and field experiments. *J. Biosci.* 20(2), 273-287.

Annexure I

Bird Species Recorded in the Study Site

S. No.	Family	Common name	Scientific name	Status	Relative Abundance
1	Anatidae	Lesser Whistling Teal	<i>Dendrocygna javanica</i>	R, C	0.0090
2	Ardeidae	Cattle Egret	<i>Bulbulcus ibis</i>	R, C	0.0492
3		Little Egret	<i>Egretta garzetta</i>	R, C	0.0083
4		Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	R, r	0.0007
5		Indian Pond Heron	<i>Ardeola grayii</i>	R, C	0.0273
6	Anhingidae	Oriental Darter	<i>Anhinga melanogaster</i>	NT,	0.0004
7	Accipitridae	Crested Serpent Eagle	<i>Spilornis cheela</i>	R, C	0.0018
8		Crested Goshawk	<i>Accipiter trivirgatus</i>	R, r	0.0007
9		Black Kite	<i>Milvus migrans</i>	R, r	0.0075
10		Pied Harrier	<i>Circus melanoleucos</i>	WM, r	0.0007
11		Shikra	<i>Accipiter badius</i>	R, C	0.0050
12	Apodidae	Asian Palm Swift	<i>Cypsiurus balasiensis</i>	R, C	0.0269
13		House Swift	<i>Apus affinis</i>	R, C	0.0122
14		Himalayan Swiftlet	<i>Collocalia fuciphaga</i>	R, r	0.0115
15	Alcedinidae	White-breasted Kingfisher	<i>Halcyon smyrensis</i>	R, C	0.0093
16		Common Kingfisher	<i>Alcedo atthis</i>	R, C	0.0122
17		Pied Kingfisher	<i>Ceryle rudis</i>	R, C	0.0018
18		Stork-billed Kingfisher	<i>Halcyon capensis</i>	R, r	0.0007
19	Aegithinidae	Common Lora	<i>Aegith inatiphia</i>	R, r	0.0011
20	Aegithalidae	Black-throated Bushtit	<i>Aegith alosconcinus</i>	R, C	0.0025
21	Bucerotidae	Oriental Pied Hornbill	<i>Anthracoeros albrostris</i>	R, C	0.0029
22	Corvidae	Rufous Treepie	<i>Dendrocitta vagabunda</i>	R, r	0.0057
23		Grey Treepie	<i>Dendrocitta formosae</i>	R, r	0.0018
24		Collared Treepie	<i>Dendrocitta frontalis</i>	R, r	0.0007
25		Common Green Magpie	<i>Cissa chinensis</i>	R, r	0.0018
26		Jungle Crow	<i>Corvus macrorhynchus</i>	R, C	0.0111
27		Common Crow	<i>Corvus splendens</i>	R, C	0.0201
28		White-throated Fantail	<i>Rhipidura albicollis</i>	R, r	0.0043
29		Eurasian Jay	<i>Garrulus glandarius</i>	R, r	0.0007
30	Chloropseidae	Blue-winged Leafbird	<i>Chloropsis cochinchinensis</i>	R, C	0.0022
31		Golden-fronted Leafbird	<i>Chloropsis aurifrons</i>	R, C	0.0043
32	Cisticolidae	Grey-breasted Prinia	<i>Prinia hodgsonii</i>	R, C	0.0047
33		Striated Prinia	<i>Prinia criniger</i>	R, C	0.0083
34		Beavan's Prinia	<i>Prinia rufescens</i>	R, C	0.0007
35	Cettidae	Black-faced Warbler	<i>Abroscopus schisticeps</i>	R, C	0.0014
36	Campephagidae	Rosy Minivet	<i>Pericrocotus roseus</i>	WM, r	0.0068
37		Scarlet Minivet	<i>Pericrocotus flammeus</i>	R, C	0.0083
38		Grey-chinned Minivet	<i>Pericrocotus solaris</i>	R, C	0.0018
39		Long-tailed Minivet	<i>Pericrocotus ethologus</i>	R, C	0.0022
40	Coraciidae	Indian Roller	<i>Coracias benghalensis</i>	R, C	0.0043
41	Caprimulgidae	Grey Nightjar	<i>Caprimulgus indicus</i>	R, r	0.0039
42	Cuculidae	Drongo Cuckoo	<i>Surniculus lugubris</i>	SM, r	0.0036
43		Common Hawk Cuckoo	<i>Heirotoccyx varius</i>	R, r	0.0022
44		Indian Cuckoo	<i>Cuculus micropterus</i>	R, C	0.0075
45		Pied Crested Cuckoo	<i>Clamator jacobinus</i>	SM, r	0.0007
46		Red-winged Crested Cuckoo	<i>Clamator coromandus</i>	R, r	0.0011
47		Asian Koel	<i>Eudynamys scolopacea</i>	R, C	0.0047

48		Green-billed Malkoha	<i>Phaenicophaeus tristis</i>	R, C	0.0050
49		Lesser Coucal	<i>Centropus bengalesis</i>	R, C	0.0014
50		Greater Coucal	<i>Centropus sinensis</i>	R, C	0.0004
51	Columbidae	Pompadour Green Pigeon	<i>Treron pompadoura</i>	R, C	0.0025
52		Yellow-footed Green Pigeon	<i>Treron phoenicoptera</i>	R, C	0.0043
53		Thick-billed Green Pigeon	<i>Treron curvirostra</i>	R, r	0.0014
54		Pin-tailed Green Pigeon	<i>Treron apicauda</i>	R, C	0.0014
55		Green Imperial Pigeon	<i>Ducula aenea</i>	R, C	0.0068
56		Spotted Dove	<i>Streptopelia chinensis</i>	R, C	0.0111
57		Oriental Turtle Dove	<i>Streptopelia orientalis</i>	R, r	0.0086
58		Red Collared Dove	<i>Streptopelia tranquebarica</i>	R, r	0.0079
59		Emerald Dove	<i>Chalcophaps indica</i>	R, r	0.0111
60		Eurasian Collard Dove	<i>Streptopelia decaocto</i>	R, r	0.0047
61		Barred Cuckoo Dove	<i>Macropygia unchall</i>	R, r	0.0029
62	Charadriidae	Little Stint	<i>Calidris minuta</i>	WM, C	0.0007
63		Red-wattled Lapwing	<i>Vanellus indicus</i>	R, C	0.0054
64	Ciconnidae	Openbill stork	<i>Anastomus oscitans</i>	R, C	0.0061
65	Dicruridae	Black Drongo	<i>Dicrurus macrocercus</i>	R, r	0.0122
66		Ashy Drongo	<i>Dicrurus leucophaeus</i>	WM, r	0.0083
67		Lesser Racket-tailed Drongo	<i>Dicrurus remifer</i>	R, r	0.0101
68		Greater Racket-tailed Drongo	<i>Dicrurus paradiseus</i>	R, r	0.0029
69	Dicacidae	Fire-breasted Flower pecker	<i>Dicaeum ignipectus</i>	R, C	0.0025
70		Scarlet-backed Flower pecker	<i>Dicaeum cruentatum</i>	R, C	0.0022
71	Estrildidae	Scaly-breasted Munia	<i>Lonchura punctulata</i>	R, C	0.0043
72		White-rumped Munia	<i>Lonchura striata</i>	R, C	0.0050
73		Black-headed Munia	<i>Lonchura malacca</i>	R, C	0.0065
74	Laridae	River Tern	<i>Sterna aurantia</i>	R, C	0.0047
75	Lanidae	Brown Shrike	<i>Lanius cristatus</i>	WM, r	0.0057
76		Grey-backed Shrike	<i>Lanius stephronotus</i>	R, r	0.0065
77	Muscicapidae	Little Pied-flycatcher	<i>Ficedula westermanni</i>	R, r	0.0018
78		White Gorgeted-flycatcher	<i>Ficedula monileger</i>	R, r	0.0025
79		Sapphire Flycatcher	<i>Ficedula sapphira</i>	R, r	0.0011
80		Rufous Gorgeted-flycatcher	<i>Ficedula strophiatea</i>	R, r	0.0014
81		Snowy Browed-flycatcher	<i>Ficedula hyperythra</i>	R, r	0.0018
82		Pygmy Blue-flycatcher	<i>Muscicapella hodgsoni</i>	R, r	0.0011
83		Magpie Robin	<i>Copsychus saularis</i>	R, C	0.0104
84		Common Stonechat	<i>Saxicola torquata</i>	WM, r	0.0029
85		Grey Bushchat	<i>Saxicola ferrea</i>	R, C	0.0032
86		White-rumped Shama	<i>Copsychus malabaricus</i>	R, r	0.0022
87		White-crowned Forktail	<i>Enicurus leschenaulti</i>	R, C	0.0032
88		Black-backed Forktail	<i>Enicurus immaculatus</i>	R, C	0.0039
89		White-capped Water-redstart	<i>Chaimarrornis leucocephalus</i>	R, r	0.0050
90		Daurian Redstart	<i>Phoenicurus aureus</i>	WM, r	0.0014
91		Plumbeous Water-redstart	<i>Rhyacornis fuliginosus</i>	R, C	0.0036

92	Motacillidae	White Wagtail	<i>Motacilla alba</i>	WM, C	0.0097
93		Grey Wagtail	<i>Motacilla cinerea</i>	WM, r	0.0079
94		Citrine Wagtail	<i>Motacilla citreola</i>	WM, C	0.0043
95		Paddyfield Pipit	<i>Anthus rufulus</i>	R, C	0.0111
96	Monarchidae	Asian Paradise Flycatcher	<i>Terpsiphone paradisi</i>	SM, r	0.0029
97	Megalaimidae	Coppersmith Barbet	<i>Megalaima haemocephala</i>	R, C	0.0065
98		Blue-throated Barbet	<i>Megalaima asiatica</i>	R, C	0.0043
99		Lineated Barbet	<i>Megalaima lineata</i>	R, C	0.0025
100		Great Barbet	<i>Megalaima virens</i>	R, r	0.0029
101	Meropidae	Green Bee-eater	<i>Merops orientalis</i>	R, C	0.0136
102		Blue-bearded Bee-eater	<i>Nyctornisathertoni</i>	R, r	0.0047
103	Nectariniidae	Purple Sunbird	<i>Nectarinia asiatica</i>	R, r	0.0075
104		Crimson sunbird	<i>Aethopyga siparaja</i>	R, C	0.0039
105		Fire-tailed Sunbird	<i>Aethopyga ignicauda</i>	R, r	0.0014
106		Streaked Spider hunter	<i>Arachnothera magna</i>	R, r	0.0025
107		Little Spider hunter	<i>Arachnothera longirostra</i>	R, C	0.0022
108	Oriolidae	Black-headed oriole	<i>Oriolus xanthornus</i>	R, C	0.0104
109		Maroon Oriole	<i>Oriolus traillii</i>	R, C	0.0007
110	Phasianidae	Red Jungle Fow	<i>Gallus gallus</i>	R, C	0.0018
111		Grey Peacock Pheasant	<i>Polyplectron bicalcaratum</i>	R, r	0.0025
112		Black Francolin	<i>Francolinus francolinus</i>	R, C	0.0029
113		Swamp Francolin	<i>Francolinus gularis</i>	R, r, VU	0.0029
114	Phalacrocoracidae	Little Cormorant	<i>Microcarbo niger</i>	R, C	0.0043
115	Psittacidae	Rose-ringed Parakeet	<i>Psittacula krameri</i>	R, C	0.0162
116		Alexandrine Parakeet	<i>Psittacula eupatria</i>	R, C	0.0176
117		Red-breasted Parakeet	<i>Psittacula alexandri</i>	R, C	0.0075
118		Blossom-headed Parakeet	<i>Psittacula roseata</i>	R, r	0.0075
119	Picidae	Fulvous-breasted Woodpecker	<i>Dendrocopos macei</i>	R, r	0.0022
120		Grey-headed Woodpecker	<i>Picus canus</i>	R, r	0.0018
121		Greater Yellownappe Woodpecker	<i>Picus flavinucha</i>	R, C	0.0065
122		Lesser Yellownappe Woodpecker	<i>Picus chlorolophus</i>	R, C	0.0029
123		Rufous Woodpecker	<i>Celeus brachyurus</i>	R, C	0.0054
124		Himalayan Flameback	<i>Dinopiumshorii</i>	R, C	0.0075
125		Greater Flameback	<i>Chrysocolaptes lucidus</i>	R, r	0.0029
126		Crimson-breasted Woodpecker	<i>Dendrocopos cathpharius</i>	R, r	0.0025
127		White-browed Piculet	<i>Sasia ochracea</i>	R, r	0.0018
128		Speckled Piculet	<i>Picumnus innominatus</i>	R, r	0.0011
129	Pittidae	Blue Pitta	<i>Pitta cyanea</i>	R, r	0.0029
130		Blue-naped Pitta	<i>Pitta nipalensis</i>	R, r	0.0007
131	Paridae	Great Tit	<i>Parus major</i>	R, C	0.0043
132		Sultan Tit	<i>Melanochlora sultanea</i>	R, C	0.0018
133	Phyllocopidae	Grey-cheeked Warbler	<i>Seicercus poliogenys</i>	R, C	0.0054
134		Greenish Warbler	<i>Phylloscopu strochiloides</i>	WM, r	0.0025
135	Pycnonotidae	Red-vented Bulbul	<i>Pycnonotus cafer</i>	R, C	0.0434
136		Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	R, C	0.0320
137		Himalayan Bulbul	<i>Pycnonotus leucogenys</i>	R, r	0.0104

138		Striated Bulbul	<i>Pycnonotus striatus</i>	R, C	0.0029
139		Black Bulbul	<i>Hyppipetes leucocephalus</i>	R, r	0.0025
140		Black-crested Bulbul	<i>Pycnonotus melanicterus</i>	R, C	0.0022
141	Passeridae	House Sparrow	<i>Passer domesticus</i>	R, C	0.0359
142	Ploceidae	Baya Weaver	<i>Ploceus philippinus</i>	R, r	0.0057
143	Saturnidae	Common Myna	<i>Acridotheres tristis</i>	R, C	0.0539
144		Pied Myna	<i>Sturnus contra</i>	R, C	0.0377
145		Jungle Myna	<i>Acridotheres fuscus</i>	R, C	0.0014
146	Sittidae	Velvet-fronted Nuthatch	<i>Sitta frontalis</i>	R, C	0.0007
147		Chestnut-bellied Nuthatch	<i>Sitta castanea</i>	R, C	0.0007
148	Strigidae	Spotted Owlet	<i>Athene brama</i>	R, r	0.0011
149		Collared Owlet	<i>Glaucidium brodiei</i>	R, r	0.0007
150		Asian Barred Owlet	<i>Glaucidium cuculoides</i>	R, r	0.0007
151		Spotted Scops Owl	<i>Otus spilocephalus</i>	R, r	0.0007
152	Scolopacidae	Common Sandpiper	<i>Actitis hypoleucos</i>	WM, C	0.0014
153		Silver-eared Mesia	<i>Leiothrix argentauris</i>	R, C	0.0018
154		White-crested Laughing Thrush	<i>Garrulax leucolophus</i>	R, r	0.0007
155		White-throated Laughing thrush	<i>Garrulax albogularis</i>	R, r	0.0007
156		Rufous-vented Laughing Thrush	<i>Garrulax gularis</i>	R, C	0.0004
157		Rufous-necked Laughing Thrush	<i>Garrulax ruficollis</i>	R, r	0.0007
158		Blue Rock-Thrush	<i>Monticola solitarius</i>	WM, C	0.0011
159		Long-tailed Sibia	<i>Heterophasia picaodes</i>	R, C	0.0018
160		Beautiful Sibia	<i>Heterophasia pulchella</i>	R, r, En	0.0007
161		Common Tailorbird	<i>Orthotomus sutorius</i>	R, C	0.0122
162		Mountain Tailorbird	<i>Orthotomus cuculatus</i>	R, C	0.0007
163	Turdidae	Blue Whistling Thrush	<i>Myophonus caeruleus</i>	R, C	0.0054
164		Orange headed Thrush	<i>Zoothera citrina (SV)</i>	SM, r	0.0018
165		Scaly Thrush	<i>Zoothera dauma</i>	WM, C	0.0014
166	Tichodromidae	Wall creeper	<i>Tichodroma muraria</i>	W, V	0.0047
167	Upupidae	Hoopoe	<i>Upupa epops</i>	R, C	0.0068
168	Zosteropidae	Oriental white-eye	<i>Zosterops palpebrosus</i>	R, C	0.0104

R - Resident; C - Common; r - Rare; WM - Winter Migrant; SM - Summer Migrant; V - Vagrant; EN - Endangered; En - Endemic; NT - Near Threatened; VU - Vulnerable; CR - Critically Endangered; NR - New Record.

ANNEXURE II

Checklist of major herpetofauna found in the study area

S.N.	Scientific name	English Name	Local Name	Conservation Status
1.	<i>Amphiesma stolatum</i>	Buffertipped Keelback Snake	Bamuni Sanp	Schedule-IV
2.	<i>Bangarus bungaroides</i>	Banded Krait	Gaula	Schedule-III
3.	<i>Bungarus caeruleus</i>	Common krait	Sankhasur	-
4.	<i>Bungarus niger</i>	Black krait	Aalod	-
5.	<i>Calotes versicolour</i>	Garden lizard	Keko	-
6.	<i>Cuora amboinensis</i>	Box turtle	Kacha	-
7.	<i>Cyrtopemys oldhami</i>	Asian leaf turtle	Kacha	Schedule-IV
8.	<i>Gekko gekko</i>	Gecko	Keko	-
9.	<i>Geochelone emys</i>	Brown tortories	Kacha	Schedule-IV
10.	<i>Geodemys hamitoui</i>	Pond turtle	Kacha	Schedule-I (P-II)
11.	<i>Hardella thurjii</i>	River turtle	Kacha	Schedule-IV
12.	<i>Hemidactylus flaviviridis</i>	Common house lizard	Keko	-
13.	<i>Kachuga tecta</i>	Roofed turtle	Kacha	Schedule-I (P-II)
14.	<i>Naja kouthia</i>	Monocoelate Cobra	Chakari Feti	Schedule-II
15.	<i>Naja naja</i>	Indian Cobra	Feti	Schedule-II
16.	<i>Ophiocephalus hannah</i>	King Cobra	Roja Feti	Schedule-II
17.	<i>Pangshura sylhetensis</i>	Assam roofed turtle	Kacha	-
18.	<i>Ptyas mucosa</i>	Rat snake	Daras	Sch II (Part II)
19.	<i>Python molurus</i>	Indian python	Gom Feti	Schedule-I (P-II)
20.	<i>Rhabdophis subminiatus</i>	Red necked Keelback Snake	Batsupa	Schedule-IV
21.	<i>Trimeresurus gramineus</i>	Bamboo viper	Karsola	-
22.	<i>Trimeresurus medoensis</i>	Pit viper		-
23.	<i>Tropidontus sp.</i>	Pond snake		Schedule-II
24.	<i>Typhlina bramima</i>	Common blind snake	Khontia sanp	Schedule-IV
25.	<i>Varanus bengalensis</i>	Monitor lizard	Gui	Schedule-II
26.	<i>Varanus salvator</i>	Water monitor lizard	Pani gui	Schedule-II
27.	<i>Xanochrophis piscator</i>	Chekered Keelbacked	Kaudia dhora	Schedule-II

*Source of data: EIA/EMP reports of proposed Tikak and Lekhapani mine lease area

ANNEXURE III

Checklist of major insects found in the study area

Scientific/ common name	Order	Family
<i>Acrida exaltata</i> Walker	Orthoptera	Acridinae
<i>Phlaeoba infumata</i> Brunner	Orthoptera	Acridinae
<i>Stenocatantops splendens</i> Thunberg	Orthoptera	Acridinae
<i>Gryllus splendens</i> Thunberg	Orthoptera	Gryllidae
<i>Gryllotalpa</i> sp.	Orthoptera	<i>Gryllotalpidae</i>
<i>Oxya nitidula</i> (walk)	Orthoptera	Acridinae
<i>Oxya fuscovittata</i> Marschall	Orthoptera	Acridinae
<i>Oxya hyla hyla</i> Serville	Orthoptera	Acridinae
<i>Poeciloceris pictus</i> Fabricius	Orthoptera	Acridinae
<i>Heiroglyphus banian</i> (Fab)	Orthoptera	Acridinae
<i>Catantops pinguis</i> (walk)	Orthoptera	Acridinae
<i>Euconocephalus indicus</i> (Redt)	Orthoptera	Tettiginidae
<i>Phaneroptera</i> sp.	Orthoptera	Tettiginidae
<i>Trigonocoryapha unicolor</i>	Orthoptera	Tettiginidae
<i>Phlaeoba pictus</i> .	Orthoptera	Acridinae
<i>Diabolocatantops pinguis</i> Walker	Orthoptera	Acrididae
<i>Anax guttatus</i> Burmeister	Odonata	Aeshnidae
<i>Agriochemis pieris</i>	Odonata	Zoraptera
<i>Ceriagrion</i> sp.	Odonata	Zoraptera
<i>Solenopsis</i> sp.	Hymenoptera	Formicidae
<i>Myrmica</i> sp.	Hymenoptera	Formicidae
<i>Atta</i> sp.	Hymenoptera	Formicidae
<i>Bombus</i> sp	Hymenoptera	Apidae
<i>Apis dorsata</i>	Hymenoptera	Apidae
Common wasp	Hymenoptera	Vespidae

ANNEXURE IV

Systematic list of butterflies recorded from the study area

S.N	English Name	Scientific Name	Relative Abundance	Status
1.	Common Fivering	<i>Ypthima baldus</i>	Very Common	-
2.	Punchinello	<i>Zemerus flegyas</i>	Very Common	-
3.	Common Grass Yellow	<i>Eurema hecabe</i>	Very Common	-
4.	Chocolate Albatross	<i>Appias lycinda</i>	Very Common	-
5.	Red Helen	<i>Papilio helenus</i>	Very Common	-
6.	Elbowed Pierrot	<i>Caleta elna</i>	Very Common	-
7.	Common Bushbrown	<i>Mycalesis perseus</i>	Very Common	-
8.	Common Emigrant	<i>Catopsila pomona</i>	Very Common	-
9.	Grey Count	<i>Tanaecia lepidea</i>	Very Common	-
10.	Chestnut Bob	<i>Lambrix salsala</i>	Very Common	-
11.	Common Lascar	<i>Pantoporia hordonia</i>	Very Common	-
12.	Common Sailer	<i>Neptis hylas</i>	Very Common	-
13.	Tawny Rajah	<i>Charaxes bernardus</i>	Very Common	-
14.	Unbroken Sergeant	<i>Athyma pravara</i>	Very Common	Endemic; IWPA Sch.II Part II
15.	Glassy Tiger	<i>Parantica aglea</i>	Very Common	-
16.	Common Line Blue	<i>Prosotas nora</i>	Very Common	-
17.	Watson's Bushbrown	<i>Mycalesis watsoni</i>	Very Common	Endemic
18.	Chocolate Royal	<i>Remelana jangala</i>	Very Common	Endemic
19.	Common Maplet	<i>Chersonesia risa</i>	Very Common	-
20.	Common Yamfly	<i>Loxura atymnus</i>	Very Common	-
21.	Branded Yamfly	<i>Yasoda tripunctata</i>	Very Common	Endemic; IWPA Sch.II Part II
22.	Light Straw Ace	<i>Pithauria stramineipennis</i>	Very Common	Endemic
23.	Spangle	<i>Papilio protenor euprotenor</i>	Very Common	-
24.	Bright Sunbeam	<i>Curetis bulis</i>	Very Common	-
25.	Common Tree Yellow	<i>Gandaca harina</i>	Very Common	Endemic
26.	Cruiser	<i>Vindula erota</i>	Very Common	-
27.	Leopard Lacewing	<i>Cethosia cyane</i>	Very Common	-
28.	Purple Sapphire	<i>Heliphorus epicles</i>	Very Common	-
29.	Fluffy Tit	<i>Zeltus amasa</i>	Very Common	-
30.	Indian Cabbage White	<i>Pieris canidia</i>	Very Common	-
31.	Straight Banded Treebrown	<i>Lethe verma</i>	Very Common	-
32.	Yellow Rajah	<i>Charaxes marmax</i>	Very Common	IWPA Sch.II Part II
33.	Five Bar Swordtail	<i>Graphium antiphates</i>	Very Common	-
34.	Red Tailed Forester	<i>Lethe sinorix</i>	Very Common	Endemic

35.	Tiger Hopper	<i>Ochus subvittatus</i>	Very Common	Endemic
36.	Chocolate Demon	<i>Anicistroides nigrita</i>	Common	-
37.	Common Evening Brown	<i>Melanitis leda</i>	Common	-
38.	Common Peacock	<i>Palipio paris</i>	Common	-
39.	Magpie Crow	<i>Euploea klugii</i>	Common	-
40.	Northern Spotted Ace	<i>Thoressa cerata</i>	Common	Endemic
41.	Raven	<i>Papilio castor</i>	Common	Endemic
42.	Yellow Orange Tip	<i>Ixias pyrene</i>	Common	-
43.	Dark Blue Tiger	<i>Tirumala septentrionis</i>	Common	-
44.	Golden Birdwing	<i>Troides aeacus</i>	Common	-
45.	Plain Bushbrown	<i>Telinga malsarida</i>	Common	Endemic; IWPA Sch.II Part II
46.	Popinjay	<i>Stibochiona nicea</i>	Common	-
47.	Red Base Jezebel	<i>Delias pasithoe</i>	Common	-
48.	Striped Tiger	<i>Danaus genutia</i>	Common	-
49.	Banded Lineblue	<i>Prosotas aluta coelestis</i>	Common	IWPA Sch.II Part II
50.	Common Batwing	<i>Atrophaneura varuna</i>	Common	-
51.	Common Cerulean	<i>Jamides celeno</i>	Common	-
52.	Common Hedge Blue	<i>Acytolepis puspa</i>	Common	-
53.	Common Mormon	<i>Papilio polytes romulus</i>	Common	-
54.	Common Palmfly	<i>Elymnias hypermnestra</i>	Common	-
55.	Common Pierrot	<i>Castalius rosimon</i>	Common	-
56.	Dusky Partwing/Coon	<i>Psolos fuligo subfasciatus</i>	Common	Endemic
57.	Dark Velvet Bob	<i>Koruthaialos butleri</i>	Common	Endemic
58.	Great Orange Tip	<i>Hebomoia glaucippe</i>	Common	-
59.	Tailed Jay	<i>Graphium agamemnon</i>	Common	-
60.	Commander	<i>Moduza procris</i>	Fairly Common	-
61.	Common Dartlet	<i>Oriens gola</i>	Fairly Common	-
62.	Common Jester	<i>Symbrenthia lilaea khasiana</i>	Fairly Common	-
63.	Common Yeoman	<i>Cirrochroa tyche</i>	Fairly Common	-
64.	Dark Catseye	<i>Zipaetis scylax</i>	Fairly Common	Endemic
65.	Great Eggfly	<i>Hypolimnas bolina</i>	Fairly Common	-
66.	Great Jay	<i>Graphium eurypylus</i>	Fairly Common	-
67.	Knight	<i>Lebadea martha</i>	Fairly Common	-
68.	Large Yeoman	<i>Cirrochroa aoris</i>	Fairly Common	-
69.	Rice Swift	<i>Borbo cinnara</i>	Fairly Common	-
70.	Small Yellow Sailer	<i>Neptis miah</i>	Fairly Common	-
71.	Staff Sergeant	<i>Athyma selenophora</i>	Fairly Common	-
72.	Swift	<i>Pelopidas sp.</i>	Fairly Common	-
73.	Water Snowflat	<i>Tagiades litigiosa</i>	Fairly Common	-
74.	Wizard	<i>Rhinopalpa polynice</i>	Fairly Common	Endemic; IWPA Sch.II Part II

75. Angled Red Forester	<i>Lethe chandica</i>	Fairly Common	-
76. Assam Flash	<i>Rapala tara</i>	Fairly Common	Endemic
77. Black Forester	<i>Lethe vindhya</i>	Fairly Common	Endemic
78. Chocolate Pansy	<i>Junonia iphita</i>	Fairly Common	-
79. Common Acacia Blue	<i>Surendra quercetorum</i>	Fairly Common	-
80. Common Blue Bottle	<i>Graphium sarpedon</i>	Fairly Common	-
81. Common Imperial	<i>Cheritra freja</i>	Fairly Common	-
82. Common Snowflat	<i>Tagiades japedus</i>	Fairly Common	-
83. Dark Evening Brown	<i>Melanitis phedima</i>	Fairly Common	-
84. Dingy Sailer	<i>Neptis pseudovikasi</i>	Fairly Common	-
85. Dot-dash Sergeant	<i>Athyma kanwa</i>	Fairly Common	Endemic; IWPA Sch.II Part II
86. Fulvous Piedflat	<i>Pseudocoladenia dan</i>	Fairly Common	-
87. Great Archduke	<i>Lexias cyanipardus</i>	Fairly Common	Endemic
88. Lime Swallowtail	<i>Papilio demoleus</i>	Fairly Common	-
89. One Spot Grass Yellow	<i>Eurema andersonii</i>	Fairly Common	-
90. Orchid Tit	<i>Hypolycaena othona</i>	Fairly Common	-
91. Peacock Pansy	<i>Junonia almana</i>	Fairly Common	-
92. Striped Blue Crow	<i>Euploea mulciber</i>	Fairly Common	IWPA Sch. IV
93. Sullied Sailer	<i>Neptis clinia</i>	Fairly Common	-
94. White Dargontail	<i>Lamproptera curius</i>	Fairly Common	Endemic
95. Yellow Coster	<i>Acraea issoria</i>	Fairly Common	-
96. Yellow Sailer	<i>Neptis ananta</i>	Fairly Common	-
97. BushHopper	<i>Ampittia dioscorides</i>	Fairly Common	-
98. Long-banded Silverline	<i>Spindasis lohita</i>	Fairly Common	-
99. Common Nawab	<i>Polyura athamas</i>	Fairly Common	-
100. Autumn Leaf	<i>Doleschallia bisaltide</i>	Uncommon	-
101. Banded Ace	<i>Halpe zema</i>	Uncommon	Endemic
102. Black Vein Sergeant	<i>Athyma ranga</i>	Uncommon	IWPA Sch.II Part-II
103. Blue Spotted Crow	<i>Euploea midamus</i>	Uncommon	IWPA Sch.II Part-II
104. Blue Tit	<i>Hypolycaena kina</i>	Uncommon	-
105. Centaur Oakblue	<i>Arhopala centaurus</i>	Uncommon	-
106. Chocolate Tiger	<i>Parantica melaneus</i>	Uncommon	-
107. Colour Sergeant	<i>Athyma inara</i>	Uncommon	-
108. Common Baron	<i>Euthalia aconthea</i>	Uncommon	-
109. Common Ciliate Blue	<i>Anthene emolus</i>	Uncommon	-
110. Common Earl	<i>Tanaecia julii</i>	Uncommon	-
111. Common Gull	<i>Cepora nerissa</i>	Uncommon	-
112. Common Lineblue	<i>Prosotas nora</i>	Uncommon	-
113. Common Maplet	<i>Chersonesia risa</i>	Uncommon	-
114. Common Rose	<i>Pachliopta aristolochiae</i>	Uncommon	-
115. Common Sergeant	<i>Athyma perius</i>	Uncommon	-

116. Common Spotted Flat	<i>Celaenorrhinus leucocera</i>	Uncommon	-
117. Common Windmill	<i>Byasa polyeuctes</i>	Uncommon	-
118. Courtsean	<i>Euripus nyctelius</i>	Uncommon	-
119. Dark Archduke	<i>Lexias dirtea khasiana</i>	Uncommon	Endemic; IWPA Sch.II Part II
120. Dark-branded Bushbrown	<i>Mycalesis mineus</i>	Uncommon	-
121. Dingiest Sailer	<i>Neptis harita</i>	Uncommon	-
122. Dusky Diadem	<i>Ethope himachala</i>	Uncommon	Endemic
123. Extra Forest Bob	<i>Scobura cephalo</i>	Uncommon	Endemic
124. Great Evening Brown	<i>Melanitis zitenius</i>	Uncommon	-
125. Great Mormon	<i>Papilio memnon</i>	Uncommon	-
126. Grey Pansy	<i>Junonia atlites</i>	Uncommon	-
127. Indian Awlking	<i>Choaspes benjaminii</i>	Uncommon	-
128. Lilacine Bushbrown	<i>Mycalesis francisca</i>	Uncommon	-
129. Orange Awlet	<i>Burara jaina</i>	Uncommon	-
130. Pale Palm Dart	<i>Telicota colon</i>	Uncommon	-
131. Pale Wanderer	<i>Pareronia avatar</i>	Uncommon	Endemic
132. Pallid Nawab	<i>Charaxes arja</i>	Uncommon	Endemic
133. Plain Sailer	<i>Neptis cartica</i>	Uncommon	Endemic
134. Common Quaker	<i>Neopithecops zalmora</i>	Uncommon	-
135. Restricted Demon	<i>Notocrypta curvifascia</i>	Uncommon	-
136. Royal Cerulean	<i>Jamides caeruleus</i>	Uncommon	Endemic
137. Tailed Judy	<i>Abisara neophron</i>	Uncommon	-
138. Tailed Sulphur	<i>Dercas verhuelli</i>	Uncommon	-
139. Veined Jay	<i>Graphium chironides</i>	Uncommon	-
140. White-edged Blue Baron	<i>Euthalia phemius</i>	Uncommon	-
141. Dark Yellow-banded Flat	<i>Celaenorrhinus aurivittata</i>	Uncommon	Endemic
142. Yellow Flat	<i>Mooreana trichoneura</i>	Uncommon	-
143. Yellow Helen	<i>Papilio nephelus</i>	Uncommon	IWPA Sch.II Part II
144. Powdered Baron	<i>Euthalia monina</i>	Uncommon	-

*IWPA-Indian Wildlife (Protection) Act 1972/ Endemic-Endemic to North East India

ANNEXURE V

Comparative account of Fish diversity of Patkai Lake and Mota beel of study area *

SN	Name of the fish and family	Patkai lake	Motabeel
1	<i>Notopterus chitala</i> (Ham.-Buch): Notopteridae	---	+
2	<i>N. notopterus</i> (Pallas) : Notopteridae	---	+
3	<i>Salmostoma bacaila</i> (Ham.-Buch): Cyprinidae	---	+
4	<i>Rasabora rasbora</i> (Ham.-Buch) : Cyprinidae	---	+
5	<i>Bengala elanga</i> (Ham.-Buch) : Cyprinidae	---	+
6	<i>Amblypharyngodon mola</i> (Ham.-Buch) : Cyprinidae	+	+
7	<i>Cyprinus carpio</i> (Linn) : Cyprinidae	++	---
8	<i>Puntius chola</i> (Ham.-Buch) : Cyprinidae	---	+
9	<i>P. conchonius</i> (Ham.-Buch) : Cyprinidae	---	+
10	<i>P. sophore</i> (Ham.-Buch.) : Cyprinidae	---	+
11	<i>Labeo bata</i> (Ham.-Buch) : Cyprinidae	---	+
12	<i>L. calbasu</i> (Ham.-Buch) : Cyprinidae	---	++
13	<i>L. gonius</i> (Ham.-Buch.) : Cyprinidae	---	+
14	<i>L. rohita</i> (Ham.-Buch.) : Cyprinidae	---	++
15	<i>Cirrhina mrigala</i> (Ham.-Buch.) : Cyprinidae	++	+++
16	<i>C. reba</i> (Ham.-Buch) : Cyprinidae	---	+
17	<i>Catla catla</i> (Ham.-Buch.) : Cyprinidae	---	+
18	<i>Nemachelius botia</i> (Ham.-Buch.): Balitoridae	---	+
19	<i>Mystus cavasius</i> (Ham.-Buch.) : Bagridae	---	+
20	<i>M. seenghala</i> (Sykes) : Bagridae	---	++
21	<i>M. tengra</i> (Ham.-Buch) : Bagridae	---	+
22	<i>M. vittatus</i> (Bloch) : Bagridae	---	+
23	<i>Wallago attu</i> (Schneider) : Siluridae	---	+
24	<i>Channa punctatus</i> (Bloch) : Channidae	++	+++
25	<i>Clarias batrahcus</i> (Linn.) : Claridae	+++	+++
26	<i>Glossogobius guri</i> (Ham.-Buch.) : Gobidae	++	+++
27	<i>Heteropneustes fossilis</i> (Bloch) : Heteropneustidae	--	++
28	<i>Xenentodon cancila</i> (Ham.-Buch.) : Belonidae	--	++
29	<i>Colisa fasciatus</i> (Schneider) : Belonidae	--	+
30	<i>Channa punctatus</i> (Bloch) : Channidae	--	+++
31	<i>C. striatus</i> (Bloch) : Channidae	--	+
32	<i>Anabus testudineus</i> (Bloch) : Anabantidae	--	+
33	<i>Chanda nama</i> (Ham.-Buch.) : Chandidae	--	+
34	<i>C. ranga</i> (Ham.-Buch.) : Chandidae	--	+
35	<i>Macrognaeus aral</i> (Bloch- Schneider) : Mastacembellidae	--	+
36	<i>M. armatus</i> (Lacepede) : Mastacembellidae	--	+

NB: + indicates presence and – indicates absence

* Bhagbati and Borkotoki (2014)

ANNEXURE VI

Phytoplankton groups recorded in the study area*

Chlorophyceae	Desmidiaceae	Bacillariophyceae	Myxophyceae
<i>Ankistrodesmus</i>	<i>Arthrodesmus</i>	<i>Amphora</i>	<i>Anabaena</i>
<i>Botryococcus</i>	<i>Closterium</i>	<i>Cocconeis</i>	<i>Aphanocaspa</i>
<i>Ceratium</i>	<i>Cosmarium</i>	<i>Cyclotella</i>	<i>Coeiospherium</i>
<i>Pediastrum</i>	<i>Desmidium</i>	<i>Cymbella</i>	<i>Merismopodia</i>
<i>Protococcus</i>	<i>Euastrum</i>	<i>Diatoma</i>	<i>Nostoc</i>
<i>Scenedesmus</i>	<i>Gennicularia</i>	<i>Diatomella</i>	<i>Oscillatoria</i>
<i>Spirogyra</i>	<i>Micrasterius</i>	<i>Epithemia</i>	<i>Rivularia</i>
<i>Synura</i>	<i>Penium</i>	<i>Eunotia</i>	<i>Spirulina</i>
<i>Ulotrix</i>		<i>Fragillaria</i>	<i>Netrium</i>
<i>Volvox</i>		<i>Gomphonema</i>	<i>Xanthidium</i>
<i>Zygnema</i>		<i>Melosira</i>	<i>Tetradesmus</i>
		<i>Meridion</i>	<i>Microcystis</i>
		<i>Navicula</i>	<i>Chlamydomonas</i>
		<i>Pinnularia</i>	<i>Chodatella</i>
		<i>Surirella</i>	<i>Crucigenia</i>
		<i>Synedra</i>	<i>Chlamydomonas</i>
		<i>Tabellaria</i>	<i>Chodatella</i>
			<i>Crucigenia</i>
			<i>Dictyosphaerium</i>
			<i>Dinobryon</i>
			<i>Euglena</i>
			<i>Hormidium</i>
			<i>Oedogonium</i>

* Bhagbati and Borkotoki (2014)

ANNEXURE VII

Diversity of zooplankton recorded in patkai lake and mota beel in the study area*

Species	Mota beel	Patkai lake
Rotifera		
<i>Brachionus angularis</i>	+++	+
<i>Brachionus calyciflorus</i>	+	++
<i>Brachionus caudatus aculeatus</i>	+	+
<i>Brachionus diersicornis</i>	+	++
<i>Brachionus quadridentata</i>	--	+
<i>Keratella cochlearis</i>	+++	--
<i>Keratella tropica</i>	+++	+
<i>Lecane lunaris</i>	+	+
<i>Lacane monostyla</i>	+	++
<i>Gastropus minor</i>	--	+
<i>Ascomorpha ovalis</i>	+	++
<i>Asplanchna sp</i>	++	+
<i>Synchaeta sp</i>	+	+
<i>Polyarthra vulgaris</i>	--	+
<i>Philodina citrine</i>	+	+++
Cladocera		
<i>Daphnia pulex</i>	+	+++
<i>Daphnia carinata</i>	+	++
<i>Monia micrua</i>	--	+
<i>Monia brachiata</i>	+	+
<i>Bosmina. Sp</i>	+++	+
<i>Alonella. Sp</i>	+	+
Copepoda		
<i>Cyclopoid copepodite</i>	+	++
<i>Diaptomus pallidus</i>	+	++
<i>Neodiaptomus sp</i>	+	+
<i>Cyclops sp</i>	+++++++	++
<i>Mesocyclops sp</i>	+	+
<i>Nauplius larva</i>	+	+
Protozoa		
<i>Paramecium caudatum</i>	++	+++
<i>Vorticella campanula</i>	+	+++
<i>Pandorina</i>	+	++
<i>Centropixis</i>	+	+
<i>Eudorina</i>	--	+
<i>Diffugia</i>	++	--

NB: + indicates presence and - indicates absence

* Bhagbati and Borkotoki (2014)

ANNEXURE-VIII (A)

List of tree species found in the study area along with their family and Importance Value Index

SN	Species Name	Family	Vernacular Name	IVI
1	<i>Acer campbellii</i> Hook.f. & Thomson ex Hiern	Sapindaceae	Mota bhe	0.3
2	<i>Actinodaphne angustifolia</i> Nees	Lauraceae	Petarichawa	0.4
3	<i>Actinodaphne obovata</i> (Nees) Blume	Lauraceae	Pateri chowa	2.1
4	<i>Adina cordifolia</i> (Roxb.) Hook. f.	Rubiaceae	Haldi sopa	0.2
5	<i>Aglaia spectabilis</i> (Miq.) S.S.Jain & S.Bennet	Meliaceae	Amari/ Bandardima	0.3
6	<i>Ailanthus excelsa</i> Roxb.	Simaroubaceae	Borpat	2.3
7	<i>Ailanthus integrifolia</i> Lam.	Simaroubaceae	Koronga	3.0
8	<i>Alangium chinense</i> (Lour.) Harms	Simaroubaceae	Borpat	1.0
9	<i>Albizia chinensis</i> (Osbeck) Merr.	Cornaceae	Chika morolia	0.3
10	<i>Albizia lebbek</i> (L.) Benth.	Mimosaceae	Saw koro	0.4
11	<i>Albizia myriophylla</i> Benth.	Mimosaceae	Siris	0.2
12	<i>Albizia procera</i> (Roxb) Benth.	Mimosaceae	Goroi/ Hitharu	0.3
13	<i>Albizia lucidior</i> (Steud.) I.C.Nielsen	Mimosaceae	Koroi	0.9
14	<i>Albizia saman</i> (Jacq.) Merr.	Mimosaceae	Moj	0.1
15	<i>Alstonia scholaris</i> (L.) R. Br.	Mimosaceae	Rain tree	1.2
16	<i>Altingia excelsa</i> Noronha	Apocynaceae	Chotiana	9.1
17	<i>Amoora wallichii</i> King	Altingiaceae	Jutuli	5.0
18	<i>Anthecephalus Chinensis</i> (Lamk.) A.Rich ex Walp.	Meliaceae	Amari	0.6
19	<i>Antidesma ghaesembilla</i> Gaertn.	Rubiaceae	Kodom /Roghu	0.1
20	<i>Antidesma montanum</i> Bl.	Euphorbiaceae	Helos	0.1
21	<i>Antidesma acidum</i> Retz.	Euphorbiaceae	Helos	0.1
22	<i>Antidesma bunius</i> (L.) Spreng.	Euphorbiaceae	Helos	0.5
23	<i>Aphanamixis polystachya</i> (Wall.) R.Parker	Euphorbiaceae	Helos	0.7
24	<i>Aporosa wallichii</i> Hook.f.	Meliaceae	Bandardima	0.2
25	<i>Aralia montana</i> Blume	Euphorbiaceae	Helos	0.4
26	<i>Ardisia macrophylla</i> Reinw. ex Blume	Araliaceae	-	0.2
27	<i>Ardisia solanacea</i> (Poir.) Roxb.	Primulaceae	Tulutha poka	0.1
28	<i>Artocarpus chama</i> Buch.-Ham.	Primulaceae	Tulutha poka	6.3
29	<i>Artocarpus lacucha</i> Buch.-Ham.	Moraceae	Sam kothal	0.7
30	<i>Baccaurea ramiflora</i> Lour.	Moraceae	Dewachali	2.7
31	<i>Bauhinia malabarica</i> Roxb.	Moraceae	Bohot	0.1
32	<i>Bauhinia variegata</i> L.	Euphorbiaceae	Leteku	0.1
33	<i>Beilschmiedia brandisii</i> Hook.f.	Caesalpiniaceae	Boga kanchan	0.5
34	<i>Bischofia javanica</i> Bl	Caesalpiniaceae	Kanchan	3.1
35	<i>Bombax ceiba</i> L.	Lauraceae	Leluk	1.1

36	<i>Boswellia serrata</i> Roxb. ex Colebr.	Euphorbiaceae	Urium	0.1
37	<i>Bridelia retusa</i> (L.) Spreng	Malvaceae	Simolu	0.2
38	<i>Bridelia stipularis</i> (L.) Bl.	Bursaraceae	Dhuna/ Guggul	0.1
39	<i>Bursera serrata</i> Wall. ex Colebr.	Euphorbiaceae	Kohir	1.8
40	<i>Butea monosperma</i> (Lamk.) Taub.	Euphorbiaceae	Mou hilikha	0.1
41	<i>Callicarpa arborea</i> Roxb.	Bursaraceae	Miritegga	6.8
42	<i>Canarium benghalense</i> Roxb.	Papilionaceae	Polash	0.1
43	<i>Canarium resiniferum</i> Bruce ex King	Verbenaceae	Maskoita	5.5
44	<i>Carallia brachiata</i> (Lour.) Merr.	Bursaraceae	Dhuna	0.3
45	<i>Caryota urens</i> L.	Bursaraceae	Dhuna	0.1
46	<i>Castanopsis armata</i> (Roxb.) Spach	Rhizophoraceae	Mahi thekara	3.8
47	<i>Castanopsis hystrix</i> Hook.f. & Thomson ex A. DC.	Arecaceae	Sewa	1.8
48	<i>Castanopsis indica</i> (Roxb. ex Lindl.) A.DC.	Fagaceae	Saru singori	10.6
49	<i>Castanopsis tribuloides</i> (Sm.) A.DC.	Fagaceae	Doba singori	0.2
50	<i>Celastrus monosperma</i> Roxb.	Fagaceae	Hingori, Singori	0.1
51	<i>Celtis tetrandra</i> Roxb.	Fagaceae	Phul singori	0.2
52	<i>Chisocheton cumingianus</i> (C.DC.) Harms	Celestraceae	Bhum loti	0.4
53	<i>Chrysophyllum roxburghii</i> G.Don	Cannabaceae		0.1
54	<i>Chukrasia tabularis</i> A. Juss.	Meliaceae	Bandardima	3.4
55	<i>Cinnamomum glanduliferum</i> (Nees.) Meissn.	Sapotaceae	Bon pitha	0.3
56	<i>Cinnamomum bejolghota</i> (Buch.-Ham.) Sweet	Meliaceae	Bogi poma	1.6
57	<i>Cinnamomum glaucescens</i> (Nees) Hand-Mazz.	Lauraceae	Gon soroi	0.2
58	<i>Combretum accuminatum</i> Roxb.	Lauraceae	Pati hunda	0.2
59	<i>Cordia dichotoma</i> G.Forst.	Lauraceae	Gonsoroi	0.2
60	<i>Crateva nurvala</i> Buch.-Ham.	Boraginaceae	Gobarhuta	0.1
61	<i>Croton tiglium</i> L.	Capparaceae	Borun	0.1
62	<i>Croton roxburghii</i> Balak	Euphorbiaceae	Koni bih	1.3
63	<i>Crypteronia paniculata</i> Blume	Euphorbiaceae	Mahudi	0.2
64	<i>Cryptocarya amygdalina</i> Nees.	Penaeaceae	Gorumora	0.1
65	<i>Cyathea spinulosa</i> Wall. ex Hook.	Lauraceae	Bon jolokia	0.8
66	<i>Dalbergia assamica</i> Benth.	Cyathaceae	-	0.1
67	<i>Derris elliptica</i> (Wall.) Benth.	Papilionaceae	Koroi	0.1
68	<i>Dillenia indica</i> L.	Papilionaceae	Bokal bih, Etam Sali	2.0
69	<i>Dillenia pentagyna</i> Roxb.	Dillaniaceae	Ou tenga	0.2
70	<i>Dimocarpus longan</i> Lour.	Dillaniaceae	Oxi	0.2
71	<i>Dipterocarpus retusus</i> Bl.	Sapindaceae	Kath lichu/ bonlichu	40.2
72	<i>Drimycarpus racemosus</i> Hook. f.	Dipterocarpaceae	Holong	0.2
73	<i>Duabanga grandiflora</i> (DC.) Walp.	Anacardiaceae	Am chaleng	8.5
74	<i>Dysoxylum alliaria</i> (Buch.-Ham.) Balak.	Lythraceae	Khokon	0.4
75	<i>Dysoxylum binectariferum</i> (Roxb.) Hook. f.	Meliaceae	Bandardima	3.1

76	<i>Dysoxylum excelsum</i> Blume syn <i>D.procerum</i>	Meliaceae	Bandardima	5.4
77	<i>Dysoxylum reticulatum</i> King.	Meliaceae	Bandardima	0.1
78	<i>Ehretia acuminata</i> R.Br.	Meliaceae	Bandardima	0.1
79	<i>Elaeocarpus aristatus</i> Roxb.	Boraginaceae	Bual	0.1
80	<i>Elaeocarpus floribundus</i> Bl.	Elaeocarpaceae	Borsopa	0.6
81	<i>Elaeocarpus grandifolius</i> Kurz.	Elaeocarpaceae	Garela sopa	0.4
82	<i>Elaeocarpus rogusus</i> Roxb.	Elaeocarpaceae	Jalpai	0.3
83	<i>Elaeocarpus sikkimensis</i> Mast.	Elaeocarpaceae	Seleng	0.1
84	<i>Elaeocarpus sphaericus</i> (Gaertn.) K. Schumann.	Elaeocarpaceae	Rudraksha	3.5
85	<i>Elaeocarpus tectorius</i> (Lour.) Poir.	Elaeocarpaceae	Poreng	2.5
86	<i>Endospermum chinense</i> Benth.	Euphorbiaceae	Phul gamari	2.0
87	<i>Engelhardtia spicata</i> Lechen ex Blume	Juglandaceae	Ronga amari	0.4
88	<i>Erythrina indica</i> Lamk.	Papilionaceae	Modar	0.1
89	<i>Erythrina stricta</i> Roxb.	Papilionaceae	Modar	0.1
90	<i>Eugenia grandis</i> Wight.	Myrtaceae		0.1
91	<i>Eurya accuminata</i> DC	Theaceae	Murmuria	1.0
92	<i>Eurya japonica</i> Thunb.	Theaceae	Murmuria	0.3
93	<i>Evodia meliaefolia</i> Benth.	Rutaceae	Maiphak	0.1
94	<i>Evodia triphylla</i> DC	Rutaceae	-	0.1
95	<i>Ficus auriculata</i> Lour.	Moraceae	Atha dimoru	0.2
96	<i>Ficus benghalensis</i> L.	Moraceae	Borgas	0.4
97	<i>Ficus benjamina</i> L.	Moraceae	Jori	3.6
98	<i>Ficus hirta</i> Vahl.	Moraceae	Khongal dimoru	0.1
99	<i>Ficus hispida</i> Vahl.	Moraceae	khohota dimoru	0.6
100	<i>Ficus lepidosa</i> Wall	Moraceae	Dimoru	0.2
101	<i>Ficus nervosa</i> Hayne ex Roth.	Moraceae	Khori pati dimoru	0.2
102	<i>Ficus racemosa</i> L.	Moraceae	Mou dimoru	0.2
103	<i>Ficus religiosa</i> L.	Moraceae	Ahot	0.4
104	<i>Ficus rumphi</i> Bl.	Moraceae	Pakhori/Jhori	0.2
105	<i>Ficus semicordata</i> Buch-Ham ex J. E. Sm.	Moraceae	-	0.6
106	<i>Garcinia atroviridis</i> Griff ex T Anderson	Cluciaceae	-	0.8
107	<i>Garcinia cowa</i> Roxb ex DC	Cluciaceae	Kau thakera	0.1
108	<i>Garcinia kydia</i> Roxb.	Cluciaceae	Kuji thakera	0.2
109	<i>Garcinia lancifolia</i> Roxb.	Cluciaceae	Rupahi thekare	0.5
110	<i>Garcinia morella</i> (Gaertn) Desr.	Cluciaceae	Kuji thakera	0.1
111	<i>Garcinia pedunculata</i> Roxb.	Cluciaceae	Sochopa tenga	0.9
112	<i>Garcinia spicata</i> (Wight & Arn.) Hook f.	Cluciaceae	Bor thakera	0.1
113	<i>Garcinia xanthochymus</i> Hook f.	Cluciaceae	-	0.3
114	<i>Garcinia dulcis</i> (Roxb.) Kurz	Cluciaceae	Tepor	0.1
115	<i>Garcinia paniculata</i> Roxb.	Euphorbiaceae	Pani chitiki	0.1

116	<i>Glochidion assamicum</i> Hook f.	Euphorbiaceae	Gorumora	0.4
117	<i>Glochidion multiloculare</i> (Wall.) Voigt.	Verbenaceae	Gomari	0.1
118	<i>Gmelina arborea</i> Roxb.	Tilaceae	Kukursuta	1.4
119	<i>Grewia disperma</i> Rottb.	Tilaceae	Kukursuta	0.2
120	<i>Grewia hirsuta</i> Vahl.	Tilaceae	Kukursita	0.3
121	<i>Grewia microcos</i> L.	Tilaceae	Kukursuta	0.6
122	<i>Gynocardia odorata</i> R. Br.	Flacourtiaceae	Lemtem	0.7
123	<i>Heteropanax fragrans</i> (Roxb.) Seem.	Araliaceae	Keseru	1.0
124	<i>Horsfieldia amygdalina</i> (Wall.) Warb.	Myristicaceae	Amol	0.1
125	<i>Horsfieldia kingii</i> (Hook.f.) Warb.	Myristicaceae	Amol	0.1
126	<i>Hydnocarpus kurzii</i> (King) Warb.	Flacourtiaceae	Salmugra	0.7
127	<i>Ilex godajam</i> Colebr. ex Hook.f.	Aquifoliaceae	Hati kerepa	0.6
128	<i>Kydia calycina</i> Roxb.	Malvaceae	Pichola	0.9
129	<i>Lagerstroemia speciosa</i> (L.) Pers.	Lythraceae	Azar	0.5
130	<i>Lannea coromandelica</i> (Houtt.) Merr.	Anacardiaceae	Jia poma	0.3
131	<i>Laportea crenulata</i> Gaudich.	Urticaceae	Surat	0.1
132	<i>Leea asiatica</i> (L.) Ridsale	Leeaceae	Ahoi	0.2
133	<i>Leea indica</i> (Burm f) Merr.	Leeaceae	Kukura thangia	0.5
134	<i>Leea macrophylla</i> Roxb.	Leeaceae	-	0.5
135	<i>Lindera assamica</i> Kurz.	Lauraceae	Matabhe	0.3
136	<i>Lindera latifolia</i> Hook f & Th.	Lauraceae	-	0.8
137	<i>Litsea cubeba</i> (Lour.) Pers.	Lauraceae	Mejangkori	0.9
138	<i>Litsea elongata</i> Wall.	Lauraceae	Petari-sawa	0.1
139	<i>Litsea laeta</i> (Nees) Hook f.	Lauraceae	boin hualu	0.1
140	<i>Litsea lancifolia</i> (Roxb.) Wall	Lauraceae	Loban	0.1
141	<i>Litsea monoptala</i> (Roxb.) Pers.	Lauraceae	Sualu	2.0
142	<i>Litsea nitida</i> Roxb. Ex Wall.	Lauraceae	Kotholua	0.4
143	<i>Litsea salicifolia</i> (Roxb ex Nees) Hook f	Lauraceae	Digholoti	0.2
144	<i>Litsea sebifera</i> Pers.	Lauraceae	Neluka, Heluka	0.1
145	<i>Livistona jenkinsiana</i> R. Br.	Areaceae	Tokou	0.5
146	<i>Macaranga denticulata</i> (Bl.) Muel. Arg	Euphorbiaceae	Jaglo/ Morolia	5.7
147	<i>Macaranga indica</i> Wight	Euphorbiaceae	Jaglo	1.4
148	<i>Maesa chisia</i> Buch.-Ham. ex D. Don	Primulaceae	Susu poroma	0.1
149	<i>Magnolia champaca</i> (L.) Baill. ex Pierre	Magnoliaceae	Titasopa	2.8
150	<i>Magnolia doltropa</i> (Buch.-Ham. ex DC.) Figlar	Magnoliaceae	Sopa	0.2
151	<i>Magnolia griffithii</i> Hook.f. & Thomson	Magnoliaceae	Gahori sopa	1.7
152	<i>Magnolia hodgsonii</i> (Hook.f. & Thomson) H.Keng	Magnoliaceae	Borhomthuri	8.0
153	<i>Magnolia insignis</i> Wall.	Magnoliaceae	Phul sopa	0.6
154	<i>Magnolia mannii</i> (King) Figla	Magnoliaceae	Kothal sopa	0.5
155	<i>Magnolia montana</i> (Blume) Figlar	Magnoliaceae	Pan sopa	0.9

156	<i>Magnolia nilagirica</i> (Zenker) Figlar	Magnoliaceae	cheni champa	0.1
157	<i>Magnolia oblonga</i> (Wall. ex Hook.f. & Thomson) Figlar	Magnoliaceae	Bor sopa/kothal sopa	0.4
158	<i>Magnolia pterocarpa</i> Roxb.	Magnoliaceae	Pansopa	2.6
159	<i>Malia composita</i> Willd.	Meliaceae	-	0.1
160	<i>Mallotus ferrugineus</i> (Roxb.) Muel. Arg.	Euphorbiaceae	Morolia	3.8
161	<i>Mallotus philippinensis</i> (Lamk) Muel. Arg.	Euphorbiaceae	Joroth	0.1
162	<i>Mangifera sylvatica</i> Roxb.	Anacardiaceae	Bon am	0.5
163	<i>Mansonia dipikae</i> Purkayastha	Sterculiaceae	Badam	0.3
164	<i>Memecylon umbellatum</i> Burm. f.	Melastomataceae	-	0.1
165	<i>Mesua ferrea</i> L.	Cluciaceae	Nahor	6.6
166	<i>Morus laevigata</i> Wall.	Moraceae	Bola	2.5
167	<i>Oroxylum indicum</i> (L.) Kurz	Bignoniaceae	Bhat ghila	0.1
168	<i>Osteodes paniculata</i> Bl.	Euphorbiaceae	-	1.4
169	<i>Persea bombycina</i> (King ex. Hook) Kostel	Lauraceae	Sum	0.3
170	<i>Persea gamblei</i> (King. ex. Hook. F.) Kostel	Lauraceae	Mejathi	0.1
171	<i>Phoebe attenuata</i> Nees.	Lauraceae	Bon sum	0.3
172	<i>Phoebe cooperiana</i> Kanjilal ex. Das	Lauraceae	Mekahi	0.5
173	<i>Phoebe goalporensis</i> Hutchinson	Lauraceae	Bonsom	2.5
174	<i>Polyalthia jenkinsii</i> Hook f & Th	Annonaceae	Koliori	0.2
175	<i>Premna latifolia</i> Roxb.	Verbenaceae	Gohora	0.1
176	<i>Premna milleflora</i> Cl.	Verbenaceae	Silguri	0.1
177	<i>Pterospermum acerifolium</i> (L.) Willd	Sterculiaceae	Hati porila	1.2
178	<i>Quercus semiserrata</i> Roxb.	Fagaceae	-	0.1
179	<i>Quercus serrata</i> Murray	Fagaceae	-	1.0
180	<i>Rhus succedanea</i> L.	Anacardiaceae	Am selenga	0.2
181	<i>Rhus javanica</i> L.	Anacardiaceae	-	2.1
182	<i>Sapium baccatum</i> Roxb.	Euphorbiaceae	Seleng/lewa	10.2
183	<i>Sapium eugenifolium</i> Buch-Ham	Euphorbiaceae	Korha	1.4
184	<i>Sapium sebiferum</i> Roxb.	Euphorbiaceae	-	0.3
185	<i>Sapium insigne</i> (Royle) Trimen	Euphorbiaceae	Moha kola	0.1
186	<i>Saurauia roxburghii</i> Wall.	Saurauiaceae	Bon posola	0.4
187	<i>Saurauia napaulensis</i> DC.	Saurauiaceae	-	0.5
188	<i>Saurauia pendula</i> Blume	Saurauiaceae	-	0.2
189	<i>Schima wallichii</i> (DC) Kuntze	Theaceae	Bhe, Naga bhe	9.9
190	<i>Senna siamea</i> (Lam.) H.S.Irwin & Barneby	Caesalpiniaceae	-	0.1
191	<i>Shorea assamica</i> Dyer	Dipterocarpaceae	Mekai	6.0
192	<i>Sloanea sterculiacea</i> var. <i>assamica</i> (Benth.) Coode	Elaeocarpaceae	Bandarnema/ Joba hingori	0.1
193	<i>Spathodea campanulata</i> P.Beauv.	Bignoniaceae	-	0.1

194	<i>Spondias pinnata</i> (L. f.) Kurz.	Anacardiaceae	Amora	0.4
195	<i>Spondias axillaris</i> Roxb.	Anacardiaceae	Neem tenga	0.7
196	<i>Sterculia alata</i> Roxb.	Sterculiaceae	-	0.6
197	<i>Sterculia villosa</i> Roxb.	Sterculiaceae	Udal	2.8
198	<i>Stereospermum chelonoides</i> (L.f.) DC.	Bignoniaceae	Dhopa paroli	2.5
199	<i>Stereospermum colais</i> (Buch.-Ham. ex Dillwyn) Mabb.	Bignoniaceae	Paroli	2.4
200	<i>Symplocos glauca</i> (Thunb.) Koidz.	Symplocaceae	-	0.1
201	<i>Symplocos oxyphylla</i> Wall.	Symplocaceae	-	0.1
202	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Jamu	0.1
203	<i>Syzygium fruticosum</i> DC.	Myrtaceae	Kothia Jamu	0.1
204	<i>Syzygium kurzii</i> (Duthie) N.P.Balakr.	Myrtaceae	Bogi jamu	0.2
205	<i>Syzygium operculatum</i> (Roxb.) Nied	Myrtaceae	-	1.1
206	<i>Tectona grandis</i> L. f.	Verbenaceae	Segun (Planted)	0.4
207	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Combretaceae	Bhomora	8.0
208	<i>Terminalia chebula</i> Retz.	Combretaceae	Silikha	2.1
209	<i>Terminalia citrina</i> Roxb. ex Fleming	Combretaceae	Silikha	0.9
210	<i>Terminalia myriocarpa</i> Van Heurck & Müll. Arg.	Combretaceae	Holokh	3.1
211	<i>Tetrameles nudiflora</i> R. Br.	Datisceae	Bhelew	0.2
212	<i>Toona ciliata</i> M. Roem.	Meliaceae	Poma	0.3
213	<i>Trema orientalis</i> (L.) Blume	Cannabaceae	Phakdema	1.3
214	<i>Trevesia palmata</i> (Roxb. ex Lindl.) Vis.	Araliaceae	Bhotola	0.4
215	<i>Vatica lanceifolia</i> (Roxburgh) Blume	Dipterocarpaceae	Morsal	9.3
216	<i>Vitex glabrata</i> R.Br.	Lamiaceae	Pani amara	0.1
217	<i>Vitex peduncularis</i> Wall. ex Schauer	Lamiaceae	Ahoi/Sila	0.1
218	<i>Walsura robusta</i> Roxb.	Meliaceae	Lali	1.7
219	<i>Wrightia coccinea</i> (Roxb. ex Hornem.) Sims	Apocynaceae	-	0.1
220	<i>Zanthoxylum rhetsa</i> DC.	Sapindaceae	Mota bhe	0.1

Annexure-VIII (B)

List of species found in shrub layer

S.No.	Name of species	Family	
1	<i>Abelmoschus moschatus</i> Medik.	Malvaceae	shrubs
2	<i>Abroma augusta</i> (L.) L. f.	Sterculiaceae	Shrub
3	<i>Alangium chinense</i> (Lour.) Harms	Cornaceae	Small tree/Shrub
4	<i>Antidesma acidum</i> Retz.	Phyllanthaceae	Shrub
5	<i>Antidesma buniis</i> (L.) Spreng.	Phyllanthaceae	Shrub
6	<i>Aralia montana</i> Blume	Araliaceae	Small tree/Shrub
7	<i>Ardisia depressa</i> C.B.Clarke	Primulaceae	Shrub
8	<i>Ardisia humilis</i> Vahl	Primulaceae	Shrub
9	<i>Ardisia macrocarpa</i> Wall.	Primulaceae	Small tree/Shrub
10	<i>Ardisia paniculata</i> Roxb.	Primulaceae	Shrub
11	<i>Ardisia solanacea</i> (Poir.) Roxb.	Primulaceae	Shrub
12	<i>Boehmeria nivea</i> (L.) Gaudich.	Urticaceae	Shrub
13	<i>Boehmeria polystachya</i> Wedd.	Urticaceae	Shrub
14	<i>Calamus erectus</i> Roxb.	Arecaceae	Shrub
15	<i>Calamus floribundus</i> Griff.	Arecaceae	Stragling shrub
16	<i>Calamus gracilis</i> Roxb.	Arecaceae	Stragling shrub
17	<i>Calamus latifolius</i> Roxb.	Arecaceae	Stragling shrub
18	<i>Calamus tenuis</i> Roxb.	Arecaceae	Stragling shrub
19	<i>Calamus flagellum</i> Griff. ex Mart.	Arecaceae	Stragling shrub
20	<i>Calamus kingianus</i> Becc.	Arecaceae	Stragling shrub
21	<i>Calamus nambariensis</i> Becc.	Arecaceae	Stragling shrub
22	<i>Callicarpa longifolia</i> Lam.	Verbenaceae	Shrub
23	<i>Camellia sinensis</i> var. <i>assamica</i> (J.W.Mast.) Kitam	Theaceae	Shrub
24	<i>Canthium gracilipes</i> Kurz	Rubiaceae	Stragling shrub
25	<i>Capparis olacifolia</i> Hook. f. & Thomson	Capparaceae	Stragling shrub
26	<i>Casearia tomentosa</i> Roxb.	Salicaceae	Shrub
27	<i>Casearia vareca</i> Roxb.	Salicaceae	Shrub
28	<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob.	Asteraceae	Shrub
29	<i>Cissus repens</i> Lamk.	Vitaceae	Stragling shrub
30	<i>Clerodendrum cephalanthum</i> Oliv.	Lamiaceae	Stragling shrub
31	<i>Clerodendrum glandulosum</i> Lindl.	Lamiaceae	Shrub
32	<i>Clerodendrum infortunatum</i> L.	Lamiaceae	Shrub
33	<i>Clerodendrum serratum</i> (L.) Moon	Lamiaceae	Shrub
34	<i>Combretum acuminatum</i> Roxb.	Combretaceae	Stragling shrub
35	<i>Costus speciosus</i> (J.Koenig) Sm.	Costaceae	Stragling shrub
36	<i>Croton caudatus</i> Geiseler	Euphorbiaceae	Climber
37	<i>Cyathea spinulosa</i> Wall. ex Hook.	Cyathaceae	Shrub
38	<i>Dalbergia stipulacea</i> Roxb.	Papilionaceae	Stragling shrub
39	<i>Dalhousiea bracteata</i> (Roxb.) Benth.	Papilionaceae	Stragling shrub

40	<i>Dracaena angustifolia</i> (Medik.) Roxb.	Aspergaceae	Shrub
41	<i>Elaeagnus caudata</i> Schltdl. ex Momiy.	Elaeagnaceae	Stragling shrub
42	<i>Entada pursaetha</i> DC	Mimosaceae	Stragling shrub
43	<i>Eugenia balsamea</i> Wight	Myrtaceae	Shrub
44	<i>Fagerlindia fasciculata</i> (Roxb.) Tiruveng	Rubiaceae	Shrub
45	<i>Ficus hederacea</i> Roxb.	Moraceae	Stragling shrub
46	<i>Glochidion multiloculare</i> (Rottler ex Willd.) Voigt	Phyllanthaceae	Small tree/shrub
47	<i>Glochidion varians</i> Miq.	Phyllanthaceae	Small tree/shrub
48	<i>Glycosmis pentaphylla</i> (Retz) DC.	Rutaceae	Shrub
49	<i>Gnetum gnemon</i> L.	Gnetaceae	Shrub
50	<i>Gnetum montanum</i> Markgraf	Gnetaceae	Stragling shrub
51	<i>Grewia hirsuta</i> Vahl	Malvaceae	Small tree/shrub
52	<i>Grewia multiflora</i> Juss.	Malvaceae	Small tree/shrub
53	<i>Grewia nervosa</i> (Lour.) Panigrahi	Malvaceae	Small tree/shrub
54	<i>Grewia polygama</i> Roxb.	Malvaceae	Small tree/shrub
55	<i>Hedychium gardenerianum</i> Rosc.	Zingiberaceae	Shrub
56	<i>Hedychium spicatum</i> Buch-Ham ex Sm	Zingiberaceae	Shrub
57	<i>Hedychium stenopetalum</i> Lodd.	Zingiberaceae	Shrub
58	<i>Holmskioldia sanguinea</i> Retz.	Lamiaceae	Stragling shrub
59	<i>Hovenia dulcis</i> Thunb.	Rhamnaceae	Shrub
60	<i>Ichnocarpus frutescens</i> (L.) W.T.Aiton	Apocynaceae	Shrub
61	<i>Knoxia mollis</i> R.Br. ex Wight & Arn.	Rubiaceae	Shrub
62	<i>Lantana camara</i> L.	Verbenaceae	Shrub
63	<i>Laportea crenulata</i> Gaudich.	Urticaceae	Shrub
64	<i>Leea asiatica</i> (L.) Ridsdale	Vitaceae	Shrub
65	<i>Leea indica</i> (Burm. f.) Merr.	Vitaceae	Shrub
66	<i>Leea macrophylla</i> Roxb. ex Hornem.	Vitaceae	Shrub
67	<i>Leea sambucina</i> Blanco	Vitaceae	Shrub
68	<i>Licuala peltata</i> Roxb. ex Buch.-Ham.	Arecaceae	Shrub
69	<i>Litsea salicifolia</i> (J. Roxb. ex Nees) Hook. f.	Lauraceae	Shrub
70	<i>Manihot esculenta</i> Crantz	Apocynaceae	Shrub
71	<i>Melastoma malabathricum</i> L.	Malastomaceae	Shrub
72	<i>Micromelum pubescens</i> Blume	Rutaceae	Small tree/shrub
73	<i>Mimosa himalayana</i> Gamble	Mimosaceae	Stragling shrub
74	<i>Morinda angustifolia</i> Roxb.	Rubiaceae	Shrub
75	<i>Mucuna birdwoodiana</i> Tutcher	Papilionaceae	Stragling shrub
76	<i>Mussaenda frondosa</i> L.	Rubiaceae	Shrub
77	<i>Mussaenda roxburghii</i> Hook f.	Rubiaceae	Shrub
78	<i>Oxyspora paniculata</i> (D. Don) DC.	Malastomaceae	Shrub
79	<i>Pandanus fascicularis</i> Lam.	Pandanaceae	Shrub
80	<i>Phragmites karka</i> (Retz.) Trin. ex Steud.	Poaceae	Shrub
81	<i>Phlogacanthus curviflorus</i> (Wall.) Nees	Acanthaceae	Shrub
82	<i>Phrynium placentarium</i> (Lour.) Merr.	Marantaceae	Shrub

83	<i>Pinanga gracilis</i> Blume	Arecaceae	Shrub
84	<i>Prunus jenkinsii</i> Hook.f. & Thomson	Rosaceae	Shrub
85	<i>Saccharum spontaneum</i> L.	Poaceae	Shrub
86	<i>Salacca secunda</i> Griff.	Arecaceae	Shrub
87	<i>Saprosma ternatum</i> Hook f.	Rubiaceae	Shrub
88	<i>Saurauia napaulensis</i> DC.	Saurauiaceae	Shrub
89	<i>Saurauia pendula</i> Blume	Saurauiaceae	Shrub
90	<i>Saurauia roxburghii</i> Wall.	Saurauiaceae	Shrub
91	<i>Schefflera impressa</i> (C.B.Clarke) Harms	Araliaceae	Shrub/ Small tree
92	<i>Schefflera venulosa</i> (Wight & Arn.) Harms	Araliaceae	Stragling shrub
93	<i>Solanum torvum</i> Sw.	Solanaceae	Shrub
94	<i>Sterculia coccinea</i> Roxb. Ex G Don	Sterculiaceae	Shrub
95	<i>Sterculia hymenocalyx</i> K. Schum.	Sterculiaceae	Shrub
96	<i>Tabernaemontana divaricata</i> (L.) R.Br. ex Roem. & Schult.	Apocynaceae	Shrub
97	<i>Tetracera indica</i> (Christm. & Panz.) Merr.	Dillaniaceae	Stragling shrub
98	<i>Tetracera sarmentosa</i> (L.) Vahl	Dillaniaceae	Stragling shrub
99	<i>Tetrastigma thomsonianum</i> Planch.	Vitaceae	Stragling shrub
100	<i>Thunbergia grandiflora</i> (Roxb. ex Rottl.) Roxb.	Acanthaceae	Stragling shrub
101	<i>Thysanolaena maxima</i> (Roxb.) Kuntze	Poaceae	Shrubs
102	<i>Urena lobata</i> L	Maliaceae	shrub
103	<i>Zanthoxylum nitidum</i> (Roxb.) DC.	Rutaceae	Stragling shrub

Annexure-VIII (C)

List of species found in Herb layer

SN	Species	Family	Status
1	<i>Abacopteris lakhimpurensis</i>	Thelypteridaceae	Common
2	<i>Achyranthes aspera</i>	Amaranthaceae	Common
3	<i>Adiantum caudatum</i>	Pteridaceae	Common
4	<i>Ageratum conyzoides</i>	Asteraceae	Common
5	<i>Ageratum houstonianum</i>	Asteraceae	Common
6	<i>Alocasia spp</i>	Araceae	Common
7	<i>Alpinia allughas</i>	Zingiberaceae	Common
8	<i>Alpinia galanga</i>	Zingiberaceae	Common
9	<i>Amischotolype dolichandra</i>	Commelinaceae	Common
10	<i>Ampelopteris prolifera</i>	Thelypteridaceae	Common
11	<i>Amphineuron opulentum</i>	Thelypteridaceae	Common
12	<i>Angiopteris evecta</i>	Marantaceae	Common
13	<i>Anoectochilus sikkimensis</i>	Orchidaceae	Common
14	<i>Anthurium spp.</i>	Araceae	Common
15	<i>Asplenium nidus</i>	Aspleniaceae	Common
16	<i>Asplenium rhizophyllum</i>	Aspleniaceae	Common
17	<i>Axonopus compressus</i>	Poaceae	Common
18	<i>Axonopus spp</i>	Poaceae	Common
19	<i>Begonia roxburghii</i>	Begoniaceae	Common
20	<i>Blumea fistulosa</i>	Asteraceae	Common
21	<i>Blumea lacera</i>	Asteraceae	Common
22	<i>Borreria articularis</i>	Rubiaceae	Common
23	<i>Borreria hispida</i>	Rubiaceae	Common
24	<i>Canna spp</i>	Cannaceae	Common
25	<i>Cenchrus ciliaris</i>	Poaceae	Common
26	<i>Centotheca lappacea</i>	Poaceae	Common
27	<i>Cissampelos pareira</i>	Menispermaceae	Common
28	<i>Cissus repens</i>	Vitaceae	Common
29	<i>Coccinia grandis</i>	Cucurbitaceae	Common
30	<i>Colocasia sp.</i>	Araceae	Common
31	<i>Commelina spp.</i>	Commelinaceae	Common
32	<i>Costus speciosus</i>	Costaceae	Common
33	<i>Curculigo orchioides</i>	Hypoxidaceae	Common
34	<i>Curcuma spp.</i>	Zingiberaceae	Common
35	<i>Cyclosorus dentatus</i>	Thelypteridaceae	Common
36	<i>Cyperus spp</i>	Cyperaceae	Common
37	<i>Cyphostemma spp</i>	Vitaceae	Common
38	<i>Cyrtococcum accrescens</i>	Poaceae	Common
39	<i>Dicliptera roxburghii</i>	Acanthaceae	Common
40	<i>Digitaria ciliaris</i>	Poaceae	Common
41	<i>Digitaria spp</i>	Poaceae	Common

42	<i>Dioscorea pentaphylla</i>	Dioscoreaceae	Common
43	<i>Dioscorea procera</i>	Dioscoreaceae	Common
44	<i>Dioscorea spp</i>	Dioscoreaceae	Common
45	<i>Diplazium asperum</i>	Athyriaceae	Common
46	<i>Diplazium spp</i>	Athyriaceae	Common
47	<i>Drymaria cordata</i>	Caryophyllaceae	Common
48	<i>Drynaria quercifolia</i>	Polypodiaceae	Common
49	<i>Drynaria spp.</i>	Caryophyllaceae	Common
50	<i>Eclipta spp.</i>	Asteraceae	Common
51	<i>Eragrostis gangetica</i>	Poaceae	Common
52	<i>Floscopa spp</i>	Commelinaceae	Common
53	<i>Gleichenia linearis</i>	Gleicheniaceae	Common
54	<i>Gleichenia longissima</i>	Gleicheniaceae	Common
55	<i>Gleichenia microphylla</i>	Gleicheniaceae	Common
56	<i>Hedychium spp.</i>	Zingiberaceae	Common
57	<i>Heliotropium indicum</i>	Boraginaceae	Common
58	<i>Heteropogon contortus</i>	Poaceae	Common
59	<i>Homalomena aromatica</i>	Araceae	Common
60	<i>Impatiens tripetala</i>	Balsaminaceae	Common
61	<i>Kaempferia rotunda</i>	Zingiberaceae	Common
62	<i>Lepidagathis incurva</i>	Acanthaceae	Common
63	<i>Lippia javanica</i>	Verbenaceae	Common
64	<i>Lycopodium pimpinellifolium</i>	Lycopodiaceae	Common
65	<i>Lycopodium serratum</i>	Lycopodiaceae	Common
66	<i>Lygodium flexuosum</i>	Lycopodiaceae	Common
67	<i>Merremia umbellata</i>	Convolvulaceae	Common
68	<i>Microsorium punctatum</i>	Polypodiaceae	Common
69	<i>Mikania micrantha</i>	Asteraceae	Common
70	<i>Mollugo pentaphylla</i>	Molluginaceae	Common
71	<i>Mucuna prurita</i>	Leguminosae	Common
72	<i>Murdannia nudiflora</i>	Commelinaceae	Common
73	<i>Oplismenus burmannii</i>	Poaceae	Common
74	<i>Oplismenus compositus</i>	Poaceae	Common
75	<i>Oplismenus longifolium</i>	Poaceae	Common
76	<i>Paederia foetida</i>	Rubiaceae	Common
77	<i>Panicum indicum</i>	Poaceae	Common
78	<i>Phrynium placentarium</i>	Marantaceae	Common
79	<i>Phrynium acuminatum</i>	Marantaceae	Common
80	<i>Phrynium capitatum</i>	Marantaceae	Common
81	<i>Piper griffithii</i>	Piperaceae	Common
82	<i>Piper sylvatica</i>	Piperaceae	Common
83	<i>Piper thomsonii</i>	Piperaceae	Common
84	<i>Polygonum chinense</i>	Polygonaceae	Common
85	<i>Pothos cathcartii</i>	Araceae	Common
86	<i>Pothos scandens</i>	Araceae	Common

87	<i>Pteris cretica</i>	Pteridaceae	Common
88	<i>Pteris semipinnata</i>	Pteridaceae	Common
89	<i>Pyrrhosia longifolia</i>	Polypodiaceae	Common
90	<i>Rhynchosglossum spp</i>	Gesneriaceae	Common
91	<i>Rubia cordifolia</i>	Rubiaceae	Common
92	<i>Scirpus juncooides</i>	Cyperaceae	Common
93	<i>Selaginella spp</i>	Selaginellaceae	Common
94	<i>Setaria palmifolia</i>	Poaceae	Common
95	<i>Spermacoce hispida</i>	Rubiaceae	Common
96	<i>Sporobolus spp</i>	Poaceae	Common
97	<i>Stenochlaena palustris</i>	Blechnaceae	Common
98	<i>Stephania japonica</i>	Menispermaceae	Common
99	<i>Urtica spp</i>	Urticaceae	Common
100	<i>Vitis japonica</i>	Vitaceae	Common
101	<i>Zingiber purpureum</i>	Zingiberaceae	Common
102	<i>Zingiber rubens</i>	Zingiberaceae	Common
103	<i>Zingiber zerumbet</i>	Zingiberaceae	Common
104	<i>Adiantum capillus-veneris</i>	Pteridaceae	Least Concern
105	<i>Commelina benghalensis</i>	Commelinaceae	Least Concern
106	<i>Cyperus pilosus</i>	Cyperaceae	Least Concern
107	<i>Desmodium adscendens</i>	Leguminosae	Least Concern
108	<i>Diplazium esculentum</i>	Athyriaceae	Least Concern
109	<i>Erianthus ravennae</i>	Poaceae	Least Concern
110	<i>Lasia spinosa</i>	Araceae	Least Concern
111	<i>Lindernia crustacea</i>	Linderniaceae	Least Concern
112	<i>Lindernia viscosa</i>	Linderniaceae	Least Concern
113	<i>Ludwigia octovalvis</i>	Onagraceae	Least Concern
114	<i>Mimosa pudica</i>	Leguminosae	Least Concern
115	<i>Paspalum conjugatum</i>	Poaceae	Least Concern
116	<i>Paspalum scrobiculatum</i>	Poaceae	Least Concern
117	<i>Phragmites karka</i>	Poaceae	Least Concern
118	<i>Polygonum barbatum</i>	Polygonaceae	Least Concern
119	<i>Polygonum hydropiper</i>	Polygonaceae	Least Concern
120	<i>Polygonum plebeium</i>	Polygonaceae	Least Concern
121	<i>Saccharum spontaneum</i>	Poaceae	Least Concern

ANNEXURE-IX

Table (A) Details of Pioneer tree species indicating planting techniques and their usages

S.No.	Species	Local name	Fruit collection season	Seed longevity	Sowing season	Germination %	Planting season	Method of Planting	Use
1	<i>Macaranga indica</i>	Jaglo	Oct.-Nov.	(1-6 month)	Soon after collection	30-50%	June-July	Direct sowing, Entire planting, Branch cutting	Fuel wood
2	<i>Macaranga denticulata</i>	Morialia	May-Oct.	(1-6 month)	Soon after collection	30-50%	June-July	Direct sowing, Entire planting, Branch cutting	Fuel wood
3	<i>Callicarpa arborea</i>	Bon-mola	-	-	Feb.	78%	June-July	Direct sowing, Entire planting, Branch cutting	Fuel wood
4	<i>Trema orientalis</i>	Jopang/Sobai-goch	Dec.-May	Upto one month		70 - 80%	June-July	Direct sowing, Entire planting,	fodder
5	<i>Mallotus tertracoccus</i>	Loru-bondha	March-April	-	Soon after collection	30-40%	June-July	Direct sowing, Entire planting, Branch cutting	food for birds
6	<i>Schima wallichii</i>	Noga-bhar/pani-bokuli jirkiri	Feb-March	1-6 month	Soon after collection	30-40%	June-July	Direct sowing, Entire planting, Branch cutting	Fuel wood
7	<i>Sterculia villosa</i>	Odal	June	upto 1 year	Soon after collection	60-70%	June-July	Direct sowing, Entire planting	Fuel wood
8	<i>Stereospermum chelonoides</i>	Dhopa tita/paroli	Jan-April	1 year	April-May	30-40%	June-July	Direct sowing, Entire planting	Fuel wood
11	<i>Albizia chinensis</i>	Sao-koroi	Jan	1 year	March	30-50%	June-July	Direct sowing, Entire planting	Fuel wood
12	<i>Albizia lebbeck</i>	Sirish/Kothiya-koroi	Dec.-Jan	2 year	March	30-50%	June-July	Direct sowing, Entire planting	Fuel wood
13	<i>Albizia procera</i>	Koroi	April-may	2 year	May	30-50%	June-July	Direct sowing, Entire planting	Fuel wood
14	<i>Bombax ceiba</i>	Silk cotton tree	March-May	2 year	-	14-75%	June-July	Direct sowing, Entire planting	Fuel wood
15	<i>Albizia lucidior</i>	Potka siris	Feb-April	1-6 month	May	50-55%	June-July	Direct sowing, Entire planting	Fuel wood

B. Details of Secondary tree species indicating planting techniques and their usages

Purpose	Species	Local name	Fruit collection season	Seed longevity	Sowing season	Germination %	Planting season	Method of Planting
Food species for primates	<i>Artocarpus chama</i>	Chamkathal	April-May	Short lived (1-6 months)	Soon after collection	50-60	June-July	Direct sowing, Entire planting
	<i>Artocarpus gomezianus</i>	Kharika-dewa	April-May	Short lived (1-6 months)	Soon after collection	50-60	June-July	Direct sowing, Entire planting
	<i>Artocarpus lacucha</i>	Bahat	April-May	Short lived (1-6 months)	Soon after collection	50-60	June-July	Direct sowing, Entire planting
	<i>Mangifera sylvatica</i>	Bon-aam	May-June	Short lived (1-6 months)	Soon after collection	30-50	June-July	Direct sowing, Entire planting
	<i>Magnolia oblonga</i>	Tita-sopa	March-May	Short lived (1-6 months)	Soon after collection	60-70	July	Direct sowing, Entire planting, Branch cutting
	<i>Mesua ferrea</i>	Nahar	May- June	Short lived (1-6 months)	Soon after collection	-	July	Direct sowing, Entire planting, Branch cutting
	<i>Dillenia indica</i>	Ou-tenga	Dec-Feb.	-	May	3-5	June-July	Direct sowing
	<i>Dillenia pentagyna.</i>	Ou-bonsolata	Dec-Feb.	-	May	3-5	June-July	Direct sowing
Fodder species	<i>Bauhinia variegata</i>	Kotora	May-June	Moderate long lived	May	95	June-July	Direct sowing, Entire planting
	<i>Morus alba</i>	Sahtut	April-May	Short lived (1-6 months)	Soon after collection	40	June-July	Direct sowing, Entire planting,
	<i>Eurya accuminata</i>	-	March-April	-	-	60	June-July	Direct sowing, Entire planting,
	<i>Mallotus philippensis</i>	Kamala- tree	March-April	June Short lived (1	April	20-30	June-July	Direct sowing, Entire planting
	<i>Malia composita</i>	Bokin	April-May	One year	Feb-March	65-70	July	Direct sowing, Entire planting
	<i>Quercus serrata</i>	-	Nov-Dec.	Up to one month	Soon after collection	10-15	June-July	Direct sowing, Entire planting
Key stone species	<i>Ficus benghalensis</i>	Bor-goeh	March-July	30 days	Soon after collection	25-30	June-July	Direct sowing, Entire planting
	<i>Ficus benamina</i>	Bor	March- July	30 days	Soon after	20-25	June-July	Direct sowing,

					collection			Entire planting
	<i>Ficus religiosa</i>	Anhat	March- July	30 days	Soon after collection	20-30	June-July	Direct sowing, Entire planting
	<i>Ficus racemosa</i>	Dimoru	March- July	30 days	Soon after collection	25-30	June-July	Direct sowing, Entire planting
	<i>Castanopsis indica</i>	Hingori	May	Moderate long lived	June	90	June-July	Direct sowing, Entire planting
Timber yielding species	<i>Aglaia spectabilis</i>	Amari	Sept.-Oct	Short lived (1-6 months)	Soon after collection	60	June-July	Direct sowing, Entire planting
	<i>Saurauia roxburghii</i>	Bon-posola	April-May	-	Soon after collection	-	June-July	Direct sowing, Entire planting,
	<i>Kydia calycina</i>	Pichola	Feb.-March	Short lived (1-6 months)	Soon after collection	60	June-July	direct sowing, Entire planting
	<i>Altingia excelsa</i>	Singri	May-June	Short lived (1-3 months)	Soon after collection	40-50	July	Direct sowing, Entire planting
	<i>Shorea assamica</i>	Mekai	March	One week	March	80-85	June-July	Direct sowing, Entire planting
	<i>Terminalia myriocarpa</i>	Holock	Oct. -Nov.	Very long lived(2years)	soon after collection	75	June-July	Direct sowing, Entire planting
	<i>Duabanga grandiflora</i>	Khukan	April- May	-	-	70	June-July	Direct sowing, Entire planting
	<i>Dipterocarpus retusus</i>	Hollong	Feb-march	7-10	March-April	50-60	May-June	Direct sowing, Entire planting
	<i>Anthocephalus chinensis</i>	Roghu	August-September	One year	Feb-March	80-90	June-July	Direct sowing, Entire planting
	<i>Magnolia champaca</i>	Tia-sopa	August	Short lived (1-3 months)	August-sept.	70-80	June-July	Direct sowing, Entire planting
Medicinally important species	<i>Terminalia bellirica</i>	Bhamora	Nov-Feb.		March -may	35-60	June-July	Direct sowing, Entire planting
	<i>Oroxylum indicum</i>	Bhat-ghila	Dec-July	Short lived (1-6 months)	Soon after collection	50	July-August	Direct sowing, Entire planting
	<i>Syzygium cumini</i>	Jam	June-August	15 days	June-July	20-90	July-August	Direct sowing, Entire planting
	<i>Syzygium fruticosum</i>	Jam	June-August	15 days	June-July	20-90	July-August	Direct sowing, Entire planting
	<i>Terminalia chebula</i>	Halikara		1year	June-July	50-60	June-July	Direct sowing, Entire planting

	<i>Terminalia arjuna</i>	Arjun	April-May	-	June-July		June-July	Direct sowing, Entire planting
	<i>Aegle marmelos</i>	Bael	March-may	-	June-July		June-July	Direct sowing, Entire planting
Avenue plantation	<i>Lagerstroemia speciosa</i>	Ajhar	Dec-Feb.	2 year	Feb-march	60-80	June	Direct sowing, Entire planting
	<i>Delonix regia</i>	Krishnasura	April-may	2-3 year	Sept-Oct.	30-40	June-July	Direct sowing, Entire planting
	<i>Peltophorum pterocarpum</i>	Copperpod	January to March	More than one year	June-July	8-10	June-July	Direct sowing, Entire planting
	<i>Alstonia scholaris</i>	Sattni	March April	1 month	April may		July	Direct sowing, Entire planting

C. Species wise details of Grasses indicating planting methods and their usages

S.No.	Species	Local Name	Planting methods	Specific feature
1	<i>Digitaria ciliaris</i>		Through seeds	Good forage value, germinates from topsoil seed bank
2	<i>Digitaria longiflora</i>		Through seeds	Good forage value, germinates from topsoil seed bank
3	<i>Oplismenus minuta</i>		Through seeds, root suckers	Good forage value, germinates from topsoil seed bank
4	<i>Oplismenus burmannii</i>	Banh-potia-bon	Through seeds, root suckers	Good forage value, germinates from topsoil seed bank
5	<i>Oplismenus compositus</i>	Banh-potia-bon	Through seeds, root suckers	Good forage value, germinates from topsoil seed bank
6	<i>Panicum incisum</i>		Through seeds, root suckers	Good forage value, germinates from topsoil seed bank
7	<i>Paspalum conjugatum</i>		Through seeds,	Good forage value, germinates from topsoil seed bank tolerant of poor, acid soils
8	<i>Paspalum scrobiculatum</i>	Kodoa-dhan	Through seeds,	can survive well on marginal soils
9	<i>Phragmites karka</i>	Nal-khagra	Through seeds, root suckers	It turns garbage into compost-like material that can be used as a soil conditioner.
10	<i>Saccharum spontaneum</i>	Kahua	Through seeds, root suckers	can succeed in wetter soils and are tolerant of seasonal inundation of the soil, can tolerate pH of 4.5 - 7.5
11	<i>Cenchrus ciliaris</i>		Through seeds, root suckers	Good forage value, drought tolerant, tolerant of fire, does not withstand waterlogging
12	<i>Cenchrus ciliaris</i>		Through seeds, root suckers	Good forage value, germinates from topsoil seed bank
13	<i>Axonopus compressus</i>	Dolicha-bon	Through seeds, root suckers	Good forage value, low fertility soils, particularly in shaded situations
14	<i>Axonopus affinis</i>		Through seeds, root suckers	Good forage value, low fertility soils, particularly in shaded situations

D. Species wise details of Shrubs and Bamboo indicating planting methods and their usages

S.No.	Species	Local Name	Planting method	Planting Time	Specific features
1	<i>Abelmoschus moschatus</i>	Gorokhiua-koroi	Through seeds	In rainy season	Medicinal property, well drained acidic soil
2	<i>Abroma augusta</i>	Hati-piola	Through seeds, cuttings	In rainy season	Medicinal property, Grow when soil condition is not favorable of less fertile.
3	<i>Ardisia humilis</i>	Chaul-dhuwa /Tolotha- paka	Through seeds, cuttings	In rainy season	Medicinal property, Prefer wet soil.
4	<i>Ardisia solanacea</i>	Chaul -dhuwa	Through seeds, cuttings	In rainy season	Medicinal property, Prefer wet soil.
5	<i>Calamus erectus</i>	Bent	Through seeds, cuttings	In rainy season	Medicinal property, Prefer wet soil.
6	<i>Clerodendrum glandulosum</i>		Through seeds	In rainy season	Medicinal property
7	<i>Clerodendrum serratum</i>		Through seeds	In rainy season	Medicinal property
8	<i>Croton caudatus</i>		Through seeds	In rainy season	Medicinal property, Prefer wet soil
9	<i>Croton oblongifolius</i>		Through seeds, cuttings	In rainy season	Medicinal property, Prefer wet soil
10	<i>Glochidion multiloculare</i>		Through seeds	In rainy season	Medicinal property, Prefer wet soil
11	<i>Litsea salicifolia</i>		Through seeds	In rainy season	Medicinal property, Prefer wet soil
12	<i>Melastoma malabathricum</i>	Key Sengs	Through seeds, Cuttings, rootshoot cutting	In rainy season	Medicinal property, Prefer wet soil
13	<i>Morinda angustifolia</i>		Through seeds	In rainy season	Medicinal property, Prefer wet soil
14	<i>Mussaenda frondosa</i>	Tengmeng	Through seeds, cuttings	In any season	Medicinal property, Prefer wet soil
15	<i>Mussaenda roxburghii</i>	Tengmeng	Through seeds, cuttings	In any season	Medicinal property, Prefer wet soil
16	<i>Saurauia napaulensis</i>		Through seeds	In rainy season	
17	<i>Solanum torvum</i>		Through seeds	In rainy season	Medicinal property
18	<i>Zanthoxylum acanthopodium</i>	Yokhung	Through seeds, cuttings	In any season	Medicinal property, Prefer wet soil
19	<i>Bambusa pallida</i>	Makal	Through seeds, cuttings, rootshoot cutting	Aug.-Sept.	
20	<i>Bambusa tulda</i>	Shingane Bans	Through seeds, cuttings, rootshoot cutting	In any season	

ANNEXURE X

Names and dates of visits of consultants and experts

SN	Dates	Place
1	26.10.2015 to 30.10.2015	Adjoining areas of NEC study side, Margherita.
2	24.11.2015 to 29.11.2015	Saleki PRF, Lekhapani RF, and Tipong RF along with the adjoining areas.
3	30.11.2015 to 4.12.2015	Tinkupani RF and Dalai PRF.
4	05.01.2016 to 09.01.2016	Tinkupani RF and Tipong RF.
5	18.01.2016 to 23.01.2016	Saleki PRF, Upper Dihing RF, Lekhapani RF and adjoining areas.
6	27.01.2016 to 03.02.2016	Lekhapani RF, Saleki PRF, Namphai RF, Kotha RF and Saleki PRF.
7	22.02.2016 to 28.02.2016	Upper Dihing RF, Dirak RF and Tipong RF.
8	01.03.2016 to 11.03.2016	Tipong RF and Tinkupani RF.
9	15.03.2016 to 20.03.2016	Tipong RF and Tinkupani RF.
10	06.06.2016 to 10.06.2016	Tipong PRF and Lekhapani RF
11	04.07.2016 to 08.07.2016	Dirak RF, Kotha RF, Lekhapani RF, Saleki PRF, Tirap RF, Tipong RF, Tipong PRF and Tinkupani RF
12	18.07.2016 to 22.07.2016	Kotha RF, Upper Dihing RF, Saleki PRF and Lekhapani RF.
13	16.07.2016 to 22.07.2016	Dalai PRF, Dirak RF, Kotha RF, Lekhapani, Saleki PRF, Tipong PRF, Tipong RF and Tinkupani RF.
14	23.07.2016 to 26.07.2016	Tirap RF, Tinkupani RF and Saleki PRF
15	26.07.2016 to 30.07.2016	Tipong RF, Tipong PRF and Saleki PRF
16	01.08.2016 to 06.08.2016	Lekhapani RF, Tipong PRF and Tirap RF
17	18.08.2016 to 23.08.2016	Tipong RF, Tirap RF and Lekhapani RF
18	22.08.2016 to 26.08.2016	Tipong PRF and Dirak RF.
19	29.08.2016 to 08.09.2016	Tirap RF, Saleki PRF, Lekhapani RF, Tipong RF, Tinkupani RF, Dirak RF and adjoining areas
20	20.09.2016 to 24.09.2016	Dalai RF, and Tirap RF.
21	24.09.2016 to 05.10.2016	Tirap RF, Tinkupani RF, Upper Dihing RF, Kotha RF, Lekhapani RF, Saleki PRF, Tipong RF, Tirap RF, and Tipong PRF.
22	3.10.2016 to 10.10.2016	Tinkupani RF, Saleki PRF, Lekhapani RF, Tipong RF and Namphai RF.
23	24.10.2016 to 28.10.2016	Dirak RF, Tirap RF and Lekhapani RF.
24	07.11.2016 to 11.11.2016	Tirap RF, Lekhapani RF, Saleki PRF and Tipong RF.
25	07.11.2016 to 17.11.2016	Upper Dihing RF, Lekhapani RF and Dirak RF.
26	19.12.2016 to 22.12.2016	Tirap RF and nearby areas

Besides, surveys for faunal studies were done continuously for three months from mid July to mid October, 2016.

PROCEEDINGS

of the workshop cum consultative meeting on
**Biodiversity Management Plan and Regional
Wildlife Plan for Makum Coalfields, Assam**

Venue: Conference Hall, Margherita Block Development office,
Margherita, Tinsukia, Assam

Dated: 15 March 2017



Organized by

RAIN FOREST RESEARCH INSTITUTE

Indian Council of Forestry Research & Education

(An Autonomous body of Ministry of Environment, Forests & Climate Change, Govt.
of India)

Post Box No. 136, Jorhat- 785001, Assam

A workshop cum consultative meeting on “**Biodiversity Management plan and regional wildlife plan for Makum coal fields, Assam**” was organized by **Rain Forest Research Institute, Jorhat** at Conference Hall of Block Development Office, Margherita Block, Tinsukia District on 15 March 2017. The prime objective of the workshop was to present the findings of the study conducted by the Rain Forest Research Institute, Jorhat under the project entitled “Preparation of Biodiversity Management Plan, Regional Wildlife Plan and Carrying capacity Study for the Makum Coal fields in Assam” funded by North Eastern Coalfields (NEC), Coal India Ltd for the Assam Forest Department. The objective also included discussion and enlisting the suggestions/comments of the participants for further improvement of the Biodiversity Management Plan, Regional Wildlife Plan and Carrying Capacity Study for Makum Coalfields, Assam. All the stakeholders including representatives from District administration, Forest department, elected representatives, local Gaon Panchayats and subject matter experts were invited to discuss the findings and chalk out appropriate mitigative measures in the light of the findings of the study done by RFRI, Jorhat.

A. Participants of the workshop

1. Shri Bikram Kairi, IAS, SDO (C), Margherita
2. Shri M.K. Dhar, DFO (WL), Tinsukia Wildlife Division
3. Shri Ram Chandra Deori, BDO, Margherita
4. Mrs. Gitanjali Sonowal, President, Block Panchayat, Margherita
5. Dr. Dilip Chetry, Vice President, Aranyak, Guwahati
6. Dr. Rajib Rudra Tariang, Assistant Professor, Digboi College, Digboi
7. Dr. Saroj K. Swain, Principal Scientist, ICAR-CIFA, Bhubaneswar, Odisha
8. Dr. Runa Bhagabati, Assistant Professor, Margherita College, Margherita
9. Shri N. N. Deka, ACF, Digboi Forest Division
10. Shri Indranil Ray, NEC, Margherita
11. Shri Mridu Paban Phukan, Rainforest Conservation Education Centre, Naharkatia
12. Dr. Ranjita Bania, Jeeva Suraksha (NGO), Sibsagar
13. Shri Romesh Hatimuria, Sanjivani – North East Socioeconomic Welfare Society
14. Shri Pabita Borgohain, Sanjivani – North East Socioeconomic Welfare Society
15. Shri Lek Bahadur Chetry, S.A. PWD Rural Road Sub-Division, Margherita
16. Shri Dhurba Dutta, Forest Range Officer, Margherita East Forest Range
17. Shri Dhimanshu Saikia, Forest Range Officer, Margherita West Forest Range
18. Shri Padum B.P. Guhain, Forest Range Officer, Jagun Forest Range
19. Shri Khargeshwar Konwar, Deputy Range Officer, Margherita East Forest Range

20. Shri Bidyadhar Sonowal, Forester, Lekhapani Forest Range
21. Ms. Kanika Dey, President, Ledo Gram Panchayat
22. Shri Keshab Acharjee, President, Ledo Colliery Gram Panchayat
23. Shri Sukhdeb Sharma, Samukjan Gram Panchayat
24. Shri Ranjit Hazarika, President, Samukjan Gram Panchayat
25. Shri Raktim Khound, President, Bargoloi Gram Panchayat
26. Shri Ishwar Prasad Sharma, Secretary, Lekhapani Gram Panchayat
27. Ms. Sangita Deori, President, Jagun Gram Panchayat
28. Shri Bhupen Pegu, Ward member, Jagun Gram Panchayat

B. Participants from Rain Forest Research Institute, Jorhat

1. Dr. Dhruva Jyoti Das, Scientist, RFRI, Jorhat
2. Shri Ajay Kumar, Scientist, RFRI, Jorhat
3. Shri Protul Hazarika, Research Assistant, RFRI, Jorhat
4. Dr. Girish Gogoi, Research Assistant, RFRI, Jorhat
5. Shri Abhijit Medhi, Technical Assistant, RFRI, Jorhat
6. Shri Abhinab Bora, Project Assistant, RFRI, Jorhat

Minutes of the meeting

The workshop cum consultative meeting was opened with a formal speech by Dr. Dhruva Jyoti Das, Scientist D, RFRI welcoming the participants. This was followed by introduction of the participants that included a brief about the area of interest of the participants. Shri Bikram Kairi, SDO (C), Margherita chaired the session. A detailed Power Point presentation on the findings and the possible management measures proposed by RFRI under Biodiversity Management Plan and Regional Wildlife Plan was made by Dr. Dhruva Jyoti Das, Scientist D. The presentation was followed by a vibrant group discussion where all the participants were requested to give their comments and suggestions for further improvement of the management plans.

Shri Bikram Kairi, Sub-Divisional Officer (Civil) informed the house that there were a lot of complaints from the villagers regarding the contamination and pollution of the water bodies owing to the mine discharge and suggested that NEC should take proper measures to address the issue. He suggested that comparative information based on time-series data of forest degradation may be incorporated in the present study. Shri Kairi stated that illegal felling is a serious issue in the region, carried out by means of axes and chain saws. He also questioned the functionality of the butterfly and orchid park established by the NEC Ltd. at Ledo and called for improvement. Shri Kairi emphasised on the lack of awareness among the local communities about the invasive

plant species, considering these plants to be a part of the forest and therefore do not understand their ecological consequences. Communities should be thus sensitized through a series of awareness programmes.

Shri N. N. Deka, Assistant Conservator of Forests, Digboi Forest Division insisted on proper reclamation of the existing and closed mining sites before proceeding for further mining activities. He underlined the importance of a time bound mitigative plan to counter the destruction caused by open cast mining projects and opined that the agency implementing the management plan should be specific and different work should be implemented by separate agencies/departments. Execution plan with budget, locations, drawing and design of interventions like check dams, greenbelt, plantations, etc and location of fragmentations should be included. Specific location wise plan including provision for creation of nursery to improve the present status of the forest, control measures for pollution of water resources should be included. A specific plan for community development including eco-tourism may also be included in biodiversity management plan. He insisted to add a provision for a requisite number of contractual trained forest staff for the project period towards the implementation of the biodiversity management plan and regional wildlife plan. He also suggested proper top soil management of the mining and dumping areas.

Dr. Dilip Chetry, Executive Director, Gibbon Conservation Centre (Aranyak) said that there should be specific agencies to execute the different parts of the management plans. He further emphasized on the necessity for division of responsibilities among various agencies for proper implementation of the management plan. Dr. Chetry pointed out lack of sufficient knowledge on the endemic flora and fauna, especially on Primates in the report and suggested inclusion of the relevant data from secondary sources. He further made a number of suggestions- yearly monitoring of pollution (Air, Water, Noise, etc.), planting of specific tree species such as the *Ficus* which is important for the feeding and lodging of Gibbons, inclusion of a proper monitoring plan regarding the participation of local communities, experts, forest officials and NGOs, organization of workshop/meeting in each Panchayat for collection of views of the local people about the management plan, preparation of a eradication plan for the invasive species keeping in mind that these species have become the food source of a number of animals and translocation of the Gibbons from the project area to a better and large habitat area.

Dr. Rajib Rudra Tariang, Assistant Professor at Digboi College pointed out, the non implementation of the topsoil management plan included in the previous NEC mining plan and that the old plan should be carried out before the reforms mentioned in the

new management plan are brought into action. He insisted on calling an urgent meeting of all the stakeholders to take stock of the status of the earlier management plans of NEC. Dr. Tariang complained about the contamination of the drinking water source in the mining region, non implementation of scientific blasting process in the coal mine leading to negative impact on the wildlife especially on the Western Hoolock Gibbon, non functioning of the NEC effluent treatment plant and demanded immediate steps be taken for running the same. He also informed about the research work of some of the faculty members of local colleges in and around Makum Coal field area regarding restoration of indigenous biodiversity through suitable plantation on restored sites of open cast coal mining areas in Margherita region.

Shri M.K. Dhar, DFO, Tinsukia Wildlife Division, Tinsukia also emphasized on the restoration of the existing and closed mining areas before proceeding for further mining activities. Shri Dhar suggested that a short survey of the project area should be carried out to enumerate the demographic details of the area and of the people affected by the project to learn about the existing management scenario of the area. Participatory Rural Appraisal (PRA) exercise may also be conducted to record the community perception for the biodiversity and wildlife management in the forest fringe areas.

Dr. Runa Bhagabati, Assistant Professor of Margherita College praised the initiative taken up by RFRI to conduct the workshop and to prepare a biodiversity database of the area surrounding the Makum Coalfields. She made many important suggestions to further improve the management plan, inclusion of a proper monitoring plan at ecological, hydro biological level, assessment of the current status of the hydro biology, wildlife and socio biology, analysis of Acid Mine drainage and preparation of mitigation plans for treating the same, development of a plan for alternative income source with the inclusion of eco tourism. Dr. Bhagabati expressed an interest to be an active partner of the project with reference to "Wetland Management" in and around Makum Coalfield area.

Shri Romesh Hatimuria of Sanjeevani, North East Socio-Economic Welfare Society, an NGO in Margherita emphasized on the management and proper maintenance of topsoil in the mining area. Mr. Hatimuria pointed out the non implementation of plantation and restoration work in the existing and closed mining areas. He emphasized on the poor mine drainage and non functionality of the Effluent Treatment plant of NEC which is polluting the river system of the area. The suggestions made by Mr. Hatimuria included – assessment of toxic gases released by open cast mines,

incorporation of mitigation measures for the toxic gases in the plan and inclusion of biodiversity outside the Forests in the management plan.

Mrs. Gitanjali Sonowal, President of Block Panchayat in Margherita emphasized on the necessity of protection of the plants and wild animals in and around mining area and enquired regarding the implementation and monitoring agency of the management plan which was not mentioned in the presentation. She suggested some reforms viz., inclusion of provisions of alternate energy sources for the local communities to reduce the illegal feeling and lopping of forests, furnishing of compensation to the farmers whose agriculture land got contaminated by mine discharge, discussion regarding the impact of previous open cast mining by NEC on land, water and air. Mrs. Sonowal enquired after the mitigation steps taken by NEC to curb the impacts of open cast mining. Shri Mridu Paban Phukan of Rainforest Conservation Education Centre in Naharkatia pointed out that the bird species Beautiful Sibia (*Heterophasia pulchella*) is not present in the study area as mentioned in the report. The suggestions forwarded by him are- conduction of a perception survey regarding the implementation of management plan and inclusion of the results in the final management plan, inclusion of the current condition of the existing OB dumps and mine drainage/ discharge with their management strategies in the plan, development of Ecotourism in Tirap and Tikak with proper reclamation of the mining areas.

Dr. Ranjita Bania of Jeeva Suraksha, an NGO in Sibasagar emphasized on developing community oriented strategies for biodiversity and wildlife management in the Makum coalfield area by encouraging PRA activities in each Gram Panchayat. She forwarded a number of suggestions viz., a time bound biodiversity management plan, specification of follow up period for NEC authorities after the completion of management plan period, provision for regular motivation and awareness programme for the local communities regarding the biodiversity, wildlife and invasive species. Dr. Bania also emphasized on the importance of aquaculture as a possible means of alternative income source for the locals.

Shri Sukhdeb Sharma, President of Samukjan Gram Panchayat opined about the improper execution of the CSR plan by NEC and the resulting grievances of the local communities. He complained about the ground water contamination caused by mining activities and the scarcity of pure drinking water as a result. He also emphasized on the consequences of mine discharge accompanied by highly acidic soil and coal dust which has rendered nearby paddy fields uncultivable. Since, NEC has not addressed the said issues he wanted the inclusion of these activities with necessary management plan in the report. Shri Keshab Acharjee, President of Ledo Colliery Gram Panchayat informed

about the organization of two number of Gram Sabha meetings in the office of Ledo Colliery Gram Panchayat a few days ago and three meetings were also organized in the presence of NEC officials at the behest of Deputy Commissioner. Matters related to the CSR of NEC were discussed in these meetings. He expressed his concern about the declining diversity and density of fish in the rivers of the area due to water pollution caused by mine discharge and pointed out the lack of community development work by the NEC. Shri Ishwar Prasad Sharma, Secretary of Lekhapani Gram Panchayat insisted on the formulation of a specific plan for the conservation of habitat of Hoolock Gibbon in the region and suggested that NEC should take necessary steps to save the biodiversity of the area including human beings. Ms. Kanika Dey, President of Ledo Gram Panchayat conveyed that her GP has a lot of grievances towards NEC and requested the RFRI team to hold a discussion with the local people.

Shri Dhimanshu Saikia, Forest Range Officer of Margherita West Forest Range suggested that the eradication of invasive species should be carried out keeping in mind about food habit of wildlife and emphasized that poisoning of the water bodies should be controlled. Shri Padum B.P. Gohain, Forest Range Officer of Jagun Forest Range suggested that the management plan should be community oriented and should emphasize on habitat conservation. He stated the workshop to be a fruitful one and that the comments of the participants will help in preparation of the plan. Shri Bidyadhar Sonowal, Forester of Lekhapani Forest Range suggested that people from grass root level of the local communities along with the officials from forest department should be encouraged to participate in the workshop. He further said that meetings should be organized with the coal affected people in the various Gram Panchayats and that NEC officials should have also participated in the workshop.

Other participants also put forward similar comments and it was unanimously stated that, there is contamination of the water sources in the area due to various mining activities and improper mine drainage and that there is a lack of specific Mitigative measure for the treatment of mine drainage/discharge. Every participant showed his/her concern towards the conservation of habitat of wildlife, especially Gibbon.

The workshop was concluded with a vote of thanks given by Ajay Kumar, Scientist, RFRI.

Glimpses of the workshop



A view of the workshop



Shri Bikram Kairi expressing his views



Dr. Dilip Chetry expressing his views



Dr. Rajib R. Tariang expressing his views



Gitanjali Sonowal, M.K. Dhar and N. N. Deka



Shri Ram Chandra Deori and Dr. R. Bhagawati



A view of the vibrant discussion



Group Photo-1

PHOTOGRAPHS

▪ Signature of Agreement, 16 September 2015:



▪ Reconnaissance survey of the study site:





Landscapes

Photo 1:
Landscape -Tirap
Reserve Forest



Photo 2:
Landscape - Shifting
Cultivation



Photo 3:
Landscape -Mining
Sites



Photo 4:
Landscape -Tea
garden



Fauna

Photo 5:
Indian crested
porcupine (*Hystrix
indica*)



Photo 6:
Asian palm civet
(*Paradoxurus
hermaphroditus*)



Photo 7:
Indian Muntjac
(*Muntiacus muntjak*)



Photo 8:
Indian Muntjac
(*Muntiacus muntjak*)



Photo 9:
Indian
Muntjac ♂ (*Muntiacu
s muntjak*)



Photo 10:
Indian Muntjac
(*Muntiacus
muntjak*)

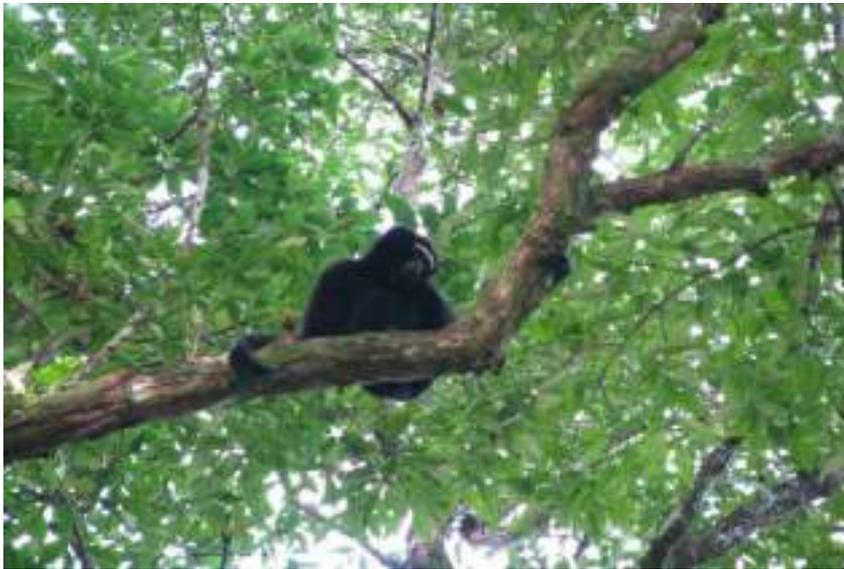


Photo 11:
Western Hoolock
Gibbon♂(*Hoolock
hoolock*)

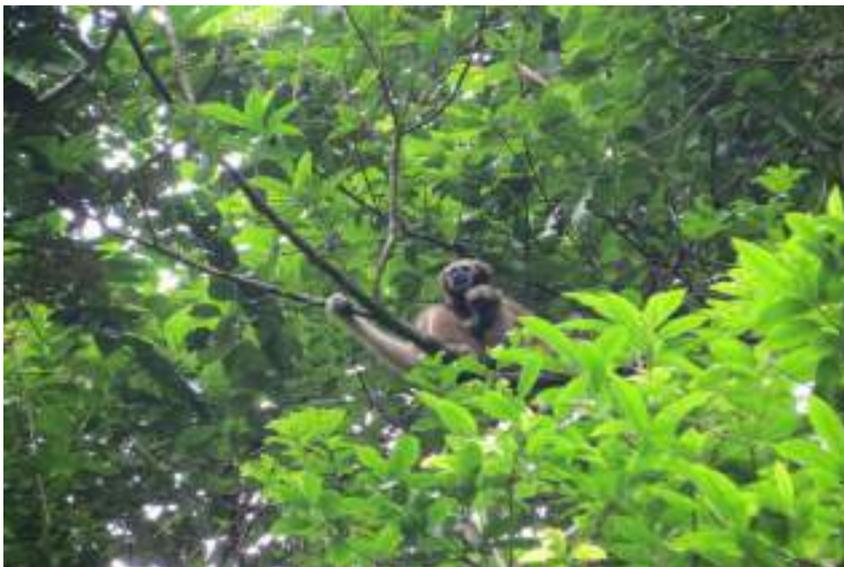


Photo 12:
Western Hoolock
Gibbon♀(*Hoolock
hoolock*)



Photo 13:
Domesticated Asian
elephant (*Elephas
maximus*)



Photo 14:
Asian elephant
dung pile (*Elephas
maximus*)



Photo 15:
Probable Pugmark
of Clouded Leopard
(*Neofelis nebulosa*)



Photo 16:
Probable Pugmark
of Clouded Leopard
(*Neofelis nebulosa*)



Photo 17:
Probable scat of
Indian leopard
(*Panthera
pardusfusca*)



Photo 18:
Red headed trogon
female (*Harpactes
erythrocephalus*)



Photo 19:
Elephant foot mark



Field work

Photo 20:
Camera trapping



Photo 21:
GPS recording



Photo 22:
Marking the trees

▪ Major Land uses/ covers: Forests

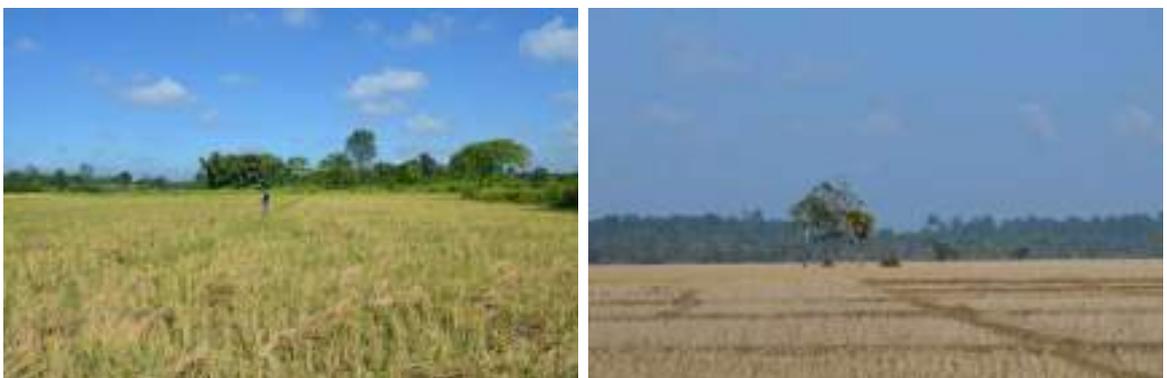




- Major Land uses/ covers: Bamboo brakes



- Major Land uses/ covers: Agriculture



- Major Land uses/ covers: Tea garden



▪ Major Land uses/ covers: Plantation

Scrub land



▪ Major Land uses/ covers:
Settlement

Water body



▪ Ground Vegetation



▪ Disturbances



▪ Few Important tree species



Arenga gracilis



Canna sp



Castanopsis indica



Cyathea sp



Dioscoria spp



Dipterocarpus retusus



Callicarpa arborea



Delima indica



1. *Aerides odorata*



2. *Dendrobium aphyllum*



3. *Dendrobium lituiflorum*



4. *Malaxis latifolia*



5. *Luisia zylanica*

Photographs showing various orchid species (1-5)



1. Great Myna, *Acridotheris grandis*



2. Eurasian Tree Sparrow, *Passer montanus*



3. Green-billed Malkoha, *Rhopodytes tristis*



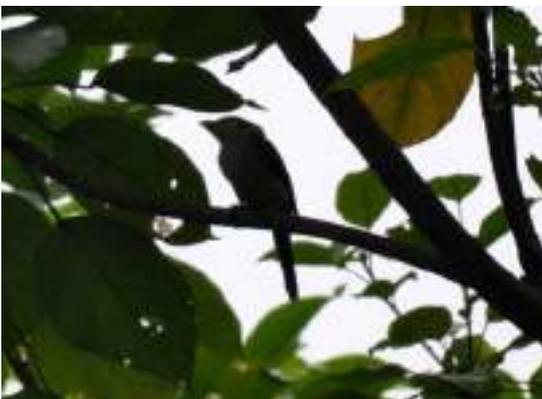
4. Lesser Racket-tailed Drongo, *Dicrurus remifer*



5. Drongo Cuckoo, *Surniculus lugubris*



6. Bronzed Drongo, *Dicrurus aeneus*



7. Long-tailed Broadbill, *Psarisomus dalhousiae*



8. Common Tailorbird, *Orthotomus sutorius*



9. Red breasted parakeet, *Psittacula alexandri*



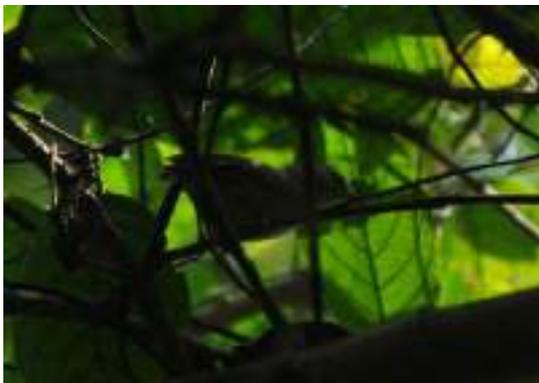
10. Yellow-footed Green Pigeon, *Treron phoenicopterus*



11. Chestnut-bellied Nuthatch, *Sitta castanea*



12. Large Woodshrike, *Tephrodornis virgatus* (male)



13. Pin-striped Titbabbler, *Macronus gularis*



14. Rufous Woodpecker, *Micropternus brachyurus*

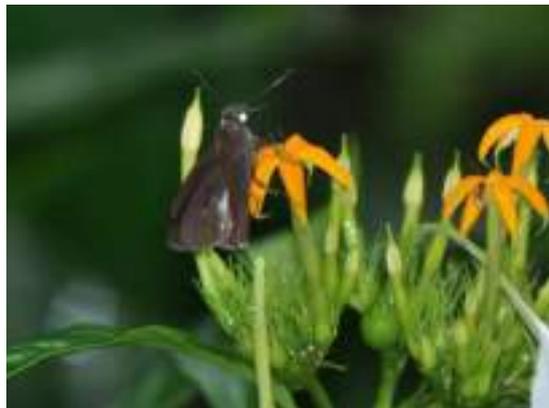


15. Blue-throated Barbet, *Megaliama asiatica*



16. Long-tailed Minivet, *Pericrocotus ethologus*

Various birds species found in the study area (1-16)

Family: Hesperiidae1. Northern Spotted Ace, *Thoressa cerata*2. Light Straw Ace, *Pithauria stramineipennis*3. Coon, *Psolos fuligo subfasciatus*4. Restricted Demon, *Notocrypta curvifascia*5. Rice Swift, *Borbo cinnara*6. Chestnut Bob, *Lambrix salsala*



7. BushHopper, *Ampittia dioscorides*



8. Indian Awlking, *Choaspes benjaminii*



9. Yellow Flat, *Mooreana trichoneura*



10. Extra Forest Bob, *Scobura cephalis*



11. Dark Velvet Bob, *Koruthialos butleri*



12. Fulvous Piedflat, *Pseudocoladenia dan*

Family: Lycaenidae13. Chocolate Royal, *Remelana jangala*14. Punchinello, *Zemeros flegyas*15. Banded Lineblue, *Prosotas aluta coelestis*16. Royal Cerulean, *Jamides caeruleus*17. Fluffy Tit, *Zeltus amasa*18. Bright Sunbeam, *Curetis bulis*



19. Common Hedge Blue, *Acytolepis puspa*



20. Elbowed Pierrot, *Caleta elna*



21. Purple Sapphire, *Heliphorus epicles*



22. Branded Yamfly, *Yasoda tripunctata*



23. Common Yamfly, *Loxura atymnus*



24. Long-banded Silverline, *Spindasis lohita*

Family: Nymphalidae

25. Plain Bushbrown, *Telinga malsarida*26. Dark Catseye, *Zipaetis scylax*27. Straight Banded Treebrown, *Lethe verma*28. Common Bushbrown, *Mycalesis perseus*29. Red Tailed Forester, *Lethe sinorix*30. Common Fivering, *Ypthima baldus*



31. Tawny Rajah, *Charaxes bernardus*



32. Tawny Rajah, *Charaxes bernardus*



33. Yellow Rajah, *Charaxes marmax*



34. Unbroken Sergeant, *Athyma pravara*



35. Common Nawab, *Polyura athamas*



36. Knight, *Lebadea martha*



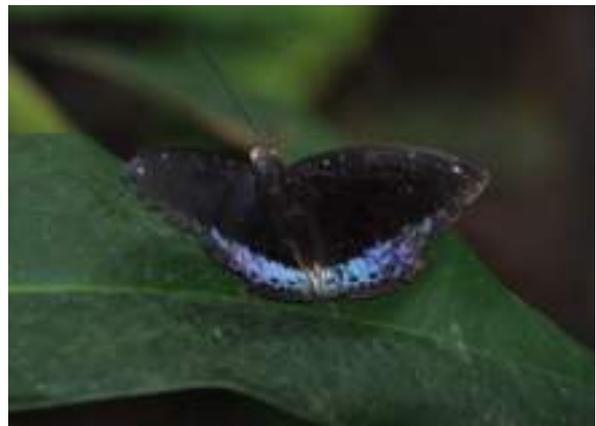
37. Leopard Lacewing, *Cethosia cyane*



38. Striped Tiger, *Danaus genutia*



39. Wizard, *Rhinopalpa polynice*



40. Dark Archduke, *Lexias dirtea khasiana*



41. Common Jester, *Symbrenthia lilaea*



42. Grey Count, *Tanaecia lepidea*



43. Yellow Sailer, *Neptis ananta*



44. Common Maplet, *Chersonesia risa*



45. White-edged Blue Baron, *Euthalia phemius*



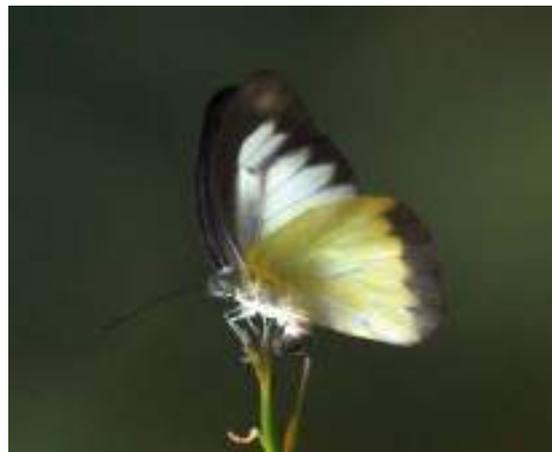
46. Powdered Baron, *Euthalia monina*

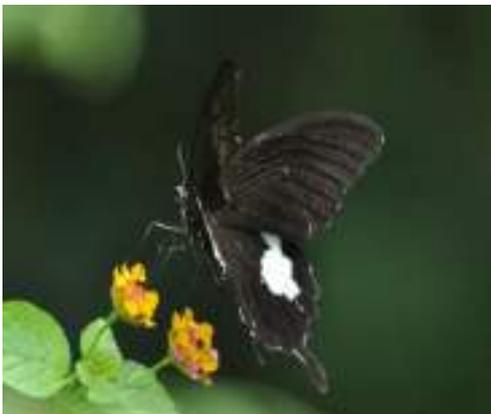
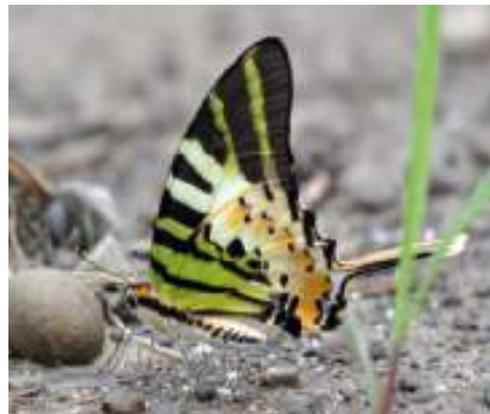


47. Commander, *Moduza procris*



48. Staff Sergeant, *Athyma selenophora*

Family: Pieridae49. Red Base Jezebel, *Delias pasithoe*50. Tailed Sulphur, *Dercas verhuelli*51. Chocolate Albatross, *Appias lyncida* (female)52. Common Grass Yellow, *Eurema hecabe*53. Common Tree Yellow, *Gandaca harina*54. Chocolate Albatross, *Appias lyncida*

Family: Papilionidae55. Tailed Jay, *Graphium Agamemnon*56. Common Peacock, *Palipio paris*57. Great Jay, *Graphium eurypylus*58. Golden Birdwing, *Troides aeacus*59. Yellow Helen, *Papilio nephelus*60. Five Bar Swordtail, *Graphium antiphates*

Photographs: Insects



Unknown Spider



Phlaeoba pictus



Praying mantis



Phlaeoba pictus



Trigonocorypha unicolor



Busy at field



Heiroglyphus banian



Dragon Fly



Anax Sp. (Dragon fly)



Catantop sp.



Unknown caterpillar



Unknown caterpillar



Diabolocatantops pinguis (Walker).



Phlaeoba infumata



Oxya nitidula



Mylabris pustulata

//TRUE COPY//

ANNEXURE A-2

170

Form 1-C
Notice of closure
(See Regulation 5, CMR-2017)

Form:

(Owner, Agent or Manager)

Name - Shri Binod Bihari Sahoo, Agent Ledo Opencast project

Postal address - Office of the Agent, Ledo Opencast project, Tinsukia, Assam,
PIN-786182

Mobile Number - 9531105661

Telephone Number (Landline) - Nil

Email ID - bbsahooil@gmail.com

To,

1. The Chief Inspector of Mines/The Director General of Mines Safety, DGMS, PO - Dhanbad - 826001, Jharkhand
2. The Zonal Inspector of Mines/The Dy. Director General of Mines Safety, DGMS, PO-Sitarampur, Dist. - West Bardhaman, West Bengal.
3. The Regional Inspector of Mines/The Director of Mines Safety, Guwahati Region, New Guwahati, Ganesh Mandir Path, House No. 16 Bye Lane - 10, PO-Noonmati, PIN - 781020
- ✓ 4. The District Magistrate, Office of the Magistrate, Post & Dist- Tinsukia, Assam

Sir,

I have to furnish the following particulars in respect of closure of

1. Name of the mine: Ledo OCP
2. Name of the owner/company/firm/association: Dr. B. Veera Reddy,
Director Technical
Coal India Limited
Coal Bhawan, 4 MAR, Plot No.

AF-III

Action Area - IA, New Town
Kolkata, South, 24 Paraganas
West Bengal - 700156

3. Location of the mine:
Lease number(s): Ledo OCP mining lease - 101 Ha
Village/area/road: Ledo
Post Office: Ledo
Police Station: Margherita
Sub-Division(Taluq)/Tehsil: Margherita
Railway Station (nearest): Ledo
District: Tinsukia
State: Assam
PIN: 786182

4. Labour Identification Number (LIN): I-1266-4774-8
5. Mine Code: 010975
6. Details of Owner, Agent, Manager

Sl. No	Particulars	Owner	Nominated Owner	Agent	Manager
i.	Name		Dr. B. Veera Reddy	Sri Binod Bihari Sahoo	Sri Teisoni Sangma
ii.	Father's Name		B. Lakshma Reddy	Late Gobinda Sahoo	Maken Sangma



iii.	Aadhar No.		695991574794	633172028732	93860336685
iv.	Address Village/area Road: Post Office: Police Station: Sub- Division: Railway Station: District: State: PIN:		Director Technical, CIL, Coal Bhawan, 4 MAR, Plot No. AF- III, Action Area-IA, New Rajarhat, Kolkata, South 24 Paraganas, West Bengal, 700156	Village/area/ road: Ledo Post Office: Ledo Police Station- Margherita Sub-Division (Taluq)/Tehsil: Margherita Railway Station (nearest): Ledo District: Tinsukia PIN: 786182	Village/area/ road: Ledo Post Office: Ledo Police Station- Margherita Sub-Division (Taluq)/Tehsil: Margherita Railway Station (nearest): Ledo District: Tinsukia PIN: 786182
v.	Mobile Number			+919531105661	6009386643
vi.	Telephone Number		(Landline) - 033- 23244024 / 4088	+919435751360	+919435751360
vii.	Fax Number		033-23244082		
viii.	e-mail ID		dt.cil@coalindia.in	bbsahoocil@gmail.com	teisoni.cil@gmail.com

7. Date on which it is intended to close/abandon the mine : (DD/MM/YYYY)- Mine closing activity likely to be started after 1 (one) month notice period (w.e.f. 14.12.2022) as per statute to intend to close the mine as per order / instruction from the competent authority.
8. Actual date of closure/abandonment: (DD/MM/YYYY) - To be communicated after completion of closure/abandonment of the mine
9. Number of Persons likely to be affected: 107 employees of Ledo OCP has been transferred to other units of NEC/CIL Margherita and other subsidiaries of Coal India Limited.
12. Reason for closure: Unsafe working due to instability in Pit-II, Techno economic non feasibility of Pit - I & III of Ledo OCP.
10. Updated plan enclosed as required under Regulation 66 of CMR, 2017-Yes/No - Yes, updated plan and sections of the mine are enclosed. Rest of the plans and sections as per Regulation 66 of CMR, 2017 will be sent after actual closure/abandonment. If yes, please specify the Plan(s) reference number(s) -
- a) Surface Plan - No. LOCP/27/22, dt. 13.08.2022
b) Working Plan - No. LOCP/26/22, dt. 08.09.2022
c) Water danger Plan - No. LOCP/29/22, dt. 09.08.2022
d) Section - No. LOCP/28/22, dt. 05.09.2022

Instructions

* delete whichever is not applicable

** Optional

Yours faithfully

Signature:

Designation: Owner/Agent/Manager:

Date:

//TRUE COPY//

1230 ANNEXURE A-3
GOVERNMENT OF ASSAM
ENVIRONMENT AND FOREST DEPARTMENT
DISPUR, GUWAHATI-6

172

ORDERS BY THE GOVERNOR

NOTIFICATION

Dated Dispur, the 5th January, 2022

No. FRM.14/2021/Pt/124 : In exercise of the powers conferred by Section 17 of Assam Forest Regulation 1891 (VII of 1891), the Governor of Assam is pleased to declare the land described in the Schedules hereto annexed to be a Reserved Forest, with effect from the date of publication of this Notification.

SCHEDULE A

- (a) District Tinsukia
(b) Forest Division..... Digboi
(c) Sub- Division (Civil)..... Margherita
(d) Mauza..... Makum
(e) Name of the Forest..... Saleki Reserved Forest.
(f) Area of the forest..... 1700 Hectares

SCHEDULE "B"

DESCRIPTION OF BOUNDARIES

East and South :-

Starting from GPS Point No 1, the boundary runs along Lekhapani nadi to meet Ledo Pani nadi at GPS Point No 2 and follows the river to meet GPS Point No 3 with the following coordinates.

Point ID	Longitude	Latitude
1	95° 49' 16.561" E	27° 18' 11.354" N
2	95° 45' 25.360" E	27° 16' 8.735" N
3	95° 42' 48.993" E	27° 15' 2.391" N

North and West:-

The boundary from GPS Point No 3 moves through artificial lines connecting following GPS points to meet GPS point No 1.

Point ID	Longitude	Latitude
4	95° 43' 27.911" E	27° 15' 46.113" N
5	95° 43' 36.137" E	27° 15' 51.425" N
6	95° 43' 34.211" E	27° 16' 4.355" N

7	95° 43' 42.174" E	27° 16' 17.512" N
8	95° 43' 25.092" E	27° 16' 20.469" N
9	95° 43' 15.712" E	27° 16' 12.932" N
10	95° 42' 57.390" E	27° 15' 56.321" N
11	95° 42' 39.720" E	27° 16' 5.284" N
12	95° 42' 54.677" E	27° 16' 14.018" N
13	95° 43' 4.793" E	27° 16' 25.083" N
14	95° 43' 9.069" E	27° 16' 35.441" N
15	95° 43' 7.930" E	27° 16' 38.823" N
16	95° 43' 17.252" E	27° 16' 45.392" N
17	95° 43' 24.252" E	27° 16' 35.922" N
18	95° 43' 30.360" E	27° 16' 29.247" N
19	95° 43' 46.691" E	27° 16' 23.337" N
20	95° 44' 9.339" E	27° 16' 16.881" N
21	95° 44' 18.829" E	27° 16' 19.574" N
22	95° 44' 17.980" E	27° 16' 27.600" N
23	95° 45' 3.053" E	27° 16' 40.299" N
24	95° 45' 33.747" E	27° 16' 48.947" N
25	95° 46' 6.042" E	27° 16' 58.045" N
26	95° 46' 1.873" E	27° 17' 2.218" N
27	95° 46' 21.195" E	27° 17' 12.858" N
28	95° 46' 48.254" E	27° 17' 27.759" N
29	95° 47' 15.839" E	27° 17' 43.383" N
30	95° 47' 14.081" E	27° 17' 45.966" N
31	95° 47' 40.188" E	27° 18' 7.454" N
32	95° 47' 58.826" E	27° 18' 7.631" N
33	95° 47' 57.869" E	27° 18' 19.250" N
34	95° 48' 12.668" E	27° 18' 21.030" N
35	95° 48' 34.709" E	27° 18' 27.316" N
36	95° 48' 47.487" E	27° 18' 23.217" N
37	95° 48' 57.959" E	27° 18' 15.887" N
38	95° 49' 11.813" E	27° 18' 16.358" N

By Order and in the name of Governor of Assam

Sd/- G. D. Tripathi, IAS

Commissioner & Secretary to the Government of Assam,
Environment and Forest Department

Memo. No. FRM.14/2021/Pt/124-A

Dated Dispur, the 5th January, 2022

Copy to :

1. The Principal Chief Conservator of Forest & HoFF, Assam, Panjabari, Guwahati-37.
2. The Forest Settlement Officer & Addl. Deputy Commissioner, Tinsukia, Assam
3. The Board of Revenue, Assam, Guwahati.
4. The Deputy Commissioner, Tinsukia, Assam.
5. The Divisional Forest Officer, Digboi, Assam

By Order etc.,

~~Officer-On-Special-Duty~~
Environment and Forest Department



অসম ৰাজপত্ৰ

প্রাপ্ত কৰ্তৃত্বৰ দ্বাৰা প্ৰকাশিত

PUBLISHED BY THE AUTHORITY



নং 7	দিশপুৰ,	বুধবাৰ,	16 ফেব্ৰুৱাৰী, 2022,	27 মাঘ,	1943 (শক)
No. 7	Dispur,	Wednesday,	16th February, 2022,	27th Magha,	1943 (S.E.)

সুকীয়া সংকলন কৰিব পৰাকৈ প্ৰথম, দ্বিতীয় (ক) আৰু দ্বিতীয় (খ) খণ্ডত সুকীয়া ক্ৰমিক পৃষ্ঠা নম্বৰ দিয়া হৈছে।

Separate paging is given to Part-I, II (A) and II (B) in order that it may be filed as a separate compilation.

সূচীপত্ৰ Contents

		পৃষ্ঠা PAGES
প্ৰথম খণ্ড-	নিযুক্তি, পদস্থান, বদলি, ক্ষমতা, ছুটি আৰু অন্যান্য নিজা জাননী	
Part-I-	Appointments, Postings, Transfers, Powers, Leaves and other Personnel Notices.	167-174
দ্বিতীয় খণ্ড- (ক)	ৰাজ্যিক চৰকাৰ আৰু বিভাগীয় মূৰব্বীৰ দ্বাৰা প্ৰচাৰিত প্ৰস্তাৱ, বিনিয়ম, আদেশ, অধিসূচনা (জাননী)।	
Part-II (A)-	Resolutions, Regulations, Orders, Notifications etc. issued by the State Government and Heads of the Department.	175-194
নৱম খণ্ড-	চৰকাৰী কাৰ্য্যালয় আৰু ৰাজহুৱা সংস্থাসমূহৰ দ্বাৰা দিয়া বিজ্ঞাপন আৰু জাননী	
Part-IX-	Advertisement and Notices by Government Offices and Public Bodies.	51-56

The 5th January, 2022

No. CMP.10/2021/94.-

CERTIFICATE OF REGISTRATION**Assam Cooperative Societies, Act, 2007****Registration No. Assam 7/2021-2022, dated 30th December, 2021.**

In the matter of an application of Sri Mamani Sarma and 9 others for registration of a Cooperative Society at House No. 85, D. R. Pathak Bhawan, Voltas Lane, Maniram Dewan Path, Chandmari, Guwahati-781003, District-Kamrup (Metro), Assam.

I do hereby certify that pursuant to the Assam Cooperative Societies Act, 2007, a Cooperative Society with limited liability by the name and style of "City Dairy & Farming Cooperative Society Ltd." has been registered in this office under Section 10 & 11 of the Assam Cooperative Societies Act, 2007.

The Bye-laws adopted by the said Cooperative Society have also been duly registered.

The area of operation of the Society : State of Assam.

Registrar of Cooperative Societies, Assam,
Khanapara, Guwahati-22.

The 5th January, 2022

No. FRM.14/2021/Pt/124.- In exercise of the powers conferred by Section 17 of Assam Forest Regulation 1891 (VII of 1891), the Governor of Assam is pleased to declare the land described in the Schedules hereto annexed to be a Reserved Forest, with effect from the date of publication of this Notification.

SCHEDULE - A

(a) District	.....	Tinsukia
(b) Forest Division	.....	Digboi
(c) Sub-Division (Civil)	.....	Margherita
(d) Mauza	.....	Makum
(e) Name of the Forest	.....	Saleki Reserved Forest
(f) Area of the Forest	.....	1700 Hectares

SCHEDULE - "B"**DESCRIPTION OF BOUNDARIES****East and South :**

Starting from GPS Point No. 1, the boundary runs along Lekhapani Nadi to meet Ledo Pani Nadi at GPS Point No. 2 and follows the river to meet GPS Point No. 3 with the following coordinates.

Point ID	Longitude	Latitude
1	95°49'16.561" E	27°18'11.354" N
2	95°45'25.360" E	27°16'8.735" N
3	95°42'48.993" E	27°15'2.391" N

North and West :

The boundary from GPS Point No. 3 moves through artificial lines connecting following GPS point to meet GPS point No. 1.

Point ID	Longitude	Latitude
4	95°43'27.911" E	27°15'46.113" N
5	95°43'36.137" E	27°15'51.425" N
6	95°43'34.211" E	27°16'4.355" N
7	95°43'42.174" E	27°16'17.512" N
8	95°43'25.092" E	27°16'20.469" N
9	95°43'15.712" E	27°16'12.932" N
10	95°42'57.390" E	27°15'56.321" N
11	95°42'39.720" E	27°16'5.284" N
12	95°42'54.677" E	27°16'14.018" N
13	95°43'4.793" E	27°16'25.083" N
14	95°43'9.069" E	27°16'35.441" N
15	95°43'7.930" E	27°16'38.823" N
16	95°43'17.252" E	27°16'45.392" N
17	95°43'24.252" E	27°16'35.922" N
18	95°43'30.360" E	27°16'29.247" N
19	95°43'46.691" E	27°16'23.337" N
20	95°44'9.339" E	27°16'16.881" N
21	95°44'18.829" E	27°16'19.574" N
22	95°44'17.980" E	27°16'27.600" N
23	95°45'3.053" E	27°16'40.299" N
24	95°45'33.747" E	27°16'48.947" N
25	95°46'6.042" E	27°16'58.045" N
26	95°46'1.873" E	27°17'2.218" N
27	95°46'21.195" E	27°17'12.858" N
28	95°46'48.254" E	27°17'27.759" N
29	95°47'15.839" E	27°17'43.383" N
30	95°47'14.081" E	27°17'45.966" N
31	95°47'40.188" E	27°18'7.454" N
32	95°47'58.826" E	27°18'7.631" N
33	95°47'57.869" E	27°18'19.250" N
34	95°48'12.668" E	27°18'21.030" N
35	95°48'34.709" E	27°18'27.316" N
36	95°48'47.487" E	27°18'23.217" N
37	95°48'57.959" E	27°18'15.887" N
38	95°49'11.813" E	27°18'16.358" N

G. D. TRIPATHI,

Commissioner & Secretary to the Government of Assam,
Environment and Forest Department.

The 5th January, 2022

No. FRM.14/2021/P/125.- In exercise of the powers conferred by Section 17 of Assam Forest Regulation 1891 (VII of 1891), the Governor of Assam is pleased to declare the land described in the Schedules annexed to be a Reserved Forest, with effect from the date of publication of this Notification.

SCHEDULE - A

(a) District	.....	Tinsukia
(b) Forest Division	.....	Digboi
(c) Sub-Division (Civil)	.....	Margherita
(d) Mauza	.....	Tirap
(e) Name of the Forest	.....	First Addition to Tirap Reserved Forest
(f) Area of the Forest	.....	3025 Hectares

//TRUE COPY//



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



1235

ANNEXURE A-5

177

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/04/00008

Date of Report: 26/04/2023

Sample ID No: GZ/TE-43/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Effluent Water (Treated)	Source: Treated Water of ETP (Railway Siding Tikak Colliery)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	Colour and Odor	1HU & Odourless	---	--
02	Suspended Solids	52.0	mg/l	100
03	Particulate size of suspended solids	22 Micron	-	Shall pass 850 Micron IS sieve
04	pH	6.6	-	5.5-9.0
05	Temperature	22°C	°C	Shall not exceed 5°C above the receiving water temperature
06	Oil & Grease	1.3	mg/l	Max. 10
07	Total residual chlorine	BDL	mg/l	Max. 1.0
08	Ammonical Nitrogen as N	1.4	mg/l	Max. 50
09	Total Kjeldahl Nitrogen (as NH ₃)	7.0	mg/l	Max. 100
10	Free ammonia (as NH ₃)	BDL	mg/l	Max. 5.0
11	Biochemical Oxygen Demand (as BOD)	14	mg/l	Max. 30
12	Chemical Oxygen Demand (as COD)	32	mg/l	Max. 250

**BDL-Below Detectable Limit



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**M/s. GREENZONE**

Recognised By

Pollution Control Board, Assam



1236



178

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

13	Arsenic (as As)	BDL	mg/l	Max. 0.2
14	Mercury (as Hg)	BDL	mg/l	Max. 0.01
15	Lead (as Pb)	BDL	mg/l	Max. 0.1
16	Cadmium (as Cd)	BDL	mg/l	Max. 2.0
17	Hexavalent Chromium (as Cr ⁶⁺)	BDL	mg/l	Max. 0.1
18	Total Chromium (as Cr)	0.003	mg/l	Max. 2.0
19	Copper (as Cu)	0.008	mg/l	Max. 3.0
20	Zinc (as Zn)	0.128	mg/l	Max. 5.0
21	Selenium (as Se)	BDL	mg/l	Max. 0.05
22	Nickel (as Ni)	BDL	mg/l	Max. 3.0
23	Cyanide (as CN)	BDL	mg/l	Max. 0.2
24	Fluoride (as F)	0.07	mg/l	Max. 2.0
25	Dissolved Phosphates (as P)	0.5	mg/l	Max. 5.0
26	Sulphide (as S)	BDL	mg/l	Max. 2.0
27	Phenolic Compounds (as C ₆ H ₅ OH)	BDL	mg/l	Max. 1.0
28	Bio-assay Test	90% survival of fish after 96 hours in 100%effluent		90% survival of fish after 96 hours in 100%effluent
29	Manganese (as Mn)	BDL	mg/l	Max. 2.0
30	Iron (as Fe)	0.31	mg/l	Max. 3.0
31	Vanadium (as V)	BDL	mg/l	Max. 0.2
32	Nitrate Nitrogen	1.3	mg/l	Max. 10

**BDL-Below Detectable Limit

Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh
Quality Manager
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report **

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00005
Sample ID No: GZ/TE-61/23

Date of Report: 11/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source: Treated Water of ETP (Railway Siding Tilak Colliery)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	Colour and Odor	1HU & Odourless	---	--
02	Suspended Solids	51.0	mg/l	100
03	Particulate size of suspended solids	22 Micron	-	Shall pass 850 Micron IS sieve
04	pH	6.8	-	5.5-9.0
05	Temperature	24°C	°C	Shall not exceed 5°C above the receiving water temperature
06	Oil & Grease	1.7	mg/l	Max. 10
07	Total residual chlorine	BDL	mg/l	Max. 1.0
08	Ammonical Nitrogen as N	1.3	mg/l	Max. 50
09	Total Kjeldahl Nitrogen (as NH ₃)	8.6	mg/l	Max. 100
10	Free ammonia (as NH ₃)	BDL	mg/l	Max. 5.0
11	Biochemical Oxygen Demand (as BOD)	20	mg/l	Max. 30
12	Chemical Oxygen Demand (as COD)	38	mg/l	Max. 250

**BDL-Below Detectable Limit



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

13	Arsenic (as As)	BDL	mg/l	Max. 0.2
14	Mercury (as Hg)	BDL	mg/l	Max. 0.01
15	Lead (as Pb)	BDL	mg/l	Max. 0.1
16	Cadmium (as Cd)	BDL	mg/l	Max. 2.0
17	Hexavalent Chromium (as Cr ⁺⁺)	BDL	mg/l	Max. 0.1
18	Total Chromium (as Cr)	0.003	mg/l	Max. 2.0
19	Copper (as Cu)	0.006	mg/l	Max. 3.0
20	Zinc (as Zn)	0.145	mg/l	Max. 5.0
21	Selenium (as Se)	BDL	mg/l	Max. 0.05
22	Nickel (as Ni)	BDL	mg/l	Max. 3.0
23	Cyanide (as CN)	BDL	mg/l	Max. 0.2
24	Fluoride (as F)	0.07	mg/l	Max. 2.0
25	Dissolved Phosphates (as P)	0.5	mg/l	Max. 5.0
26	Sulphide (as S)	BDL	mg/l	Max. 2.0
27	Phenoile Compounds (as C ₆ H ₅ OH)	BDL	mg/l	Max. 1.0
28	Bio-assay Test	90% survival of fish after 96 hours in 100%effluent		90% survival of fish after 96 hours in 100%effluent
29	Manganese (as Mn)	BDL	mg/l	Max. 2.0
30	Iron (as Fe)	0.29	mg/l	Max. 3.0
31	Vanadium (as V)	BDL	mg/l	Max. 0.2
32	Nitrate Nitrogen	1.4	mg/l	Max. 10

**BDL-Below Detectable Limit

Analyzed By
Chief Chemist (D N D Choudhury)Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)**NOTE:**

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**



greener future...

M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00020

Date of Report: 26/05/2023

Sample ID No: GZ/TE-76/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source: Treated Water of ETP (Railway Siding Tikak Colliery)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	Colour and Odor	1HU & Odourless	---	--
02	Suspended Solids	56.0	mg/l	100
03	Particulate size of suspended solids	22 Micron	--	Shall pass 850 Micron IS sieve
04	pH	6.6	--	5.5-9.0
05	Temperature	23°C	°C	Shall not exceed 5°C above the receiving water temperature
06	Oil & Grease	1.5	mg/l	Max. 10
07	Total residual chlorine	BDL	mg/l	Max. 1.0
08	Ammonical Nitrogen as N	1.6	mg/l	Max. 50
09	Total Kjeldahl Nitrogen (as NH ₃)	12.6	mg/l	Max. 100
10	Free ammonia (as NH ₃)	BDL	mg/l	Max. 5.0
11	Biochemical Oxygen Demand (as BOD)	24	mg/l	Max. 30
12	Chemical Oxygen Demand (as COD)	46	mg/l	Max. 250

**BDL-Below Detectable Limit



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

13	Arsenic (as As)	BDL	mg/l	Max. 0.2
14	Mercury (as Hg)	BDL	mg/l	Max. 0.01
15	Lead (as Pb)	BDL	mg/l	Max. 0.1
16	Cadmium (as Cd)	BDL	mg/l	Max. 2.0
17	Hexavalent Chromium (as Cr ⁺⁶)	BDL	mg/l	Max. 0.1
18	Total Chromium (as Cr)	0.004	mg/l	Max. 2.0
19	Copper (as Cu)	0.007	mg/l	Max. 3.0
20	Zinc (as Zn)	0.134	mg/l	Max. 5.0
21	Selenium (as Se)	BDL	mg/l	Max. 0.05
22	Nickel (as Ni)	BDL	mg/l	Max. 3.0
23	Cyanide (as CN)	BDL	mg/l	Max. 0.2
24	Fluoride (as F)	0.06	mg/l	Max. 2.0
25	Dissolved Phosphates (as P)	0.8	mg/l	Max. 5.0
26	Sulphide (as S)	BDL	mg/l	Max. 2.0
27	Phenoile Compounds (as C ₆ H ₅ OH)	BDL	mg/l	Max. 1.0
28	Bio-assay Test	90% survival of fish after 96 hours in 100%effluent		90% survival of fish after 96 hours in 100%effluent
29	Manganese (as Mn)	BDL	mg/l	Max. 2.0
30	Iron (as Fe)	0.32	mg/l	Max. 3.0
31	Vanadium (as V)	BDL	mg/l	Max. 0.2
32	Nitrate Nitrogen	1.7	mg/l	Max. 10

**BDL-Below Detectable Limit

Analyzed By
Chief Chemist (D N D Choudhury)

 Quality Manager
 Reviewed and Authorized By:
 Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighol.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00005
Sample ID No: GZ/TE-93/23

Date of Report: 08 /06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source:	Treated Water of ETP (Railway Siding Tihak Colliery)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	Colour and Odor	ZHU & Odourless		--
02	Suspended Solids	57.0	mg/l	100
03	Particulate size of suspended solids	23 Micron		Shall pass 850 Micron IS sieve
04	pH	6.8		5.5-9.0
05	Temperature	24 ^o C	^o C	Shall not exceed 5 ^o c above the receiving water temperature
06	Oil & Grease	1.7	mg/l	Max. 10
07	Total residual chlorine	BDL	mg/l	Max. 1.0
08	Ammonical Nitrogen as N	1.2	mg/l	Max. 50
09	Total Kjeldahl Nitrogen (as NH ₃)	5.6	mg/l	Max. 100
10	Free ammonia (as NH ₃)	BDL	mg/l	Max. 5.0
11	Biochemical Oxygen Demand (as BOD)	24	mg/l	Max. 30
12	Chemical Oxygen Demand (as COD)	41	mg/l	Max. 250

**BDL-Below Detectable Limit



Analyzed By
Chief Chemist (D N D Choudhury)

[Signature]
Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

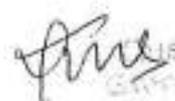


AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

13	Arsenic (as As)	BDL	mg/l	Max. 0.2
14	Mercury (as Hg)	BDL	mg/l	Max. 0.01
15	Lead (as Pb)	BDL	mg/l	Max. 0.1
16	Cadmium (as Cd)	BDL	mg/l	Max. 2.0
17	Hexavalent Chromium (as Cr ⁺⁶)	BDL	mg/l	Max. 0.1
18	Total Chromium (as Cr)	0.005	mg/l	Max. 2.0
19	Copper (as Cu)	0.007	mg/l	Max. 3.0
20	Zinc (as Zn)	0.189	mg/l	Max. 5.0
21	Selenium (as Se)	BDL	mg/l	Max. 0.05
22	Nickel (as Ni)	BDL	mg/l	Max. 3.0
23	Cyanide (as CN)	BDL	mg/l	Max. 0.2
24	Fluoride (as F)	0.04	mg/l	Max. 2.0
25	Dissolved Phosphates (as P)	0.7	mg/l	Max. 5.0
26	Sulphide (as S)	BDL	mg/l	Max. 2.0
27	Phenoile Compounds (as C ₆ H ₅ OH)	BDL	mg/l	Max. 1.0
28	Bio-assay Test	90% survival of fish after 96 hours in 100%effluent		90% survival of fish after 96 hours in 100%effluent
29	Manganese (as Mn)	BDL	mg/l	Max. 2.0
30	Iron (as Fe)	0.31	mg/l	Max. 3.0
31	Vanadium (as V)	BDL	mg/l	Max. 0.2
32	Nitrate Nitrogen	1.8	mg/l	Max. 10

**BDL-Below Detectable Limit


Analyzed By
Chief Chemist (B N D Choudhury)


Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report **

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00020
Sample ID No: GZ/TE-108/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water(Treated)	Source: Treated Water of ETP (Railway Siding Tikak Colliery)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	Colour and Odor	2HU & Odourless		--
02	Suspended Solids	59.0	mg/l	100
03	Particulate size of suspended solids	23 Micron		Shall pass 850 Micron IS sieve
04	pH	7.1		5.5-9.0
05	Temperature	24°C	°C	Shall not exceed 5°C above the receiving water temperature
06	Oil & Grease	1.5	mg/l	Max. 10
07	Total residual chlorine	BDL	mg/l	Max. 1.0
08	Ammonical Nitrogen as N	1.7	mg/l	Max. 50
09	Total Kjeldahl Nitrogen (as NH ₃)	8.4	mg/l	Max. 100
10	Free ammonia (as NH ₃)	BDL	mg/l	Max. 5.0
11	Biochemical Oxygen Demand (as BOD)	23	mg/l	Max. 30
12	Chemical Oxygen Demand (as COD)	41	mg/l	Max. 250

**BDL-Below Detectable Limit



Analyzed By
Chief Chemist (D N D Choudhury)


Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

13	Arsenic (as As)	BDL	mg/l	Max. 0.2
14	Mercury (as Hg)	BDL	mg/l	Max. 0.01
15	Lead (as Pb)	BDL	mg/l	Max. 0.1
16	Cadmium (as Cd)	BDL	mg/l	Max. 2.0
17	Hexavalent Chromium (as Cr ⁺⁺)	BDL	mg/l	Max. 0.1
18	Total Chromium (as Cr)	0.003	mg/l	Max. 2.0
19	Copper (as Cu)	0.004	mg/l	Max. 3.0
20	Zinc (as Zn)	0.156	mg/l	Max. 5.0
21	Selenium (as Se)	BDL	mg/l	Max. 0.05
22	Nickel (as Ni)	BDL	mg/l	Max. 3.0
23	Cyanide (as CN)	BDL	mg/l	Max. 0.2
24	Fluoride (as F)	0.05	mg/l	Max. 2.0
25	Dissolved Phosphates (as P)	0.6	mg/l	Max. 5.0
26	Sulphide (as S)	BDL	mg/l	Max. 2.0
27	Phenoile Compounds (as C ₆ H ₅ OH)	BDL	mg/l	Max. 1.0
28	Bio-assay Test	90% survival of fish after 96 hours in 100%effluent		90% survival of fish after 96 hours in 100%effluent
29	Manganese (as Mn)	BDL	mg/l	Max. 2.0
30	Iron (as Fe)	0.29	mg/l	Max. 3.0
31	Vanadium (as V)	BDL	mg/l	Max. 0.2
32	Nitrate Nitrogen	1.9	mg/l	Max. 10

**BDL-Below Detectable Limit

Analyzed By
 Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
 Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Residual sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00038
Sample ID No: GZ/TE-126/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source: Treated Water of ETP (Railway Siding Tikak Colliery)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	Colour and Odor	1HU & Odourless		--
02	Suspended Solids	53.0	mg/l	100
03	Particulate size of suspended solids	20 Micron		Shall pass 850 Micron IS sieve
04	pH	6.9		5.5-9.0
05	Temperature	23°C	°C	Shall not exceed 5°C above the receiving water temperature
06	Oil & Grease	1.3	mg/l	Max. 10
07	Total residual chlorine	BDL	mg/l	Max. 1.0
08	Ammonical Nitrogen as N	1.8	mg/l	Max. 50
09	Total Kjeldahl Nitrogen (as NH ₃)	7.0	mg/l	Max. 100
10	Free ammonia (as NH ₃)	BDL	mg/l	Max. 5.0
11	Biochemical Oxygen Demand (as BOD)	23	mg/l	Max. 30
12	Chemical Oxygen Demand (as COD)	44	mg/l	Max. 250

**BDL-Below Detectable Limit



Analyzed By
Chief Chemist (D N D Choudhury)



Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

- Results reported are valid at the time of and under the prevailing conditions of measurement.
- Results refer only to the particular parameters tested.
- Remnant sample will be destroyed after 20 days from the date of receipt of sample.
- This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
13	Arsenic (as As)	BDL	mg/l	Max. 0.2
14	Mercury (as Hg)	BDL	mg/l	Max. 0.01
15	Lead (as Pb)	BDL	mg/l	Max. 0.1
16	Cadmium (as Cd)	BDL	mg/l	Max. 2.0
17	Hexavalent Chromium (as Cr ^{VI})	BDL	mg/l	Max. 0.1
18	Total Chromium (as Cr)	0.003	mg/l	Max. 2.0
19	Copper (as Cu)	0.003	mg/l	Max. 3.0
20	Zinc (as Zn)	0.136	mg/l	Max. 5.0
21	Selenium (as Se)	BDL	mg/l	Max. 0.05
22	Nickel (as Ni)	BDL	mg/l	Max. 3.0
23	Cyanide (as CN)	BDL	mg/l	Max. 0.2
24	Fluoride (as F)	0.05	mg/l	Max. 2.0
25	Dissolved Phosphates (as P)	0.7	mg/l	Max. 5.0
26	Sulphide (as S)	BDL	mg/l	Max. 2.0
27	Phenolic Compounds (as C ₆ H ₅ OH)	BDL	mg/l	Max. 1.0
28	Bio-assay Test	90% survival of fish after 96 hours in 100% effluent		90% survival of fish after 96 hours in 100% effluent
29	Manganese (as Mn)	BDL	mg/l	Max. 2.0
30	Iron (as Fe)	0.29	mg/l	Max. 3.0
31	Vanadium (as V)	BDL	mg/l	Max. 0.2
32	Nitrate Nitrogen	1.0	mg/l	Max. 10

**BDL-Below Detectable Limit

Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Resonant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** Sample Report **



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/06/00009
Sample ID No: GZ/AAQ-77/23

Date of Report:15/06/2023
Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Near Settling Tank (Railway Siding Tikak Colliery)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 12/06/2023	End Date 13/06/2023	Ambient Temperature 30°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	18.7	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	50.4	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.4	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	24.4	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit , * MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks : Nil

Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, DIBROI.

End of Report



TEST REPORT

Report No: AN/23/04/00008
Sample ID No: GZ/AN-28/23

Date of Report: 25/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source Near Settling Tank (Railway Siding Tikak Colliery)
Sample collected by	Greenzone Representative
Sample Collection Particulars	22/04/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) [As per CPCB Guidelines]
1.	Near Settling Tank (Railway Siding Tikak Colliery)	72	65	66.0	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) [As per CPCB Guidelines]
1.	Near Settling Tank (Railway Siding Tikak Colliery)	69	62	63.2	70

Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Durg)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Resonant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

End of Report



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



191



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00019

Sample ID No: GZ/AN-53/23

Date of Report: 26/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Settling Tank (Railway Siding Tikak Colliery)
Sample collected by	Greenzone Representative
Sample Collection Particulars	19/05/2023

ANALYSIS REPORT

(Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Near Settling Tank (Railway Siding Tikak Colliery)	73	62	69.3	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Near Settling Tank (Railway Siding Tikak Colliery)	68	61	65.2	70

Analyzed By
Chief Chemist (D N-D Choudhury)



Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****

TEST REPORT

Report No: AN/23/05/00008

Date of Report: 11/05/2023

Sample ID No: GZ/AN-42/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Settling Tank (Railway Siding Tikak Colliery)
Sample collected by	Greenzone Representative
Sample Collection Particulars	05/05/2023

ANALYSIS REPORT

(Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) [As per CPCB Guidelines]
1.	Near Settling Tank (Railway Siding Tikak Colliery)	71	65	66	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) [As per CPCB Guidelines]
1.	Near Settling Tank (Railway Siding Tikak Colliery)	69	69.1	62.9	70

Analyzed By
Chief Chemist (D N D Choudhary)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report **



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00008
Sample ID No: GZ/AN-65/23

Date of Report: 08/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Settling Tank (Railway Siding Tikak Colliery)
Sample collected by	Greenzone Representative
Sample Collection Particulars	02/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Settling Tank (Railway Siding Tikak Colliery)	74	65	70	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Settling Tank (Railway Siding Tikak Colliery)	69	65	67.2	70



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



AN ISO 9001:2015 & ISO 15001:2015 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/000119

Date of Report: 20/06/2023

Sample ID No: GZ/AN-76/23

Contract No-GEMC-511687745288609 Dtd-14/03/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Near Settling Tank (Railway Siding Tikak Colliery)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L_{eq} (dB-A)	Limits L_{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Settling Tank (Railway Siding Tikak Colliery)	74	67	70	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L_{eq} (dB-A)	Limits L_{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Settling Tank (Railway Siding Tikak Colliery)	67	63	65.2	70

Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Retainant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

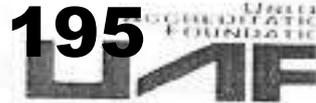
** End of Report**



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No:AN/23/06/00033

Sample ID No: GZ/AN-90/23

Date of Report: 04/07/2023

Contract No-GEMC-S11687745288609 Dtd-14/03/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Settling Tank (Railway Siding Tikak Colliery)
Sample collected by	Greenzone Representative
Sample Collection Particulars	30/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Settling Tank (Railway Siding Tikak Colliery)	72	57	64	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Settling Tank (Railway Siding Tikak Colliery)	67	63	65.2	70



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00016

Date of Report: 29/04/2023

Sample ID No: GZ/AAQ-58/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Near Settling Tank (Railway Siding Tikak Colliery)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 26/04/2023	End Date 27/04/2023	Ambient Temperature 24°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS 2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	26.2	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	52.5	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.3	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	26.0	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL(MDL:1.0)*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL(MDL:0.01)*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL(MDL:0.01)*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL(MDL:5.0)*	µg/m ³	100 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL(MDL:0.01)*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL(MDL:0.1)*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL(MDL:0.01)*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL(MDL:0.01)*	ng/m ³	20 (Annual Average)

*BDL: Below Detection Limit, * MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighol.

End of Report



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



TIKAK EXTENSION OLP APRIL to JUNE 2023
UNITEE HERITATION FOUNDATION
197
UNAF

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00047
Sample ID No: GZ/TE-135/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Surface Water	Source: K-Drift Drain(Near Agent Office) (Tikak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl.No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.85	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	29.0	mg/l	Max 250
03	SS (Suspended Solids)	39.0	mg/l	Max 100
04	Oil & Grease	1.5	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****

APRIL TO JUNE - 2023



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



198



greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00029
Sample ID No: GZ/TE-117/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: K-Drift Drain(Near Agent Office) (Tikak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.81	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	22.0	mg/l	Max 250
03	SS (Suspended Solids)	31.0	mg/l	Max 100
04	Oil & Grease	1.3	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1257



199

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00014

Sample ID No: GZ/TE-102/23

Date of Report: 08/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: K-Drift Drain(Near Agent Office) (Tikak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 l.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.68	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	28.0	mg/l	Max 250
03	SS (Suspended Solids)	37.0	mg/l	Max 100
04	Oil & Grease	1.7	mg/l	Max 10



Analyzed By
Chief Chemist (D N B Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Retained sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

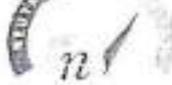
**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1258



200



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00014
Sample ID No: GZ/TE-70/23

Date of Report: 10/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: K-Drift Drain(Near Agent Office) (Tikak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.65	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	26.0	mg/l	Max 250
03	SS (Suspended Solids)	32.0	mg/l	Max 100
04	Oil & Grease	1.1	mg/l	Max 10



Analyzed By
Chief Chemist (D N D-Choudhury)

Pulakesh Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



1259



201

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00029

Sample ID No: GZ/TE-85/23

Date of Report: 26/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: K-Drift Drain(Near Agent Office) (Tilak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.72	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	25.0	mg/l	Max 250
03	SS (Suspended Solids)	37.0	mg/l	Max 100
04	Oil & Grease	1.8	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Durg)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1260

202



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/04/00007
Sample ID No: GZ/TE-42/23

Date of Report: 26/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: K-Drift Drain(Near Agent Office) (Tikak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.51	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	29.0	mg/l	Max 250
03	SS (Suspended Solids)	33.0	mg/l	Max 100
04	Oil & Grease	1.7	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1261



203

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00052

Sample ID No: GZ/TE-142/23

Date of Report: 04/07/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Downstream Ledo Pani Nallah (Tikak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E)-19.05.1993 & 31.12.1993
01	pH	6.4	-	5.5-9.0
02	COD (Chemical Oxygen Demand)	24.0	mg/l	Max 250
03	SS (Suspended Solids)	34.0	mg/l	Max 100
04	Oil & Grease	1.6	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam

1262



204

UNIT
NORBERTATH
FOUNDATION

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00052
Sample ID No: GZ/TE-140/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Downstream Ledo Pani Nallah (Tikak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E) 19.05.1993 & 31.12.1993
01	pH	6.7	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	26.0	mg/l	Max 250
03	SS (Suspended Solids)	37.8	mg/l	Max 100
04	Oil & Grease	1.6	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**

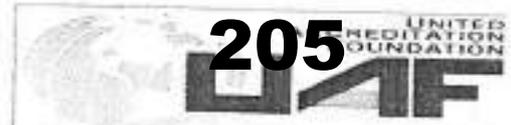


M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1263



205

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00051

Sample ID No: GZ/TE-139/23

Date of Report: 08/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Downstream Ledo Pani Nallah (Tilak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E)-19.05.1993 & 31.12.1993
01	pH	6.5	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	23.0	mg/l	Max 250
03	SS (Suspended Solids)	38.0	mg/l	Max 100
04	Oil & Grease	1.1	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam

1264



206



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/000137

Date of Report: 26/05/2023

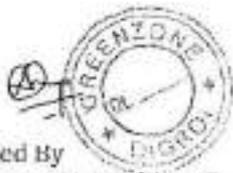
Sample ID No: GZ/TE-50/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Downstream Ledo Pani Nallah (Tikak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 l.	

ANALYSIS REPORT

Sl No.	Parameters	Results	Units	Limit as per GSR 422(E), 19.05.1993 & 31.12.1993
01	pH	6.2	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	24.0	mg/l	Max 250
03	SS (Suspended Solids)	33.0	mg/l	Max 100
04	Oil & Grease	1.2	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager,
Greenzone, Dighoi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dng)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



1265



207
UNITED ACCREDITATION FOUNDATION
IAF

greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00049

Sample ID No: GZ/TE-134/23

Date of Report: 10/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source:	Downstream Ledo Pani Nallah (Tikak Extension OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.1	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	29.0	mg/l	Max 250
03	SS (Suspended Solids)	38.0	mg/l	Max 100
04	Oil & Grease	1.4	mg/l	Max 10



Analyzed By
Chief Chemist (D N D'Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1266



208

UNIT
ACCREDITATION
FOUNDATION

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/04/00022

Date of Report: 26/04/2023

Sample ID No: GZ/TE-35/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Downstream Ledo Pani Nallah (Tibak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.9	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	28.0	mg/l	Max 250
03	SS (Suspended Solids)	36.0	mg/l	Max 100
04	Oil & Grease	1.4	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report **



M/S. GREENZONE
 Recognised By
 Pollution Control Board, Assam

1267



209

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

Report No: AAQ/23/06/00006
 Sample ID No: GZ/AAQ-74/23

TEST REPORT

Name & Address of Client		NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		Contract No-GEMC-511687745288609,		Date of :	
Sample Description		Type: Ambient Air Sample		Source: Mine Area(Near Worksho. (Tikak Extension OCP)			
Sample collected by		Greenzone Representative		Ambient Temperature 30°C			
Sample Collection Particulars		Start Date 09/06/2023		End Date 10/06/2023		Analysis P 15 51:	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	19.7	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	49.8	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.5	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	21.6	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	80 (24 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	100 (8 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	1.0 (24 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	4.0 (1 Hours Average)
09	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.01]*	µg/m ³	400 (24 Hours Average)
10	Arsenic (as As)	BDL[MDL:0.1]*	ng/m ³	5.0 (Annual Average)
11	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	1.0 (Annual Average)
12		BDL[MDL:0.02]*	ng/m ³	6.0 (Annual Average)
				20 (Annual Average)

*BDL : Below Detection Limit, *MDL: Minimum Detection Limit
 NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
 Chief Chemist (D N D Choudhury)

Quality Manager
 Greenzone, Digboi
 Reviewed and Authorized By:
 Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the writes permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report



M/s. GREENZONE

1268

Recognized By
Pollution Control Board, Assam

210



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/06/00007

Date of Report:13/06/2023

Sample ID No: GZ/AAQ-75/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Near Malugaon No. 2 (Tikak Extension OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 10/06/2023	End Date 11/06/2023	Ambient Temperature 29°C	Analysis Protocol IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	17.9	µg /m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	51.3	µg /m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.8	µg /m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	23.8	µg /m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg /m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg /m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg /m ³	1.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg /m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg /m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng /m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng /m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng /m ³	20 (Annual Average)

*BDL : Below Detection Limit, *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/06/00008

Date of Report: 13/06/2023

Sample ID No: GZ/AAQ-76/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Residential Colony of Tikak Colliery (Tikak Extension OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 10/06/2023	End Date 11/06/2023	Ambient Temperature 30°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	19.7	µg /m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	51.4	µg /m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.7	µg /m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	25.7	µg /m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg /m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL: 0.01]*	µg /m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg /m ³	4.0 (1 Hour Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg /m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL: 0.01]*	µg /m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL: 0.1]*	ng /m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL: 0.01]*	ng /m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL: 0.01]*	ng /m ³	20 (Annual Average)

*BDL : Below Detection Limit , *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N B Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

****End of Report****

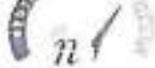


M/s. GREENZONE

Recognised by

Pollution Control Board, Assam

1270



212



AN ISO 9001:2015 & ISO 15189:2013 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/06/00005

Date of Report: 12/06/2023

Sample ID No: GZ/AAQ-73/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Kolpara Gaon (Near Panchayat Office) (Tilak Extension OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 09/06/2023	End Date 10/06/2023	Ambient Temperature 30°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	18.8	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	50.5	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.6	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	23.9	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit , * MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00007
Sample ID No: GZ/AAQ-49/23

Date of Report: 27/04/2023
Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Mine Area (Near Workshop) (Tikak Extension OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 24/04/2023	End Date 25/04/2023	Ambient Temperature 23°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	18.5	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	45.1	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.9	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	24.7	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit , * MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1272

214 ACCREDITED
ISO 9001:2015 & ISO 45001:2018

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00012

Date of Report: 28/04/2023

Sample ID No: GZ/AAQ-54/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Near Malugaon No.2 (Tikal Extension OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 25/04/2023	End Date 26/04/2023	Ambient Temperature 23°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	20.2	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) or PM ₁₀	49.5	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.6	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	26.0	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit, * MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: NIL



Analyzed By
Chief Chemist (D N D Choudhury)

[Signature]
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

*End of Report**



greener future...

M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1273



215

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00013

Date of Report:28/04/2023

Sample ID No: GZ/AAQ-55/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Residential Colony of Tikak Colliery (Tikak Extension OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 25/04/2023	End Date 26/04/2023	Ambient Temperature 24°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	19.1	µg /m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	51.5	µg /m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.5	µg /m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	24.0	µg /m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg /m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg /m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg /m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg /m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg /m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng /m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng /m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng /m ³	20 (Annual Average)

*BDL : Below Detection Limit , * MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

****End of Report****

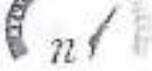


M/s. GREENZONE

Recognised By

Pollution Control Board, Assam

1274



216



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00006

Date of Report:27/04/2023

Sample ID No: GZ/AAQ-48/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Kolpara Gaon (Near Panchayat Office) (Tikak Extension OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 24/04/2023	End Date 25/04/2023	Ambient Temperature 23°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	18.5	µg /m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	48.5	µg /m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.8	µg /m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	23.0	µg /m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg /m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL: 0.01]*	µg /m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg /m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg /m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL: 0.01]*	µg /m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL: 0.1]*	ng /m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL: 0.01]*	ng /m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL: 0.01]*	ng /m ³	20 (Annual Average)

*BDL : Below Detection Limit, * MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



217

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00015
Sample ID No: GZ/AAQ-57/23

Date of Report: 28/04/2023
Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Ambient Air Sample Heavy Metal	Source: Residential Colony of Tikak Colliery (Tikak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 25/04/2023	End Date 26/04/2023	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit
01	Mercury (as Hg)	BDL (MDL:0.001)	µg/m ³	-
02	Chromium (as Cr)	BDL (MDL:0.001)	µg/m ³	-
03	Cadmium (as Cd)	BDL (MDL:0.001)	µg/m ³	-

*BDL : Below Detection Limit,

* MDL: Minimum Detection Limit



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

****End of Report****



M/s. GREENZONE

Recognized By
Pollution Control Board, Assam

1276

218



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00014
Sample ID No: GZ/AAQ-56/23

Date of Report:28/04/2023
Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Ambient Air Sample Heavy Metal	Source: Near Malugaon No 2 (Tikak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 25/04/2023	End Date 26/04/2023	

ANALYSIS REPORT

Sl.No.	Parameters	Results	Units	Limit
01	Mercury (as Hg)	BDL (MDL:0.001)	µg/m ³	-
02	Chromium (as Cr)	BDL (MDL:0.001)	µg/m ³	-
03	Cadmium (as Cd)	BDL (MDL:0.001)	µg/m ³	-

*BDL : Below Detection Limit ,

* MDL: Minimum Detection Limit



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Dung
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report



M/s. GREENZONE

Recognized By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00008

Date of Report: 27/04/2023

Sample ID No: GZ/AAQ-50/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Ambient Air Sample Heavy Metal	Source: Mine Area (Near Workshop) (Tikak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 24/04/2023	End Date 25/04/2023	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit
01	Mercury (as Hg)	BDL (MDL:0.001)	µg /m ³	-
02	Chromium (as Cr)	BDL (MDL:0.001)	µg /m ³	-
03	Cadmium (as Cd)	BDL (MDL:0.001)	µg /m ³	-

*BDL : Below Detection Limit ,

*MDL: Minimum Detection Limit



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Dung
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

****End of Report****



M/s. GREENZONE

1278

220



Recognized By
Pollution Control Board, Assam

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00009

Date of Report: 27/04/2023

Sample ID No: GZ/AAQ-51/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Ambient Air Sample Heavy Metal	Source: Kolpara Gaon (Near Panchayat Office) (Tikak Extension OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 24/04/2023	End Date 25/04/2023	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit
01	Mercury (as Hg)	BDL (MDL:0.001)	µg /m ³	-
02	Chromium (as Cr)	BDL (MDL:0.001)	µg /m ³	-
03	Cadmium (as Cd)	BDL (MDL:0.001)	µg /m ³	-

*BDL : Below Detection Limit ,

*MDL: Minimum Detection Limit



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/04/00005
Sample ID No: GZ/AN-25/23

Date of Report: 25/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area(Near Workshop) (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	22/04/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area(Near Workshop) (Tikak Extension OCP)	74	65	67.0	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area(Near Workshop) (Tikak Extension OCP)	68	61	65.2	70



Analyzed By
Chief Chemist (D N B Choudhury)

 Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



greener future...

M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1280



222



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/04/00006
Sample ID No: GZ/AN-26/23

Date of Report: 25/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Malugaon No-2 (Tikok Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	22/04/2023

ANALYSIS REPORT

(Day Time)

Sl No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits
					Leq (dB-A) (As per CPCB Guidelines)
1	Near Malugaon No 2 (Tikok Extension OCP)	55	49	52.5	55

(Night Time)

Sl No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits
					Leq (dB-A) (As per CPCB Guidelines)
1	Near Malugaon No-2 (Tikok Extension OCP)	41	36	38.5	45



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Quality Manager
Greenzone, Dighoi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/04/00007
Sample ID No: GZ/AN-27/23

Date of Report: 25/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Residential Colony of Tikak Colliery (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	22/04/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Residential Colony of Tikak Colliery (Tikak Extension OCP)	54	42	49	55

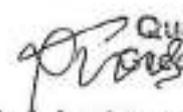
(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Residential Colony of Tikak Colliery (Tikak Extension OCP)	42	37	39.5	45

Analyzed By
Chief Chemist (D N B. Chowdhury)



Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)



NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1282



224



green future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/04/00004
Sample ID No: GZ/AN-24/23

Date of Report: 25/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Kolpara Gaon, Near Panchayat Office (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	22/04/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak Extension OCP)	54	50	52.2	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak Extension OCP)	44	36	42.7	45

Analyzed By
Chief Chemist (D N S Choudhury)



Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

Pulakesh
Quality Manager
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Resonant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00005

Sample ID No: GZ/AN-38/23

Date of Report: 11/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area(Near Workshop) (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	05/05/2023

ANALYSIS REPORT

(Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area(Near Workshop) (Tikak Extension OCP)	75	63	70	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area(Near Workshop) (Tikak Extension OCP)	66	60	63.5	70

Analyzed By
Chief Chemist (D N B Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

Quality Manager
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORTReport No: AN/23/05/00006
Sample ID No: GZ/AN-40/23Date of Report: 11/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Malugaon No-2 (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	05/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Malugaon No-2 (Tikak Extension OCP)	54	50	52.7	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Malugaon No-2 (Tikak Extension OCP)	43	36	40.5	45

Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digoal
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)**NOTE:**

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digoal.

** End of Report*



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



1285



227

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00007

Sample ID No: GZ/AN-41/23

Date of Report: 11/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Residential Colony of Tikak Colliery (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	05/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Residential Colony of Tikak Colliery (Tikak Extension OCP)	52	42	48.3	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Residential Colony of Tikak Colliery (Tikak Extension OCP)	37	32	34.5	45



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1286



228



green zone future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00004
Sample ID No: GZ/AN-38/23

Date of Report: 11/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/202

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Kolpara Gaon ,Near Panchayat Office (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	05/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon ,Near Panchayat Office (Tikak Extension OCP)	54	49	51.5	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon ,Near Panchayat Office (Tikak Extension OCP)	41	36	40.6	45

Analyzed By
Chief Chemist (D N B Chakraborty)



Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

Pulakesh
Quality Manager
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report*



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00016

Sample ID No: GZ/AN-50/23

Date of Report: 26/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Mine Area(Near Workshop) (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	19/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1	Mine Area(Near Workshop) (Tikak Extension OCP)	74	65	72.6	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1	Mine Area(Near Workshop) (Tikak Extension OCP)	65	60	63.7	70



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1288



230

ACCREDITED



green future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00017
Sample ID No: GZ/AN-51/23

Date of Report: 26/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Malugaon No.2 (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	19/05/2023

ANALYSIS REPORT

(Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Near Malugaon No-2 (Tikak Extension OCP)	53	49	51.2	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Near Malugaon No-2 (Tikak Extension OCP)	40	35	37.5	45

Analyzed By
Chief Chemist (D. N. D. Choudhury)



Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



1289



231

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00018

Sample ID No: GZ/AN-52/23

Date of Report: 26/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Residential Colony of Tikak Colliery (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	19/05/2023

ANALYSIS REPORT

(Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Residential Colony of Tikak Colliery (Tikak Extension OCP)	53	42	49.4	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Residential Colony of Tikak Colliery (Tikak Extension OCP)	42	38	40.2	45



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1290



232



greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00015
Sample ID No: GZ/AN-49/23

Date of Report: 26/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Kolpara Gaon, Near Panchayat Office (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	19/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak Extension OCP)	54	50	52.2	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak Extension OCP)	40	35	41.5	45



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)
Quality Manager
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1291



233

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00005

Sample ID No: GZ/AN-62/23

Date of Report: 08/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area(Near Workshop) (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	02/06/2023

ANALYSIS REPORT

Day Time]

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area(Near Workshop) (Tikak Extension OCP)	71	65	68.7	75

[Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area(Near Workshop) (Tikak Extension OCP)	69	64	66.7	70



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Dung
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognized By
Pollution Control Board, Assam

1292



234



green future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00006
Sample ID No: GZ/AN-63/23

Date of Report: 08/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Malugaon No.2 (Tikok Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	02/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Malugaon No-2 (Tikok Extension OCP)	51	45	48.8	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Malugaon No-2 (Tikok Extension OCP)	43	38	40.7	45

Analyzed By
Chief Chemist (D. D. Choudhury)



Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No:AN/23/06/00007
Sample ID No: GZ/AN-64/23

Date of Report: 08/06/2023
Contract No-GEMC-511687745288609 Dtd-14/03/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Residential Colony of Tikak Colliery (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	02/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Residential Colony of Tikak Colliery(Tikak Extension OCP)	54	47	50.9	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Residential Colony of Tikak Colliery(Tikak Extension OCP)	41	36	38.9	45



Analyzed By
Chief Chemist (D N D'Choudhury)

[Signature]
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam

1294



236

ACCREDITED
FOUNDER

shining future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00004

Sample ID No: GZ/AN-61/23

Date of Report: 08/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Kolpara Gaon ,Near Panchayat Office (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	02/06/2023

ANALYSIS REPORT

Day Time)

Sl No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1	Kolpara Gaon ,Near Panchayat Office (Tikak Extension OCP)	53	49	51.2	55

(Night Time)

Sl No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1	Kolpara Gaon ,Near Panchayat Office (Tikak Extension OCP)	42	38	43.5	45



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1295



237

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00016

Sample ID No: GZ/AN-73/23

Date of Report: 20 /06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area(Near Workshop) (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L_{eq} (dB-A)	Limits L_{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area(Near Workshop) (Tikak Extension OCP)	70	65	68.1	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L_{eq} (dB-A)	Limits L_{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area(Near Workshop) (Tikak Extension OCP)	67	61	64.8	70



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



greener future...

M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1296



238



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00013
Sample ID No: GZ/AN-70/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Malugaon No 2 (Tikok Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Malugaon No-2 (Tikok Extension OCP)	54	49	51.5	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Malugaon No-2 (Tikok Extension OCP)	41	36	38.9	45



Analyzed By

Chief Chemist (D N D Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remaining sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



239

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No:AN/23/06/00018

Sample ID No: GZ/AN-75/23

Date of Report: 20/06/2023

Contract No-GEMC-511687745288609 Dtd-14/03/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring Source:Residential Colony of Tikak Colliery (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Residential Colony of Tikak Colliery(Tikak Extension OCP)	55	49	52.5	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Residential Colony of Tikak Colliery(Tikak Extension OCP)	42	37	39.7	45



Analyzed By
Chief Chemist (D N B Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



greener future...

M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1298



240



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00013

Sample ID No: GZ/AN-70/23

Date of Report: 20/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Kolpara Gaon, Near Panchayat Office (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1	Kolpara Gaon, Near Panchayat Office (Tikak Extension OCP)	54	48	50.5	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1	Kolpara Gaon, Near Panchayat Office (Tikak Extension OCP)	41	37	40.2	45



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



greener future...

M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00027

Sample ID No: GZ/AN-84/23

Date of Report: 04/07/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area(Near Workshop) (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	30/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area(Near Workshop) (Tikak Extension OCP)	70	61	67.7	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area(Near Workshop) (Tikak Extension OCP)	69	64	66.7	70



Analyzed By
Chief Chemist (S. S. Choudhury)

Pulakesh Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1300



242



green zone future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00028
Sample ID No: GZ/AN-85/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Near Malugaon no-2 (Tikal extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	30/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Malugaon no-2 (Tikal extension OCP)	54	47	51.6	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Malugaon no-2 (Tikal extension OCP)	44	38	41.5	45

Analyzed By
Chief Chemist (D N Deka) (Signature)



Quality Manager
Greenzone, Dighoi (Signature)
Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



1301



243

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No:AN/23/06/00027

Sample ID No: GZ/AN-84/23

Date of Report: 04/07/2023

Contract No-GEMC-511687745288609 Dtd-14/03/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Residential Colony of Tikak Colliery (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	30/06/2023

ANALYSIS REPORT

(Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Residential Colony of Tikak Colliery(Tikak Extension OCP)	53	49	51.2	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Residential Colony of Tikak Colliery(Tikak Extension OCP)	44	38	41.8	45



Analyzed By
Chief Chemist (D N D Goudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam

1302



244



Green future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00026
Sample ID No: GZ/AN-83/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Kolpara Gaon, Near Panchayat Office (Tikak Extension OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	30/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak Extension OCP)	53	48	50.2	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak Extension OCP)	42	37	41.6	55



Analyzed by
Chief Chemist (D. N. D. S. Choudhury)

Quality Manager
Greenzone, Dighol

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighol.

** End of Report**



30, Chitrapatan, ...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

GROUND WATER LEVEL MEASUREMENT RESULTS

Contract no-GEMC-S11687745288609 Dtd-14/04/2023

Sl. No	Well No	Village/Location	Owner	Longitude	Latitude	Date of Measurement	Elevation (M)	Well Dia (m)	M.P (m)	A.G.L (m)	B.M.P (m)	W.L (m)	B.G.L (m)	Formation of Soil
1	L-1	Barnabasti	Govt.	N-27°17'19.80"	E-95°44'30.30"	22-04-2023	143	1.2	3.4	0.40	6.84	3.44	2.92	Alluvium
2	L-3	Komalagan	Govt.	N-27°18'55.86"	E-95°47'45.72"	22-04-2023	144	1.2	4.21	1.03	7.6	3.39	3.18	Alluvium
3	L-4	Rasagan	Govt.	N-27°18'52.30"	E-95°48'09.20"	22-04-2023	145	1.2	3.84	0.81	5.21	1.17	3.03	Alluvium
4	L-6	Calabor	Govt.	N-27°19'08.10"	E-95°51'18.10"	22-04-2023	148	1.2	4.28	0.7	9.75	5.47	3.58	Alluvium
5	L-13	Trey Galy (2)	Opp. P. Stan	N-27°19'59.60"	E-95°50'53.50"	22-04-2023	140	0.95	3.04	0.75	7.16	4.12	2.29	Alluvium
6	L-14	Sisari	BuchhuanTh	N-27°18'56.40"	E-95°48'59.90"	22-04-2023	136	0.9	4.99	0.55	7.65	2.66	4.44	Alluvium
7	L-15	Vijang (Pothogoon / Pathogoon)	Bilagan	N-27°19'04.40"	E-95°51'03.30"	22-04-2023	151	0.95	2.13	0.6	6.15	3.82	1.73	Alluvium
8	L-16	Anrithagan	HariulBhanka	N-27°20'00.90"	E-95°45'41.70"	22-04-2023	135	0.8	1.33	0.28	3.18	1.85	1.05	Alluvium
9	L-17	Salkagan	Pardhan	N-27°18'22.00"	E-95°47'19.60"	24-04-2023	135	0.8	5.09	0.33	7.68	2.39	4.76	Alluvium
10	L-18	Korogoh (By Stn.)	Govt.	N-27°16'59.00"	E-95°42'45.00"	24-04-2023	147	0.9	1.06	0.34	2.41	1.35	0.72	Alluvium
11	L-19	Mandam (Lalajai)	Govt.	N-27°16'58.10"	E-95°41'24.10"	24-04-2023	163	0.88	2.35	0.74	4.19	1.04	1.61	Alluvium
12	L-20	Nandong (Tea Estate)	Govt.	N-27°16'58.40"	E-95°41'21.50"	24-04-2023	163	0.92	2.4	0.58	3.57	1.17	1.82	Alluvium
13	L-21	Lachungain	Pvt. Well	N-27°18'34.00"	E-95°49'08.30"	24-04-2023	149	1.3	2.18	0.85	4	1.82	2.13	Alluvium
14	T-1	Melghatbari	Nun Singh Sah	N-27°17'34.40"	E-95°44'56.00"	24-04-2023	135	1.05	4.54	0.57	6.08	1.54	3.97	Alluvium
15	T-2	Mulangaron	Bachhast Temple	N-27°19'07.90"	E-95°43'06.40"	24-04-2023	127	0.8	3.16	0.65	7.32	4.16	2.51	Alluvium
16	T-3	Leso (Sisari Barai)	Narayan Das	N-27°17'30.90"	E-95°44'04.70"	24-04-2023	137	0.9	2.06	0.91	4.51	2.45	1.25	Alluvium

M.P-Measuring Point, A.G.L-Above Ground Level, B.M.P-Below Measuring Point, W.L-Water Level, B.G.L-Below Ground Level

Analysed By:

N.Handique

[Signature]

Quality Manager
Greenstone Diabolo

Review & Authorized By:

Pulakesh Dng

Recognized by
Pollution Control Board, Assam



JAN 2001 2013 & NO 15001/2018 CERTIFIED LAB

Sl. No	Dug Well	Village/Location	Owner	Longitude	Latitude	Date of Measurement	Elevation (m)	Well Dia (m)	SLP (m)	SLL (m)	RMP (m)	W.L. (m)	R.L. (m)	Condition of Well
17	T-4	Kedda (Santabin)	Govt.	92°17'31.70"	25°43'13.00"	25-04-2023	146	0.9	3.15	0.94	56.1	2.28	7.11	Abandoned
18	PW-10	Kedda-gau	Govt.	92°10'16.20"	25°41'15.50"	25-04-2023	134	1.05	3.12	1.01	10.9	1.01	1.11	Abandoned
19	PW-11	Trean gade	Govt.	92°27'19.80.00"	25°40'10.50"	25-04-2023	139	0.9	2.75	0.97	6.2	2.8	1.05	Abandoned
20	PW-4	Physan-g	Govt.	91°27'01.22.00"	25°43'00.00"	25-04-2023	145	0.2	1.94	0.54	6.1	1.05	0.81	Abandoned
21	PW-7	Polhagar	Govt.	92°27'09.23.00"	25°41'13.00"	25-04-2023	144	1	3.25	1.01	4.15	1.01	1.01	Abandoned

Contract No: GEMC-51168/745/338629 Dtg-14/04/2023

M.P-Measuring Point, A, G, L-Above Ground Level, B, M, P-Below Measuring Point, W, L-Water Level, B, G, L-Below Ground Level

Analyzed By:

N. Handique

Reviewed & Authorized By:

PNR

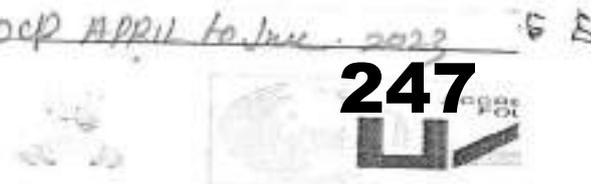
Analyst: Lujag

Amara Road, Dibrugarh, Assam. Phone: 9473967431, 7027950076. Email: gpcboardassam@gmail.com



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 15001:2018 CERTIFIED LAB

TEST REPORT

Report No: DW/23/04/00001

Sample ID No: GZ/DW-28/23

Date of Report: 26/04/2023

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam	
Sample Description	Type: Drinking Water	Source: Tube Well Water of Samukjan Village (Tikak OCP)
Sample collected by	Greenzone Representative	
Sample Collection Particulars	Date - 22/04/2023	Analysis Protocol: IS-3025

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	*Requirement (Acceptable Limits)	*Permissible Limit in the absence of Alternate Source	Method of Test
01	Colour (Hazen Units)	5	Hazen Units	5	15	IS:3025, Part 4
02	Odour	Odourless	-	Agreeable	Agreeable	IS:3025, Part 5
03	Turbidity, NTU	0	NTU	Max 1	Max 5	IS:3025, Part 10
04	pH	7.2	-	6.5 - 8.5	No Relaxation	IS:3025, Part 11
05	Total Hardness (as CaCO ₃),	36.7	mg/l	Max 200	Max 600	IS:3025, Part 21
06	Iron (as Fe)	0.14	mg/l	Max 0.30	No Relaxation	IS:3025, Part 53
07	Chloride (as Cl)	5.0	mg/l	Max 250	1000	IS:3025, Part 32
08	Free Residual Chlorine	BDL (MDL:0.1)	mg/l	Min 0.2	1	IS:3025, Part 26
09	Fluoride (as F)	BDL (MDL:0.01)	mg/l	Max 1.0	Max 1.5	IS:3025, Part 60
10	Total Dissolved Solids	178.0	mg/l	Max 500	Max 2000	IS:3025, Part 16

* BDL : Below Detection Limit, MDL: Minimum Detection Limit

* Limits as per Drinking Water Standard IS 10500:2012

Analyzed By
Chief Chemist (D N D Choudhury)



Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

Quality Manager
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1306



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

Sl. No.	Parameters	Results	Unit	*Requirement (Acceptable Limits)	*Permissible Limit in the absence of Alternate Source	Method of Test
11	Calcium (as Ca)	23.4	mg/l	Max 75	Max 200	IS:3025, Part 40
12	Magnesium (as Mg)	13.3	mg/l	Max 30	Max 100	IS:3025, Part 46
13	Sulphate (as SO ₄)	7.0	mg/l	Max 200	Max 400	IS:3025, Part 24
14	Nitrate (as NO ₃)	0.5	mg/l	Max 45	No Relaxation	IS:3025, Part 34
15	Phenolic Compound C ₆ H ₅ OH	BDL (MDL:0.001)	mg/l	Max 0.001	Max 0.002	IS:3025, Part 43
16	Total Arsenic (as As)	BDL (MDL:0.01)	mg/l	Max 0.01	Max 0.05	IS:3025, Part 37
17	Lead (as Pb)	BDL (MDL:0.01)	mg/l	Max 0.01	No Relaxation	IS:3025, Part 47
18	Total Alkalinity (as CaCO ₃)	23.0	mg/l	Max 200	Max 600	IS:3025, Part 23

* BDL : Below Detection Limit , MDL: Minimum Detection Limit

* Limits as per Drinking Water Standard IS 10500:2012



Analyzed By
Chief Chemist (D N D Choudhury)

 Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

****End of Report****

TEST REPORT

Report No: AAQ/23/06/00003

Date of Report:10/06/2023

Sample ID No: GZ/AAQ-71/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Near Coal Dump (Tikak OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 07/06/2023	End Date 08/06/2023	Ambient Temperature 28°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	18.4	µg /m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	47.8	µg /m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.6	µg /m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	21.7	µg /m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL(MDL:1.0)*	µg /m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL(MDL: 0.01)*	µg /m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL(MDL:0.01)*	mg /m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL(MDL:5.0)*	µg /m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL(MDL: 0.01)*	µg /m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL(MDL: 0.1)*	ng /m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL(MDL: 0.01)*	ng /m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL(MDL: 0.01)*	ng /m ³	20 (Annual Average)

*BDL : Below Detection Limit , * MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N B Choudhury)

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

****End of Report****



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam

1308

250

AN ISO 9001:2015 & ISO 15001:2015 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/06/00005

Date of Report: 12/06/2023

Sample ID No: GZ/AAQ-73/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Kalpara Gaon (Near Panchayat Office) (Tikak OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 09/06/2023	End Date 10/06/2023	Ambient Temperature 30°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	18.8	µg /m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	50.5	µg /m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.6	µg /m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	23.9	µg /m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL(MDL:1.0)*	µg /m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL(MDL:0.01)*	µg /m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL(MDL:0.01)*	mg /m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL(MDL:5.0)*	µg /m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL(MDL:0.01)*	µg /m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL(MDL:0.1)*	ng /m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL(MDL:0.01)*	ng /m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL(MDL:0.01)*	ng /m ³	20 (Annual Average)

*BDL : Below Detection Limit , * MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report



greenzone...

M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1309

251



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/06/00004

Sample ID No: GZ/AAQ-72/23

Date of Report:10/06/2023

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam			
Sample Description	Type: Ambient Air Sample	Source: Near Namghar (Tikak OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 07/06/2023	End Date 08/06/2023	Ambient Temperature 29°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	19.2	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	49.3	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.3	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	22.1	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit , * MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report



M/s. GREENZONE

Recognized By

Pollution Control Board, Assam

1310

2521F

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/06/00002

Date of Report: 09/06/2023

Sample ID No: GZ/AAQ-70/23

Contract No-GEMC-511.687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Near Namdang Mine (Tikak OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 06/06/2023	End Date 07/06/2023	Ambient Temperature 29°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	17.2	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	49.1	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.7	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	23.5	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit , *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report



M/s. GREENZONE

Recognized By
Pollution Control Board, Assam



1311



253

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/06/00001

Date of Report: 09/06/2023

Sample ID No: GZ/AAQ-69/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Mine Area (Tikak OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 06/06/2023	End Date 07/06/2023	Ambient Temperature 29°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	15.3	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	48.6	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.2	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	22.3	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit, *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N B Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

****End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00001
Sample ID No: G2/AAQ-43/23

Date of Report: 25/04/2023
Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Mine Area (Tikak OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 22/04/2023	End Date 23/04/2023	Ambient Temperature 24°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS 2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	20.4	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	47.1	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.4	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	23.0	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit, *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard
Remarks: Nil

Analyzed By
Chief Chemist (D N D Choudhury)



Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

*End of Report**



M/s. GREENZONE

Recognized By
Pollution Control Board, Assam

1313



255



AN ISO 9001:2015 & ISO 45001:2018 (CERTIFIED) LAB

TEST REPORT

Report No: AAQ/23/04/00002

Date of Report: 25/04/2023

Sample ID No: GZ/AAQ-44/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Near Namdang Mine (Tikak OCI)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 22/04/2023	End Date 23/04/2023	Ambient Temperature 24°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	21.5	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	46.3	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.3	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	25.0	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit, * MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report



M/s. GREENZONE

Recognized By
Pollution Control Board, Assam

1314



256



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00003

Date of Report:25/04/2023

Sample ID No: GZ/AAQ-45/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Near Coal Dump (Tikak OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 23/04/2023	End Date 24/04/2023	Ambient Temperature 25°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	19.6	µg /m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	50.2	µg /m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.6	µg /m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	27.0	µg /m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL(MDL:1.0)*	µg /m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL(MDL: 0.01)*	µg /m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL(MDL:0.01)*	mg /m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL(MDL:5.0)*	µg /m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL(MDL: 0.01)*	µg /m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL(MDL: 0.1)*	ng /m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL(MDL: 0.01)*	ng /m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL(MDL: 0.01)*	ng /m ³	20 (Annual Average)

*BDL : Below Detection Limit , * MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report



greener future...

M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1315



257



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00004
Sample ID No: GZ/AAQ-46/23

Date of Report: 26/04/2023
Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Near Nanghar (Tikak OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 23/04/2023	End Date 24/04/2023	Ambient Temperature 23°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	18.3	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	48.7	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.4	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	28.0	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL(MDL:1.0)*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL(MDL:0.01)*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL(MDL:0.01)*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL(MDL:5.0)*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL(MDL:0.01)*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL(MDL:0.1)*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL(MDL:0.01)*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL(MDL:0.01)*	ng/m ³	20 (Annual Average)

*BDL: Below Detection Limit, *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D. N. Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

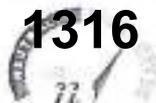
End of Report



greener future...

M/s. GREENZONE

Recognized By
Pollution Control Board, Assam



258



AN ISO 9001:2015 & ISO 15001:2015 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00006

Sample ID No: GZ/AAQ-48/23

Date of Report: 27/04/2023

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Kolpara Gaon (Near Panchayat Office) (Tikak OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 24/04/2023	End Date 25/04/2023	Ambient Temperature 23°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	18.5	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	48.5	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.8	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	23.0	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit , * MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1317



259

greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/04/00001

Sample ID No: GZ/AN-21/23

Date of Report: 25/04/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	22/04/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tikak OCP)	73	67	70.0	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tikak OCP)	65	60	63.7	70



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)
Quality Manager
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



260



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/04/00002
Sample ID No: GZ/AN-22/23

Date of Report: 25/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Namghar (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	22/04/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) [As per CPCB Guidelines]
1.	Near Namghar (Tikak OCP)	54	49	51.5	55

[Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Namghar (Tikak OCP)	43	38	40.0	45



Analyzed By
Chief Chemist (D N B Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1319



261

greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/04/00003

Date of Report: 25/04/2023

Sample ID No: GZ/AN-23/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Coal Dump Area (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	22/04/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Coal Dump (Tikak OCP)	72	66	69.1	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Coal Dump(Tikak OCP)	69	63	66.3	70



Analyzed By
Chief Chemist (D N UCB) (Signature)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/04/00004
Sample ID No: GZ/AN-24/23

Date of Report: 25/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Kolpara Gaon ,Near Panchayat Office (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	22/04/2023

ANALYSIS REPORT

Day Time]

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits
					Leq(dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon ,Near Panchayat Office (Tikak OCP)	54	50	52.2	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits
					Leq(dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon ,Near Panchayat Office (Tikak OCP)	44	38	42.7	45



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Dighoi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00001

Sample ID No: GZ/AN-35/23

Date of Report: 11/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	05/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tikak OCP)	73	62	69.3	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tikak OCP)	69	62	65.9	70



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



264

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00002
Sample ID No: GZ/AN-36/23

Date of Report: 11/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Near Namghar (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	05/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Near Namghar (Tikak OCP)	54	48	50.9	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Near Namghar (Tikak OCP)	42	37	39.5	45



Analyzed By
Chief Chemist (D N D'Ghouthury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report*



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



265



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00002

Date of Report: 11/05/2023

Sample ID No: GZ/AN-37/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Coal Dump Area (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	05/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Coal Dump (Tikak OCP)	72	68	70.2	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Coal Dump (Tikak OCP)	68	60	66.0	70



Analyzed By
Chief Chemist (DND Choudhury)

Reviewed and Authorized By
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report*



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



266



AN ISO 9001:2015 & ISO 43001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00004
Sample ID No: GZ/AN-38/23

Date of Report: 11/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Kolpara Gaon ,Near Panchayat Office (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	05/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon ,Near Panchayat Office (Tikak OCP)	54	49	51.5	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon ,Near Panchayat Office (Tikak OCP)	41	36	40.6	45



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report*



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1325



267

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00012

Sample ID No: GZ/AN-47/23

Date of Report: 26/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	19/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tikak OCP)	74	70	72.2	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tikak OCP)	65	59	60.1	70



Analyzed By
Chief Chemist (D N B Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



268



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00013
Sample ID No: GZ/AN-47/23

Date of Report: 26/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04,2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Namghar (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	19/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Namghar (Tikak OCP)	54	49	51.5	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Namghar (Tikak OCP)	41	36	43.2	45



Analyzed By
Chief Chemist (D N Choudhury)

Quality Manager -
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00014

Date of Report: 26/05/2023

Sample ID No: GZ/AN-48/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Coal Dump Area (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	19/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Coal Dump(Tikak OCP)	72	67	69.5	75

(Night Time)

Sl No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Coal Dump (Tikak OCP)	66	62	64.2	70



Analyzed By
Chief Chemist (D. N. Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



270



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00015
Sample ID No: GZ/AN-49/23

Date of Report: 26/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Kolpara Gaon, Near Panchayat Office (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	19/05/2023

ANALYSIS REPORT

(Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak OCP)	54	50	52.2	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak OCP)	40	35	41.5	45



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report **



green future...

M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1329



271

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00001

Date of Report: 08/06/2023

Sample ID No: GZ/AN-58/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	02/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tikak OCP)	74	67	71.0	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tikak OCP)	68	63	65.7	70



Analyzed By
Chief Chemist (D. K. Choudhury)

Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By:
Pollution Control Board, Assam



272



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00002
Sample ID No: GZ/AN-59/23

Date of Report: 08/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Namghar (Tikak OC ²)
Sample collected by	Greenzone Representative
Sample Collection Particulars	02/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits
					L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Namghar (Tikak OC ²)	54	48	51.4	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits
					L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Namghar (Tikak OC ²)	44	39	41.7	45



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1331



273

greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00012

Sample ID No: GZ/AN-69/23

Date of Report: 20/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukla, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tikak OCP)	73	69	72.2	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tikak OCP)	69	64	66.7	70



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00013
Sample ID No: GZ/AN-70/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Near Namghar (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

(Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Namghar (Tikak OCP)	55	51	53.2	55

(Night Time)

Sl No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Namghar (Tikak OCP)	43	38	40.5	45



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager (Pulakesh Dng)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1333



275

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00013
Sample ID No: GZ/AN-70/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Coal Dump Area (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Coal Dump Tikak OCP	71	65	68.7	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Coal Dump Tikak OCP	69	62	65.9	70



Analyzed By
Chief Chemist (D N B Choudhury)

Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



276



Green & Future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00013

Sample ID No: GZ/AN-70/23

Date of Report: 20/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Kolpara Gaon, Near Panchayat Office (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak OCP)	54	40	50.5	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak OCP)	41	37	40.2	45



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1335



277

greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00013

Sample ID No: GZ/AN-70/23

Date of Report: 20/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Coal Dump Area (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Coal Dump Tikak OCP	71	65	68.7	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Coal Dump Tikak OCP	69	62	65.9	70



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



278



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00013
Sample ID No: GZ/AN-70/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Kolpara Gaon, Near Panchayat Office (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak OCP)	54	48	50.5	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak OCP)	41	37	40.2	45



Analyzed By
Chief Chemist (D N D Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



279



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00023

Sample ID No: GZ/AN-80/23

Date of Report: 04/07/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	30/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tikak OCP)	73	68	71.1	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tikak OCP)	69	65	67.2	70



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

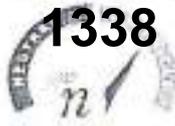
1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



280



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00024
Sample ID No: GZ/AN-81/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Namghar (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	30/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Near Namghar (Tikak OCP)	54	48	51.5	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Near Namghar (Tikak OCP)	42	36	39.5	45



Analyzed By
Chief Chemist (D N B Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



281

greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00025
Sample ID No: GZ/AN-82/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Coal Dump (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	30/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Near Coal Dump (Tikak OCP)	75	68	72.0	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Near Coal Dump (Tikak OCP)	69	62	65.9	70



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00026
Sample ID No: GZ/AN-83/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Kolpara Gaon, Near Panchayat Office (Tikak OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	30/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak OCP)	53	48	50.2	55

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Kolpara Gaon, Near Panchayat Office (Tikak OCP)	42	37	41.6	55



Analyzed By
Chief Chemist (D N. Choudhury)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)
Quality Manager
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/04/00003

Sample ID No: GZ/TE-38/23

Date of Report: 26/04/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water(Un-treated)	Source: Mine Raw Water Before Coal Stock Yard (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.1	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	198.0	mg/l	Max 250
03	SS (Suspended Solids)	150.0	mg/l	Max 100
04	Oil & Grease	2.3	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Dung
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



284



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00001
Sample ID No: GZ/TE-57/23

Date of Report: 10/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: Mine Raw Water Before Coal Stock Yard (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	4.8	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	187.0	mg/l	Max 250
03	SS (Suspended Solids)	163.0	mg/l	Max 100
04	Oil & Grease	2.7	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report **



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



1343



285

greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00016

Date of Report: 26/05/2023

Sample ID No: GZ/TE-72/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water(Un-Treated)	Source: Mine Raw Water Before Coal Stock Yard (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 l.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E)-19.05.1993 & 31.12.1993
01	pH	5.2	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	199.0	mg/l	250
03	SS(Suspended Solids)	148.0	mg/l	100
04	Oil & Grease	3.6	mg/l	10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Dung
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



286



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00001

Date of Report: 08/06/2023

Sample ID No: GZ/TE-89/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: Mine Raw Water Before Coal Stock Yard (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E), 19.05.1993 & 31.12.1993
01	pH	4.9	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	177.0	mg/l	Max 250
03	SS (Suspended Solids)	152.0	mg/l	Max 100
04	Oil & Grease	2.4	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Dung
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report **



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1345



287

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00016
Sample ID No: GZ/TE-104/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un -Treated)	Source: Mine Raw Water Before Coal Stock Yard (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.3	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	210.0	mg/l	Max 250
03	SS (Suspended Solids)	141.0	mg/l	Max 100
04	Oil & Grease	2.1	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Resonant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



288



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00034
Sample ID No: GZ/TE-122/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: Mine Raw Water Before Coal Stock Yard (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	5.1	-	5.5-9.0
02	COD (Chemical Oxygen Demand)	189.0	mg/l	Max 250
03	SS (Suspended Solids)	131.0	mg/l	Max 100
04	Oil & Grease	1.8	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh
Quality manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



greener future...

M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/04/00004

Sample ID No:GZ/TE-39/23

Date of Report: 26/04/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: Near Coal Dump before ETP (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	5.3	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	198.0	mg/l	Max 250
03	SS (Suspended Solids)	120.0	mg/l	Max 100
04	Oil & Grease	3.1	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



290



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00002
Sample ID No:GZ/TE-58/23

Date of Report: 11/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: Near Coal Dump before ETP (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl.No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	5.4	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	189.0	mg/l	Max 250
03	SS (Suspended Solids)	112.0	mg/l	Max 100
04	Oil & Grease	2.4	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Dng
Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dng)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Residual sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



greener future...

M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1349



291

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00017

Date of Report: 26/05/2023

Sample ID No:GZ/TE-73/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: Near Coal Dump before ETP (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	4.6	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	179.0	mg/l	Max 250
03	SS (Suspended Solids)	134.0	mg/l	Max 100
04	Oil & Grease	2.1	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Dung
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



292



recher future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00002

Date of Report: 06/06/2023

Sample ID No:GZ/TE-90/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: Near Coal Dump before ETP (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	4.9	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	215.0	mg/l	Max 250
03	SS (Suspended Solids)	115.0	mg/l	Max 100
04	Oil & Grease	2.4	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



1351



293

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00017

Date of Report: 20/06/2023

Sample ID No:GZ/TE-105/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: Near Coal Dump before ETP (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.1	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	189.0	mg/l	Max 250
03	SS (Suspended Solids)	105.0	mg/l	Max 100
04	Oil & Grease	2.5	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

[Signature]
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid as the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1352

294



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00035

Sample ID No:GZ/TE-123/23

Date of Report: 04/07/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: Near Coal Dump before ETP (Tilak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	5.3	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	167.0	mg/l	Max 250
03	SS (Suspended Solids)	132.0	mg/l	Max 100
04	Oil & Grease	2.7	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Dang
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dang)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



295

greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/04/00005

Date of Report: 26/04/2023

Sample ID No:GZ/TE-40/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Surface Water	Source: Upstream Namdang River (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.5	-	5.5-9.0
02	COD (Chemical Oxygen Demand)	28.0	mg/l	Max 250
03	SS (Suspended Solids)	56.0	mg/l	Max 100
04	Oil & Grease	1.2	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

[Signature]
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



296



AN ISO 9001:2015 & ISO 45001:2018 (CERTIFIED) LAB

TEST REPORT

Report No: TE/23/05/00003
Sample ID No:GZ/TE-59/23

Date of Report: 11/05/2023
Contract No-GEMC-S11687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Upstream Namdang River (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.8	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	32.0	mg/l	Max 250
03	SS (Suspended Solids)	67.0	mg/l	Max 100
04	Oil & Grease	1.3	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Palakesh Dung
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Palakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Residual sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



greener future...

M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



1355



297

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00018

Date of Report: 26/05/2023

Sample ID No:GZ/TE-74/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Surface Water	Source:	Upstream Nandung River (Tilak OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 L.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.9	-	5.5-9.0
02	COD (Chemical Oxygen Demand)	33.0	mg/l	Max 250
03	SS (Suspended Solids)	76.0	mg/l	Max 100
04	Oil & Grease	1.3	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

[Signature]
Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



298



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00003
Sample ID No:GZ/TE-91/23

Date of Report: 08/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Upstream Namdang River (Fikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	6.8	"	5.5-9.0
02	COD (Chemical Oxygen Demand)	29.0	mg/l	Max 250
03	SS (Suspended Solids)	78.0	mg/l	Max 100
04	Oil & Grease	2.1	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1357



299

greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00018

Sample ID No:GZ/TE-106/23

Date of Report: 20/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Upstream Namdang River (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.2	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	32.0	mg/l	Max 250
03	SS (Suspended Solids)	45.0	mg/l	Max 100
04	Oil & Grease	1.3	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1358

300



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00036
Sample ID No:GZ/TE-124/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source:	Upstream Namdang River (Tikak OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 l.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	6.3	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	39.0	mg/l	Max 250
03	SS (Suspended Solids)	53.0	mg/l	Max 100
04	Oil & Grease	1.9	mg/l	Max 10



Analyzed By
Chief Chemist [D N D Choudhury]

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1359



301

greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/04/00006

Date of Report: 26/04/2023

Sample ID No:GZ/TE-41/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Downstream Namdang River (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	7.1	-	5.5-9.0
02	COD (Chemical Oxygen Demand)	69.0	mg/l	Max 250
03	SS (Suspended Solids)	71.0	mg/l	Max 100
04	Oil & Grease	1.6	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



302



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00004

Date of Report: 11/05/2023

Sample ID No:GZ/TE-60/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786101,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Downstream Namdang River (Tilak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(F),19.05.1993 & 31.12.1993
01	pH	6.7	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	67.0	mg/l	Max 250
03	SS (Suspended Solids)	89.0	mg/l	Max 100
04	Oil & Grease	1.8	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



303



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00019

Date of Report: 26/05/2023

Sample ID No:GZ/TE-75/23

Contract No-GEMC-5116 87745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Surface Water	Source: Downstream Namdang River (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	7.2	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	78.0	mg/l	Max 250
03	SS (Suspended Solids)	84.0	mg/l	Max 100
04	Oil & Grease	1.4	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Dung
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



304



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00004

Date of Report: 08/06/2023

Sample ID No:GZ/TE-92/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Downstream Namdang River (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl.No	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	7.3	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	62.0	mg/l	Max 250
03	SS (Suspended Solids)	75.0	mg/l	Max 100
04	Oil & Grease	2.1	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Dung
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1363



305

UP
ACCREDITED
FOUNDATION



greener future,...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00036
Sample ID No:GZ/TE-124/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Upstream Namdang River (Tilak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	6.3	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	39.0	mg/l	Max 250
03	SS (Suspended Solids)	53.0	mg/l	Max 100
04	Oil & Grease	1.9	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh
Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****





M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



306



greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00037
Sample ID No:GZ/TE-125/23

Date of Report: 04/07/2023
Contract No-GEMC-S11687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786101,Dist. Tinsukia,Assam		
Sample Description	Type: Surface Water	Source: Downstream Namdang River (Tikak OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 l.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	7.5	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	47.0	mg/l	Max 250
03	SS (Suspended Solids)	56.0	mg/l	Max 100
04	Oil & Grease	1.8	mg/l	Max 10



Analyzed By
Chief Chemist (D N D Choudhury)

Pulakesh Dung
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



TIRAP APRIL to June 2023
Railway siding

307

Ambient Air

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00023

Date of Report: 02/05/2023

Sample ID No: GZ/AAQ-65/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Near Workshop (Manager Office) (Railway Siding Tirap Colliery)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 29/04/2023	End Date 30/04/2023	Ambient Temperature 24°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	20.5	µg /m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	57.1	µg /m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.6	µg /m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	22.0	µg /m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg /m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL: 0.01]*	µg /m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg /m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg /m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL: 0.01]*	µg /m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL: 0.1]*	ng /m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL: 0.01]*	ng /m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL: 0.01]*	ng /m ³	20 (Annual Average)

*BDL : Below Detection Limit , *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks Nil

Analyzed By
Asst. Chemist (N. Handique)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Resonant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

*End of Report**



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/04/00017
Sample ID No: GZ/TE-52/23

Date of Report: 26/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Effluent Water (Treated)	Source:	Near Entrance Gate (Railway Siding Tirap Colliery)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	Colour and Odor	2HU & Odourless	---	--
02	Suspended Solids	38.0	mg/l	100
03	Particulate size of suspended solids	20 Micron	--	Shall pass 850 Micron IS sieve
04	pH	6.5	--	5.5-9.0
05	Temperature	23°C	°C	Shall not exceed 5°C above the receiving water temperature
06	Oil & Grease	1.1	mg/l	Max. 10
07	Total residual chlorine	BDL	mg/l	Max. 1.0
08	Ammonical Nitrogen as N	1.0	mg/l	Max. 50
09	Total Kjeldahl Nitrogen (as NH ₃)	7.0	mg/l	Max. 100
10	Free ammonia (as NH ₃)	BDL	mg/l	Max. 5.0
11	Biochemical Oxygen Demand (as BOD)	10	mg/l	Max. 30
12	Chemical Oxygen Demand (as COD)	19	mg/l	Max. 250

**BDL-Below Detectable Limit

Analyzed By
Asst. Chemist (N. Handique)

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

13	Arsenic (as As)	BDL	mg/l	Max. 0.2
14	Mercury (as Hg)	BDL	mg/l	Max. 0.01
15	Lead (as Pb)	BDL	mg/l	Max. 0.1
16	Cadmium (as Cd)	BDL	mg/l	Max. 2.0
17	Hexavalent Chromium (as Cr ⁺⁺)	BDL	mg/l	Max. 0.1
18	Total Chromium (as Cr)	0.004	mg/l	Max. 2.0
19	Copper (as Cu)	0.009	mg/l	Max. 3.0
20	Zinc (as Zn)	0.128	mg/l	Max. 5.0
21	Selenium (as Se)	BDL	mg/l	Max. 0.05
22	Nickel (as Ni)	BDL	mg/l	Max. 3.0
23	Cyanide (as CN)	BDL	mg/l	Max. 0.2
24	Fluoride (as F)	0.09	mg/l	Max. 2.0
25	Dissolved Phosphates (as P)	0.7	mg/l	Max. 5.0
26	Sulphide (as S)	BDL	mg/l	Max. 2.0
27	Phenolic Compounds (as C ₆ H ₅ OH)	BDL	mg/l	Max. 1.0
28	Bio-assay Test	90% survival of fish after 96 hours in 100%effluent		90% survival of fish after 96 hours in 100%effluent
29	Manganese (as Mn)	BDL	mg/l	Max. 2.0
30	Iron (as Fe)	0.67	mg/l	Max. 3.0
31	Vanadium (as V)	BDL	mg/l	Max. 0.2
32	Nitrate Nitrogen	1.5	mg/l	Max. 10

**BDL-Below Detectable Limit

Analyzed By
Asst. Chemist (N. Handique)

Reviewed and Authorized By:
Quality Manager(Pulakesh Dang)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**

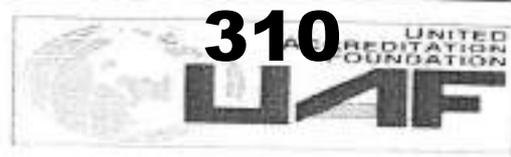


M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1368



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00013
Sample ID No: GZ/TE-69/23

Date of Report: 11/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source:	Near Entrance Gate (Railway Siding Tirap Colliery)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	Colour and Odor	1HU & Odourless	---	--
02	Suspended Solids	32.0	mg/l	100
03	Particulate size of suspended solids	21 Micron	-	Shall pass 850 Micron IS sieve
04	pH	6.9	-	5.5-9.0
05	Temperature	22°C	°C	Shall not exceed 5°C above the receiving water temperature
06	Oil & Grease	1.3	mg/l	Max. 10
07	Total residual chlorine	BDL	mg/l	Max. 1.0
08	Ammonical Nitrogen as N	1.2	mg/l	Max. 50
09	Total Kjeldahl Nitrogen (as NH ₃)	8.6	mg/l	Max. 100
10	Free ammonia (as NH ₃)	BDL	mg/l	Max. 5.0
11	Biochemical Oxygen Demand (as BOD)	12	mg/l	Max. 30
12	Chemical Oxygen Demand (as COD)	21	mg/l	Max. 250

**BDL-Below Detectable Limit



Analyzed By
N. Handique
Asst. Chemist (N. Handique)

Pulakesh
Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.



greener future...

M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



1369

311



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

13	Arsenic (as As)	BDL	mg/l	Max. 0.2
14	Mercury (as Hg)	BDL	mg/l	Max. 0.01
15	Lead (as Pb)	BDL	mg/l	Max. 0.1
16	Cadmium (as Cd)	BDL	mg/l	Max. 2.0
17	Hexavalent Chromium (as Cr ⁺⁺)	BDL	mg/l	Max. 0.1
18	Total Chromium (as Cr)	0.006	mg/l	Max. 2.0
19	Copper (as Cu)	0.009	mg/l	Max. 3.0
20	Zinc (as Zn)	0.122	mg/l	Max. 5.0
21	Selenium (as Se)	BDL	mg/l	Max. 0.05
22	Nickel (as Ni)	BDL	mg/l	Max. 3.0
23	Cyanide (as CN)	BDL	mg/l	Max. 0.2
24	Fluoride (as F)	0.06	mg/l	Max. 2.0
25	Dissolved Phosphates (as P)	0.8	mg/l	Max. 5.0
26	Sulphide (as S)	BDL	mg/l	Max. 2.0
27	Phenoile Compounds (as C ₆ H ₅ OH)	BDL	mg/l	Max. 1.0
28	Bio-assay Test	90% survival of fish after 96 hours in 100%effluent		90% survival of fish after 96 hours in 100%effluent
29	Manganese (as Mn)	BDL	mg/l	Max. 2.0
30	Iron (as Fe)	0.56	mg/l	Max. 3.0
31	Vanadium (as V)	BDL	mg/l	Max. 0.2
32	Nitrate Nitrogen	1.2	mg/l	Max. 10

**BDL-Below-Detectable Limit



Analyzed By
Asst. Chemist (N. Handique)

Quality Manager
Greenzone, Digoal

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digoal.

** End of Report **



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00028
Sample ID No: GZ/TE-84/23

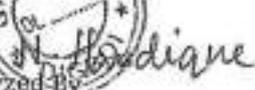
Date of Report: 26/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

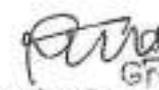
Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source:	Near Entrance Gate (Railway Siding Tirap Colliery)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	Colour and Odor	1HU & Odourless	---	--
02	Suspended Solids	36.0	mg/l	100
03	Particulate size of suspended solids	22 Micron	-	Shall pass 850 Micron IS sieve
04	pH	6.6	-	5.5-9.0
05	Temperature	20°C	°C	Shall not exceed 5°C above the receiving water temperature
06	Oil & Grease	1.2	mg/l	Max. 10
07	Total residual chlorine	BDL	mg/l	Max. 1.0
08	Ammonical Nitrogen as N	1.2	mg/l	Max. 50
09	Total Kjeldahl Nitrogen (as NH ₃)	11.2	mg/l	Max. 100
10	Free ammonia (as NH ₃)	BDL	mg/l	Max. 5.0
11	Biochemical Oxygen Demand (as BOD)	15	mg/l	Max. 30
12	Chemical Oxygen Demand (as COD)	23	mg/l	Max. 250

**BDL-Below Detectable Limit

Analyzed By: 
Asst. Chemist (N. Handique)

Reviewed and Authorized By: 
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

13	Arsenic (as As)	BDL	mg/l	Max. 0.2
14	Mercury (as Hg)	BDL	mg/l	Max. 0.01
15	Lead (as Pb)	BDL	mg/l	Max. 0.1
16	Cadmium (as Cd)	BDL	mg/l	Max. 2.0
17	Hexavalent Chromium (as Cr ⁺⁺)	BDL	mg/l	Max. 0.1
18	Total Chromium (as Cr)	0.007	mg/l	Max. 2.0
19	Copper (as Cu)	0.008	mg/l	Max. 3.0
20	Zinc (as Zn)	0.131	mg/l	Max. 5.0
21	Selenium (as Se)	BDL	mg/l	Max. 0.05
22	Nickel (as Ni)	BDL	mg/l	Max. 3.0
23	Cyanide (as CN)	BDL	mg/l	Max. 0.2
24	Fluoride (as F)	0.07	mg/l	Max. 2.0
25	Dissolved Phosphates (as P)	0.9	mg/l	Max. 5.0
26	Sulphide (as S)	BDL	mg/l	Max. 2.0
27	Phenoile Compounds (as C ₆ H ₅ OH)	BDL	mg/l	Max. 1.0
28	Bio-assay Test	90% survival of fish after 96 hours in 100%effluent		90% survival of fish after 96 hours in 100%effluent
29	Manganese (as Mn)	BDL	mg/l	Max. 2.0
30	Iron (as Fe)	0.63	mg/l	Max. 3.0
31	Vanadium (as V)	BDL	mg/l	Max. 0.2
32	Nitrate Nitrogen	1.7	mg/l	Max. 10

**BDL-Below Detectable Limit



Analyzed By:
Asst. Chemist (N. Handique)

Quality Manager
Greenzone, Digboi

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1372



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00013
Sample ID No: GZ/TE-101/23

Date of Report: 08/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Effluent Water (Treated)	Source:	Near Entrance Gate (Railway Siding Tirap Colliery)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	Colour and Odor	2HU & Odourless	--	--
02	Suspended Solids	39.0	mg/l	100
03	Particulate size of suspended solids	21 Micron	-	Shall pass 850 Micron IS sieve
04	pH	6.8	-	5.5-9.0
05	Temperature	21°C	°C	Shall not exceed 5°C above the receiving water temperature
06	Oil & Grease	1.4	mg/l	Max. 10
07	Total residual chlorine	BDL	mg/l	Max. 1.0
08	Ammonical Nitrogen as N	1.3	mg/l	Max. 50
09	Total Kjeldahl Nitrogen (as NH ₃)	9.8	mg/l	Max. 100
10	Free ammonia (as NH ₃)	BDL	mg/l	Max. 5.0
11	Biochemical Oxygen Demand (as BOD)	18	mg/l	Max. 30
12	Chemical Oxygen Demand (as COD)	25	mg/l	Max. 250

****BDL-Below Detectable Limit**



Analyzed By
Asst. Chemist (N. Handique)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam

1373



315



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

13	Arsenic (as As)	BDL	mg/l	Max. 0.2
14	Mercury (as Hg)	BDL	mg/l	Max. 0.01
15	Lead (as Pb)	BDL	mg/l	Max. 0.1
16	Cadmium (as Cd)	BDL	mg/l	Max. 2.0
17	Hexavalent Chromium (as Cr ⁺⁶)	BDL	mg/l	Max. 0.1
18	Total Chromium (as Cr)	0.007	mg/l	Max. 2.0
19	Copper (as Cu)	0.009	mg/l	Max. 3.0
20	Zinc (as Zn)	0.134	mg/l	Max. 5.0
21	Selenium (as Se)	BDL	mg/l	Max. 0.05
22	Nickel (as Ni)	BDL	mg/l	Max. 3.0
23	Cyanide (as CN)	BDL	mg/l	Max. 0.2
24	Fluoride (as F)	0.08	mg/l	Max. 2.0
25	Dissolved Phosphates (as P)	0.7	mg/l	Max. 5.0
26	Sulphide (as S)	BDL	mg/l	Max. 2.0
27	Phenoile Compounds (as C ₆ H ₅ OH)	BDL	mg/l	Max. 1.0
28	Bio-assay Test	90% survival of fish after 96 hours in 100%effluent		90% survival of fish after 96 hours in 100%effluent
29	Manganese (as Mn)	BDL	mg/l	Max. 2.0
30	Iron (as Fe)	0.57	mg/l	Max. 3.0
31	Vanadium (as V)	BDL	mg/l	Max. 0.2
32	Nitrate Nitrogen	1.8	mg/l	Max. 10

**BDL-Below Detectable Limit



Analyzed By
Asst. Chemist (N. Handique)

Quality Manager
Greenzone, Dighoi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00028
Sample ID No: GZ/TE-116/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Effluent Water (Treated)	Source:	Near Entrance Gate (Railway Siding Tirap Colliery)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 L.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	Colour and Odor	ZHU & Odourless	---	--
02	Suspended Solids	37.0	mg/l	100
03	Particulate size of suspended solids	22 Micron	--	Shall pass 850 Micron IS sieve
04	pH	6.7	--	5.5-9.0
05	Temperature	22°C	°C	Shall not exceed 5°C above the receiving water temperature
06	Oil & Grease	1.2	mg/l	Max. 10
07	Total residual chlorine	BDL	mg/l	Max. 1.0
08	Ammonical Nitrogen as N	1.9	mg/l	Max. 50
09	Total Kjeldahl Nitrogen (as NH ₃)	12.6	mg/l	Max. 100
10	Free ammonia (as NH ₃)	BDL	mg/l	Max. 5.0
11	Biochemical Oxygen Demand (as BOD)	17	mg/l	Max. 30
12	Chemical Oxygen Demand (as COD)	23	mg/l	Max. 250

**BDL-Below Detectable Limit

Analyzed By
Asst. Chemist (N. Handique)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

13	Arsenic (as As)	BDL	mg/l	Max. 0.2
14	Mercury (as Hg)	BDL	mg/l	Max. 0.01
15	Lead (as Pb)	BDL	mg/l	Max. 0.1
16	Cadmium (as Cd)	BDL	mg/l	Max. 2.0
17	Hexavalent Chromium (as Cr ^{VI})	BDL	mg/l	Max. 0.1
18	Total Chromium (as Cr)	0.005	mg/l	Max. 2.0
19	Copper (as Cu)	0.008	mg/l	Max. 3.0
20	Zinc (as Zn)	0.125	mg/l	Max. 5.0
21	Selenium (as Se)	BDL	mg/l	Max. 0.05
22	Nickel (as Ni)	BDL	mg/l	Max. 3.0
23	Cyanide (as CN)	BDL	mg/l	Max. 0.2
24	Fluoride (as F)	0.09	mg/l	Max. 2.0
25	Dissolved Phosphates (as P)	0.8	mg/l	Max. 5.0
26	Sulphide (as S)	BDL	mg/l	Max. 2.0
27	Phenolic Compounds (as C ₆ H ₅ OH)	BDL	mg/l	Max. 1.0
28	Bio-assay Test	90% survival of fish after 96 hours in 100%effluent		90% survival of fish after 96 hours in 100%effluent
29	Manganese (as Mn)	BDL	mg/l	Max. 2.0
30	Iron (as Fe)	0.49	mg/l	Max. 3.0
31	Vanadium (as V)	BDL	mg/l	Max. 0.2
32	Nitrate Nitrogen	1.5	mg/l	Max. 10

**BDL-Below Detectable Limit



Analyzed By
Asst. Chemist (N. Handique)

Reviewed and Authorized by:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1376



318

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00046
Sample ID No: GZ/TE-134/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Effluent Water (Treated)	Source:	Near Entrance Gate (Railway Siding Tirap Colliery)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L	

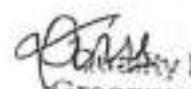
ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E)-19.05.1993 & 31.12.1993
01	Colour and Odor	IHU & Odourless	---	--
02	Suspended Solids	38.0	mg/l	100
03	Particulate size of suspended solids	23 Micron	--	Shall pass 850 Micron IS sieve
04	pH	6.8	--	5.5-9.0
05	Temperature	24°C	°C	Shall not exceed 5°C above the receiving water temperature
06	Oil & Grease	1.4	mg/l	Max. 10
07	Total residual chlorine	BDL	mg/l	Max. 1.0
08	Ammonical Nitrogen as N	1.7	mg/l	Max. 50
09	Total Kjeldahl Nitrogen (as NH ₃)	8.6	mg/l	Max. 100
10	Free ammonia (as NH ₃)	BDL	mg/l	Max. 5.0
11	Biochemical Oxygen Demand (as BOD)	15	mg/l	Max. 30
12	Chemical Oxygen Demand (as COD)	21	mg/l	Max. 250

**BDL-Below Detectable Limit

Analyzed By

Asst. Chemist (N. Handique)


Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

13	Arsenic (as As)	BDL	mg/l	Max. 0.2
14	Mercury (as Hg)	BDL	mg/l	Max. 0.01
15	Lead (as Pb)	BDL	mg/l	Max. 0.1
16	Cadmium (as Cd)	BDL	mg/l	Max. 2.0
17	Hexavalent Chromium (as Cr ⁺⁶)	BDL	mg/l	Max. 0.1
18	Total Chromium (as Cr)	0.006	mg/l	Max. 2.0
19	Copper (as Cu)	0.007	mg/l	Max. 3.0
20	Zinc (as Zn)	0.185	mg/l	Max. 5.0
21	Selenium (as Se)	BDL	mg/l	Max. 0.05
22	Nickel (as Ni)	BDL	mg/l	Max. 3.0
23	Cyanide (as CN)	BDL	mg/l	Max. 0.2
24	Fluoride (as F)	0.08	mg/l	Max. 2.0
25	Dissolved Phosphates (as P)	0.5	mg/l	Max. 5.0
26	Sulphide (as S)	BDL	mg/l	Max. 2.0
27	Phenoile Compounds (as C ₆ H ₅ OH)	BDL	mg/l	Max. 1.0
28	Bio-assay Test	90% survival of fish after 96 hours in 100%effluent		90% survival of fish after 96 hours in 100%effluent
29	Manganese (as Mn)	BDL	mg/l	Max. 2.0
30	Iron (as Fe)	0.54	mg/l	Max. 3.0
31	Vanadium (as V)	BDL	mg/l	Max. 0.2
32	Nitrate Nitrogen	1.7	mg/l	Max. 10

**BDL-Below Detectable Limit



Analyzed By
Asst. Chemist (N. Handique)

N. Handique

Pulakesh Dung Manager
Greenzone Digboi

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Resonant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**

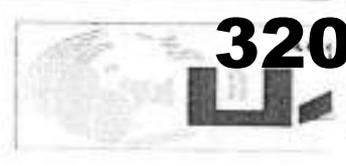


M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1378



320

Ambient noise
Tirap



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/04/00011
Sample ID No: GZ/AN-31/23

Date of Report: 25/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Workshop (Manager Office) (Railway Siding Tirap Colliery)
Sample collected by	Greenzone Representative
Sample Collection Particulars	22/04/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Workshop (Manager Office) (Railway Siding Tirap Colliery)	72	66	69.1	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Workshop (Manager Office) (Railway Siding Tirap Colliery)	65	63	64.2	55


Analyzed By
Asst. Chemist (N. Handique)


Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00011

Sample ID No: GZ/AN-45/23

Date of Report: 11/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Workshop (Manager Office) (Railway Siding Tirap Colliery)
Sample collected by	Greenzone Representative
Sample Collection Particulars	05/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Near Workshop (Manager Office) (Railway Siding Tirap Colliery)	74	67	71.4	75

[Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Near Workshop (Manager Office) (Railway Siding Tirap Colliery)	69	62	65.9	70

Analyzed By
Asst. Chemist (N. Handique)Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**



M/s. GREENZONE

Recognized By
Pollution Control Board, Assam

1380



322

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00022
Sample ID No: GZ/AN-56/23

Date of Report: 26/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Near Workshop (Manager Office) (Railway Siding Tirap Colliery)
Sample collected by	Greenzone Representative
Sample Collection Particulars	19/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Workshop (Manager Office) (Railway Siding Tirap Colliery)	70	64	67.3	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Workshop (Manager Office) (Railway Siding Tirap Colliery)	67	62	65.1	70



Analyzed By: *N. Handique*
Asst. Chemist (N. Handique)

Pulakesh Dung
Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00011

Sample ID No: GZ/AN-68/23

Date of Report: 08/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Workshop (Manager Office) (Railway Siding Tirap Colliery)
Sample collected by	Greenzone Representative
Sample Collection Particulars	02/06/2023

ANALYSIS REPORT

(Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Workshop (Manager Office) (Railway Siding Tirap Colliery)	73	67	70.0	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Workshop (Manager Office) (Railway Siding Tirap Colliery)	66	61	63.7	70



Analyzed By
Asst. Chemist (N. Handique)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**



M/s. GREENZONE

Recognised By:
Pollution Control Board, Assam



1382



324
QAF

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00022

Sample ID No: GZ/AN-79/23

Date of Report: 26/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Near Workshop (Manager Office) (Railway Siding Tirap Colliery)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Workshop (Manager Office) (Railway Siding Tirap Colliery)	71	65	67.7	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Workshop (Manager Office) (Railway Siding Tirap Colliery)	68	60	66.0	70



Analyzed By:
Asst. Chemist (N. Handique)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1383



325

AN ISO 9001:2015 & ISO 15001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00033
Sample ID No: GZ/AN-90/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Near Workshop (Manager Office) (Railway Siding Tirap Colliery)
Sample collected by	Greenzone Representative
Sample Collection Particulars	30/06/2023

ANALYSIS REPORT

(Day Time)

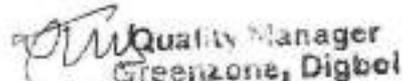
Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Workshop (Manager Office) (Railway Siding Tirap Colliery)	74	70	72.2	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Near Workshop (Manager Office) (Railway Siding Tirap Colliery)	69	62	65.9	70



Analyzed by
Asst. Chemist (N. Handique)



Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

****End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam

1384



326

Ambient Air +
Certified



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/06/00016

Date of Report: 18/06/2023

Sample ID No: GZ/AAQ-84/23

Contract No-GEMC-511687745288509, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Near Workshop (Manager Office) (Railway Siding Tirap Colliery)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 15/06/2023	End Date 16/06/2023	Ambient Temperature 23°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	18.7	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	50.4	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.4	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	24.4	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit , *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil

Analyzed By: *N. Handique*
Asst. Chemist (N. Handique)

Pulakesh Dung
Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

End of Report*



M/s. GREENZONE
Recognised By
Pollution Control Board, Assam



327

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00017
Sample ID No: GZ/AAQ-59/23

Date of Report: 29/04/2023
Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Tirap East Mine (Tirap OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 26/04/2023	End Date 27/04/2023	Ambient Temperature 23°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	20.8	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	51.9	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.1	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	27.0	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL(MDL:1.0)*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL(MDL:0.01)*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL(MDL:0.01)*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL(MDL:5.0)*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL(MDL:0.01)*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL(MDL:0.1)*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL(MDL:0.01)*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL(MDL:0.01)*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit, *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil

Analyst:
Asst. Chemist (N. Handique)

Quality Manager
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

*End of Report**

TEST REPORT

Report No: AAQ/23/04/00018

Date of Report: 01/05/2023

Sample ID No: GZ/AAQ-60/23

Contract No-GEMC-511687745288603, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Tirap West Mine (Tirap OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 27/04/2023	End Date 28/04/2023	Ambient Temperature 24°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	19.4	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	50.7	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.5	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	26.0	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL(MDL:1.0)*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL(MDL:0.01)*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL(MDL:0.01)*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL(MDL:5.0)*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL(MDL:0.01)*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL(MDL:0.1)*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL(MDL:0.01)*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL(MDL:0.01)*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit , *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil


Analyst
Asst. Chemist (N. Handique)


Quality Manager
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

*End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00019

Date of Report: 01/05/2023

Sample ID No: GZ/AAQ-61/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Sipegaon (Tirap OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 27/04/2023	End Date 28/04/2023	Ambient Temperature 24°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	18.4	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	52.1	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.5	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	24.0	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL(MDL:1.0)*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL(MDL: 0.01)*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL(MDL:0.01)*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL(MDL:5.0)*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL(MDL: 0.01)*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL(MDL: 0.1)*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL(MDL: 0.01)*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL(MDL: 0.01)*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit , *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil

Analysed By:
Asst. Chemist (N. Handique)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

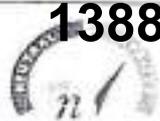
NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



330



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00020

Date of Report: 02/05/2023

Sample ID No: GZ/AAQ-62/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Ledo Gaon, Pero Field (Tirap OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 28/04/2023	End Date 29/04/2023	Ambient Temperature 23°C	Analysis Protocol: IS 5102

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	19.1	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	53.6	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.8	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	22.0	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL(MDL:1.0)*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL(MDL:0.01)*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL(MDL:0.01)*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL(MDL:5.0)*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL(MDL:0.01)*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL(MDL:0.1)*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL(MDL:0.01)*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL(MDL:0.01)*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit , *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyst
Asst. Chemist (N Handique)

Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

*End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1389



331

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00021

Date of Report: 02/05/2023

Sample ID No: GZ/AAQ-63/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Pacha Gaon (Tirap OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 28/04/2023	End Date 29/04/2023	Ambient Temperature 23°C	Analysis Protocol IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	18.4	µg /m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	56.3	µg /m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.4	µg /m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	26.0	µg /m ³	80 (24 Hours Average)
05	Ozone(as O ₃)	BDL[MDL:1.0]*	µg /m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL: 0.01]*	µg /m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg /m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg /m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL: 0.01]*	µg /m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL: 0.1]*	ng /m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL: 0.01]*	ng /m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL: 0.01]*	ng /m ³	20 (Annual Average)

*BDL : Below Detection Limit , *MDL: Minimum Detection Limit

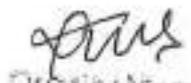
NAAQS-National Ambient Air Quality Standard

Remarks: Nil

Analyzed By:
Asst. Chemist (P. Handique)



Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)



NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

*End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/04/00022

Date of Report: 02/05/2023

Sample ID No: GZ/AAQ-64/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Malamkhan Gaon (Tirap OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 29/04/2023	End Date 30/04/2023	Ambient Temperature 24°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS-2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	19.9	µg /m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	58.2	µg /m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.5	µg /m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	23.0	µg /m ³	80 (24 Hours Average)
05	Ozone(as O ₃)	BDL(MDL:1.0)*	µg /m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL(MDL: 0.01)*	µg /m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL(MDL:0.01)*	mg /m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL(MDL:5.0)*	µg /m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL(MDL: 0.01)*	µg /m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL(MDL: 0.1)*	ng /m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL(MDL: 0.01)*	ng /m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL(MDL: 0.01)*	ng /m ³	20 (Annual Average)

*BDL : Below Detection Limit , *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil


 Analyzed By:
 Asst.Chemist (N Handique)

Quality Manager
 Reviewed and Authorized By:
 Quality Manager (Pulakesh Dung)

NOTE

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

*End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: DW/23/04/00012

Date of Report:27/04/2023

Sample ID No: GZ/DW-39/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam	
Sample Description	Type: Drinking Water	Source: Drinking Water of Residential Area (Tirap OCP)
Sample collected by	Greenzone Representative	
Sample Collection Particulars	Date - 23/04/2023	Analysis Protocol: IS-3025

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	*Requirement (Acceptable Limits)	*Permissible Limit in the absence of Alternate Source	Method of Test
01	Colour (Hazen Units)	2	Hazen Units	5	15	IS:3025, Part 4
02	Odour	Odourless	-	Agreeable	Agreeable	IS:3025, Part 5
03	Turbidity, NTU	0	NTU	Max 1	Max 5	IS:3025, Part 10
04	pH	7.1	-	6.5 - 8.5	No Relaxation	IS:3025, Part 11
05	Total Hardness (as CaCO ₃)	39.8	mg/l	Max 200	Max 600	IS:3025, Part 21
06	Iron (as Fe)	0.15	mg/l	Max 0.30	No Relaxation	IS:3025, Part 53
07	Chloride (as Cl)	7.1	mg/l	Max 250	1000	IS:3025, Part 32
08	Free Residual Chlorine	BDL (MDL:0.1)	mg/l	Min 0.2	1	IS:3025, Part 26
09	Fluoride (as F)	BDL (MDL:0.01)	mg/l	Max 1.0	Max 1.5	IS:3025, Part 60
10	Total Dissolved Solids	174.0	mg/l	Max 500	Max 2000	IS:3025, Part 16

* BDL : Below Detection Limit , MDL: Minimum Detection Limit

* Limits as per Drinking Water Standard IS 10500:2012


 Analyzed By
 Asst.Chemist (N Handique)


 Quality Manager
 Reviewed and Authorized by:
 Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.



www.greenzone...

M/s. GREENZONE

Recognised by
Pollution Control Board, Assam



334



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

Sl. No.	Parameters	Results	Unit	*Requirement (Acceptable Limits)	*Permissible Limit in the absence of Alternate Source	Method of Test
11	Calcium (as Ca)	25.1	mg/l	Max 75	Max 200	IS:3025, Part 40
12	Magnesium (as Mg)	14.4	mg/l	Max 30	Max 100	IS:3025, Part 46
13	Sulphate (as SO ₄)	7.6	mg/l	Max 200	Max 400	IS:3025, Part 24
14	Nitrate (as NO ₃)	0.6	mg/l	Max 45	No Relaxation	IS:3025, Part 34
15	Phenolic Compound C ₆ H ₅ OH	BDL [MDL:0.001]	mg/l	Max 0.001	Max 0.002	IS:3025, Part 43
16	Total Arsenic (as As)	BDL [MDL:0.01]	mg/l	Max 0.01	Max 0.05	IS:3025, Part 37
17	Lead (as Pb)	BDL [MDL:0.01]	mg/l	Max 0.01	No Relaxation	IS:3025, Part 47
18	Total Alkalinity (as CaCO ₃)	23.0	mg/l	Max 200	Max 600	IS:3025, Part 23

* BDL : Below Detection Limit , MDL: Minimum Detection Limit

* Limits as per Drinking Water Standard IS 10500:2012



Analyzed by
Asst.Chemist (N Handique)

Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

****End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1393



335

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/04/00010

Sample ID No:GZ/TE-45/23

Date of Report: 26/04/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: West Mine Raw Water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.1	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	98.0	mg/l	Max 250
03	SS (Suspended Solids)	120.0	mg/l	Max 100
04	Oil & Grease	2.5	mg/l	Max 10

Analyzed By
Asst. Chemist (N)



A. J. Dandique

Reviewed and Authorised by
Quality Manager (Pulakesh Dung)

Pulakesh Dung
Quality Manager
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Managed By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: **11/23/04/00011**
Sample ID No: **GZ/TE-46/23**

Date of Report: **26/04/2023**
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source: Treated Water of Neutralization Pond (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.7	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	32.0	mg/l	Max 250
03	SS (Suspended Solids)	40.0	mg/l	Max 100
04	Oil & Grease	1.1	mg/l	Max 10


Analyzed by
Asst. Chemist (N. Handique)


Quality Manager
Greenzone, Digboi
Reviewed and Authorized by
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/04/00013
Sample ID No:GZ/TE-48/23

Date of Report: 26/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source: East Mine Treated water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.7	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	26.0	mg/l	Max 250
03	SS (Suspended Solids)	38.0	mg/l	Max 100
04	Oil & Grease	1.3	mg/l	Max 10



Analysed by
Asst. Chemist (N. Handique)

Reviewed and Approved by
Quality Manager
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****

TEST REPORT

Report No: TE/23/04/00012

Date of Report: 26/04/2023

Sample ID No:GZ/TE-47/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: East Mine Raw water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	4.9	-	5.5-9.0
02	COD (Chemical Oxygen Demand)	86.0	mg/l	Max 250
03	SS (Suspended Solids)	98.0	mg/l	Max 100
04	Oil & Grease	2.3	mg/l	Max 10



Asst. Chemist (N. Handique)

Pulakesh
Quality Manager
Reviewed by: *Digboi*
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/04/00014
Sample ID No:GZ/TE-49/23Date of Report: 26/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Sipe Gaon Nallah water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.9	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	21.0	mg/l	Max 250
03	SS (Suspended Solids)	32.0	mg/l	Max 100
04	Oil & Grease	2.1	mg/l	Max 10

Analyzed by
N. Handique
Assam (N. Handique)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



340



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/04/00016

Sample ID No:GZ/TE-51/23

Date of Report: 26/04/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Upstream of Tirap River (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E)-19.05.1993 & 31.12.1993
01	pH	6.6	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	23.0	mg/l	Max 250
03	SS (Suspended Solids)	38.0	mg/l	Max 100
04	Oil & Grease	1.7	mg/l	Max 10



Analyzed By
Asst. Chemist (N. Handique)

N. Handique

Pulakesh Dung
Quality Manager
Greenzone, Digboi

Reviewed and Authorized by
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/04/00015

Sample ID No:GZ/TE-50/23

Date of Report: 26/04/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Downstream of Tirap River (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 22/04/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.6	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	19.0	mg/l	Max 250
03	SS (Suspended Solids)	28.0	mg/l	Max 100
04	Oil & Grease	1.1	mg/l	Max 10



Analyzed by
Asst. Chemist (N. Handique)

Reviewed and Authorized by
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1400

342

770
611

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00006

Date of Report: 11/05/2023

Sample ID No:GZ/TE-62/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: West Mine Raw Water (Tirap DCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E), 19.05.1993 & 31.12.1993
01	pH	5.2	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	120.0	mg/l	Max 250
03	SS (Suspended Solids)	134.0	mg/l	Max 100
04	Oil & Grease	2.9	mg/l	Max 10

Analyzed By
Asst. Chemist (N. Himadree)



Reviewed and
Quality Manager (Pulakesh Dung)

(Signature)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****

M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1401



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00007
Sample ID No:GZ/TE-63/23

Date of Report: 11/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source: Treated Water of Neutralization Pond (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.9	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	25.0	mg/l	Max 250
03	SS (Suspended Solids)	44.0	mg/l	Max 100
04	Oil & Grease	1.3	mg/l	Max 10

Analyzed By
Chemist (N. Handique)



Quality Manager
Greenzone, Digboi
Reviewed and Authorized by: Asst.
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00009

Date of Report: 11/05/2023

Sample ID No:GZ/TE-65/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source:	East Mine Treated Water (Tirap OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.9	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	23.0	mg/l	Max 250
03	SS (Suspended Solids)	55.0	mg/l	Max 100
04	Oil & Grease	1.5	mg/l	Max 10


Asst. Chemist (N. Handique)


Quality Manager
Greenzone, Digboi
Reviewed and Authorized by:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00008

Sample ID No:GZ/TE-64/23

Date of Report: 11/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: East Mine Raw Water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	4.7	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	76.0	mg/l	Max 250
03	SS (Suspended Solids)	115.0	mg/l	Max 100
04	Oil & Grease	2.5	mg/l	Max 10



Analysed By
Asst. Chemist (N. Handique)

N. Handique

Reviewed and Approved By:
Quality Manager (Pulakesh Dung)

Pulakesh Dung

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00010

Sample ID No:GZ/TE-66/23

Date of Report: 11/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Sipe Gaon Nallah water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.1	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	22.0	mg/l	Max 250
03	SS (Suspended Solids)	55.0	mg/l	Max 100
04	Oil & Grease	1.5	mg/l	Max 10



Analysed by
Chief Chemist (D N D Choudhury)

D N D Choudhury

Pulakesh Dung
Quality Manager

Reviewed and Authorized by
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By:
Pollution Control Board, Assam



1405



347

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00012
Sample ID No:GZ/TE-68/23

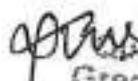
Date of Report: 11/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Downstream of Tirap River (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.2	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	23.0	mg/l	Max 250
03	SS (Suspended Solids)	36.0	mg/l	Max 100
04	Oil & Grease	1.4	mg/l	Max 10


Analysed By:
Asst. Scientist (N. Handique)


Quality Manager
Reviewed and Authorized By: Digboi
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****

**M/s. GREENZONE**

Recognised By

Pollution Control Board, Assam



348



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00011

Date of Report: 11/05/2023

Sample ID No:GZ/TE-67/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Upstream of Tirap River (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 05/05/2023	Quantity Drawn : 3 L.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.8	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	25.0	mg/l	Max 250
03	SS (Suspended Solids)	39.0	mg/l	Max 100
04	Oil & Grease	1.9	mg/l	Max 10

Analyzed By
Asst. Chemist (N. Handique)

N. Handique

Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1407

349



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00021

Sample ID No:GZ/TE-77/23

Date of Report: 26/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: West Mine Raw Water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.4	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	90.0	mg/l	Max 250
03	SS (Suspended Solids)	111.0	mg/l	Max 100
04	Oil & Grease	3.2	mg/l	Max 10

Analyzed By
Asst. Chemist (N)



Nandique

Pulakesh
Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



1408



350

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00022

Sample ID No:GZ/TE-78/23

Date of Report: 26/05/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source: Treated Water of Neutralization Pond (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 L.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.4	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	28.0	mg/l	Max 250
03	SS (Suspended Solids)	41.0	mg/l	Max 100
04	Oil & Grease	1.5	mg/l	Max 10



Analyzed By
Asst. Chemist (N. Handique)

Reviewed By
Quality Manager
Greenzone, Digboi
Quality Manager(Pulakesh Dung)

NOTE

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

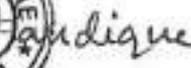
Report No: TE/23/05/00024
Sample ID No:GZ/TE-80/23

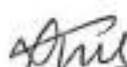
Date of Report: 26/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source: East Mine Treated Water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.3	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	25.0	mg/l	Max 250
03	SS (Suspended Solids)	41.0	mg/l	Max 100
04	Oil & Grease	1.5	mg/l	Max 10


Analyst
Asst. Chemist (N. Handique)


Quality Manager
Reviewed and Authorized By
Quality Manager (Pufakesh Dng)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00023

Date of Report: 26/05/2023

Sample ID No:GZ/TE-79/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Disc. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source:	East Mine Raw Water (Tirap OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	5.3	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	95.0	mg/l	Max 250
03	SS (Suspended Solids)	81.0	mg/l	Max 100
04	Oil & Grease	2.5	mg/l	Max 10



Asst. Chemist (N. Handique)

Quality Manager
By: Pulakesh Dung
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1411



353

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00025

Date of Report: 26/05/2023

Sample ID No:GZ/TE-81/23

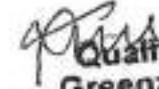
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Sipe Gaon Nallah water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.3	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	24.0	mg/l	Max 250
03	SS (Suspended Solids)	37.0	mg/l	Max 100
04	Oil & Grease	1.2	mg/l	Max 10


Analysed By
Asst. Analyst (N. Handique)


Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00026

Date of Report: 26/05/2023

Sample ID No:GZ/TE-82/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Upstream of Tirap River (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 L.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	6.9	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	28.0	mg/l	Max 250
03	SS (Suspended Solids)	39.0	mg/l	Max 100
04	Oil & Grease	1.9	mg/l	Max 10



Analyzed By
Asst. Chemist (N. Handique)

Quality Manager
Greenzone, Digboi

Reviewed and Audited by
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****

M/s. GREENZONERecognised By
Pollution Control Board, Assam

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/05/00027

Date of Report: 26/05/2023

Sample ID No:GZ/TE-83/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Surface Water	Source:	Downstream of Tirap River (Tirap OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 19/05/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.1	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	25.0	mg/l	Max 250
03	SS (Suspended Solids)	35.0	mg/l	Max 100
04	Oil & Grease	1.3	mg/l	Max 10

Analysed By
Asst. Chemist (N. Handique)Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)**NOTE:-**

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1414

356

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00006

Date of Report: 08/06/2023

Sample ID No:GZ/TE-94/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: West Mine Raw Water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl.No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	5.4	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	97.0	mg/l	Max 250
03	SS (Suspended Solids)	167.0	mg/l	Max 100
04	Oil & Grease	2.6	mg/l	Max 10



Analyzed By
Asst. Chemist (Digboi)

Pulakesh Dung

Pulakesh Dung
Quality Manager
Greenzone Digboi
Reviewed and Authorized by
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**

M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1415



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00007

Date of Report: 08/06/2023

Sample ID No:GZ/TE-95/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam	
Sample Description	Type: Effluent Water (Treated)	Source: Treated Water of Neutralization Pond (Tirap OCP)
Sample collected by	Greenzone Representative	
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.9	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	23.0	mg/l	Max 250
03	SS (Suspended Solids)	47.0	mg/l	Max 100
04	Oil & Grease	1.7	mg/l	Max 10

Analyzed By
Asst. Chemist (N. Handique)



Reviewed and Authorized By
Quality Manager (Pulakesh Dung)

Quality Manager
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

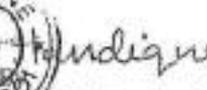
Report No: TE/23/06/00009
Sample ID No:GZ/TE-97/23

Date of Report: 08/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source:	East Mine Treated Water (Tirap OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per ISIRI 422(E).19.05.1993 & 31.12.1993
01	pH	6.8	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	23.0	mg/l	Max 250
03	SS (Suspended Solids)	47.0	mg/l	Max 100
04	Oil & Grease	1.7	mg/l	Max 10


Assam (N. Handique)


Quality Manager
Greenzone Digboi
Reviewed and Authorized by
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00008
Sample ID No:GZ/TE-96/23

Date of Report: 08/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source:	East Mine Raw Water (Tirap OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.2	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	93.0	mg/l	Max 250
03	SS (Suspended Solids)	107.0	mg/l	Max 100
04	Oil & Grease	2.7	mg/l	Max 10


Analysed by
Asst. Chemist (N. Handique)


Quality Manager
Reviewed by
Greenzone, Digboi:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00010
Sample ID No:GZ/TE-98/23

Date of Report: 08/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Sipe Gaon Nallah water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 412(E),19.05.1993 & 31.12.1993
01	pH	5.9	-	5.5-9.0
02	COD (Chemical Oxygen Demand)	21.0	mg/l	Max 250
03	SS (Suspended Solids)	34.0	mg/l	Max 100
04	Oil & Grease	1.3	mg/l	Max 10

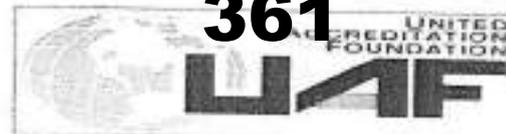

Analysed By
Chief Chemist (D N D Choudhury)


Quality Manager
Greenzone Digboi
Reviewed and
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**

M/s. GREENZONERecognised By
Pollution Control Board, Assam

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00012

Sample ID No:GZ/TE-100/23

Date of Report: 08/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source:	Downstream of Tirap River (Tirap OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.8	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	21.0	mg/l	Max 250
03	SS (Suspended Solids)	35.0	mg/l	Max 100
04	Oil & Grease	1.6	mg/l	Max 10



Asst. Chemist (N. Handique)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)**NOTE:**

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Resonant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00011

Date of Report: 08/06/2023

Sample ID No:GZ/TE-99/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Upstream of Tirap River (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 02/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	6.8	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	27.0	mg/l	Max 250
03	SS (Suspended Solids)	42.0	mg/l	Max 100
04	Oil & Grease	2.1	mg/l	Max 10

Analyzed By
Asst. Chemist (N. Haldongia)



Reviewed and Authorized By:
Quality Manager (Pulakesh Durg)

Quality Manager
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1421



363

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00021
Sample ID No:GZ/TE-109/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: West Mine Raw Water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 L	

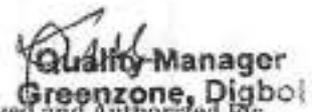
ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.1	-	5.5-9.0
02	COD (Chemical Oxygen Demand)	87.0	mg/l	Max 250
03	SS (Suspended Solids)	132.0	mg/l	Max 100
04	Oil & Grease	2.5	mg/l	Max 10

Analyzed By
Asst. Chemist (N. Handique)



Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)



NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00022

Date of Report: 20/06/2023

Sample ID No:GZ/TE-110/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam		
Sample Description	Type: Effluent Water (Treated)	Source: Treated Water of Neutralization Pond (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 l.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.3	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	27.0	mg/l	Max 250
03	SS (Suspended Solids)	32.0	mg/l	Max 100
04	Oil & Grease	1.9	mg/l	Max 10



Analyzed By

Asst. Chemist (N. Handique)

N. Handique

Pulakesh Dung
Quality Manager
Greenzone, Digboi
Reviewed and Authorized By
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00023
Sample ID No:GZ/TE-111/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: East Mine Raw Water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.1	-	5.5-9.0
02	COD (Chemical Oxygen Demand)	99.0	mg/l	Max 250
03	SS (Suspended Solids)	72.0	mg/l	Max 100
04	Oil & Grease	2.9	mg/l	Max 10


Analysed By:
Asst. Chemist (N. Handique)


Reviewed and Authored By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00024

Sample ID No:GZ/TE-112/23

Date of Report: 20/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source:	East Mine Treated Water (Tirap OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	7.1	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	29.0	mg/l	Max 250
03	SS (Suspended Solids)	42.0	mg/l	Max 100
04	Oil & Grease	1.9	mg/l	Max 10



Asst. Chemist (N. Handique)

[Signature]
Quality Manager,
Greenzone, Dighoi
Reviewed & Authorized By:
Quality Manager (Pulakesh Dng)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00026
Sample ID No:GZ/TE-114/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source:	Upstream of Tirap River (Tirap OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.8	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	25.0	mg/l	Max 250
03	SS (Suspended Solids)	37.0	mg/l	Max 100
04	Oil & Grease	1.5	mg/l	Max 10

Analyzed By
Asst. Chemist (N. Handique)



Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

Quality Manager
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



renew future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00025

Sample ID No:GZ/TE-113/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source:	Sipe Gaon Nallah water (Tirap OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.7	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	27.0	mg/l	Max 250
03	SS (Suspended Solids)	32.0	mg/l	Max 100
04	Oil & Grease	1.4	mg/l	Max 10

Analysed By
Asst. Chemist (N. Handique)Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)**NOTE:**

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**



M/s. GREENZONE

Recognized By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00027

Sample ID No:GZ/TE-115/23

Date of Report: 20/06/2023

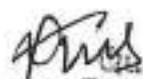
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source:	Downstream of Tirap River (Tirap OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 16/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.4	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	24.0	mg/l	Max 250
03	SS (Suspended Solids)	33.0	mg/l	Max 100
04	Oil & Grease	1.2	mg/l	Max 10


 Assam Chemist (N. Handique)


 Quality Manager
 Reviewed and Authorized by
 Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00039

Date of Report: 04/07/2023

Sample ID No:GZ/TE-127/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: West Mine Raw Water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	4.9	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	98.0	mg/l	Max 250
03	SS (Suspended Solids)	123.0	mg/l	Max 100
04	Oil & Grease	3.5	mg/l	Max 10



N. Handique

Analyzed By
Asst. Chemist (N. Handique)

Pulakesh Dung

Quality Manager
Greenzone Digboi
Reviewed and Approved
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00039

Date of Report: 04/07/2023

Sample ID No:GZ/TE-127/23

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: West Mine Raw Water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn: 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E),19.05.1993 & 31.12.1993
01	pH	4.9	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	98.0	mg/l	Max 250
03	SS (Suspended Solids)	123.0	mg/l	Max 100
04	Oil & Grease	3.5	mg/l	Max 10



Analyzed By
Asst. Chemist (N. Handique)

N. Handique

Reviewed By
Quality Manager
Greenzone, Digboi
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00040
Sample ID No:GZ/TE-128/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source: Treated Water of Neutralization Pond (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.7	-	5.5-9.0
02	COD (Chemical Oxygen Demand)	27.0	mg/l	Max 250
03	SS (Suspended Solids)	31.0	mg/l	Max 100
04	Oil & Grease	1.6	mg/l	Max 10

Analyzed By
Asst. Chemist (N. Handique)



Reviewed and Authorized By
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1431



373

reener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00042
Sample ID No:GZ/TE-130/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Treated)	Source: East Mine Treated Water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	6.7	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	22.0	mg/l	Max 250
03	SS (Suspended Solids)	38.0	mg/l	Max 100
04	Oil & Grease	1.5	mg/l	Max 10



Assist. Chemist (N. Handique)

afus

Reviewed by
Quality Manager
Greenzone, Digboi

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00041
Sample ID No:GZ/TE-129/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Effluent Water (Un-Treated)	Source: East Mine Raw Water (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	4.9	-	5.5-9.0
02	COD (Chemical Oxygen Demand)	23.0	mg/l	Max 250
03	SS (Suspended Solids)	36.0	mg/l	Max 100
04	Oil & Grease	1.8	mg/l	Max 10



N. Handique
Asst. Chemist (N. Handique)

Pulakesh Dung
Quality Manager
Greenzone, Digboi
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00043
Sample ID No:GZ/TE-131/23

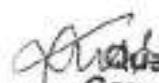
Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source:	Sipe Gaon Nallah water (Tirap OCP)
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L.	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.8	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	23.0	mg/l	Max 250
03	SS (Suspended Solids)	39.0	mg/l	Max 100
04	Oil & Grease	1.2	mg/l	Max 10


N. Handique
Asst. Chemist (N. Handique)


Quality Manager
Greenzone Digboi
Reviewed and Authorised by
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1434



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00044
Sample ID No:GZ/TE-132/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Upstream of Tirap River (Tirap OCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	7.2	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	27.0	mg/l	Max 250
03	SS (Suspended Solids)	45.0	mg/l	Max 100
04	Oil & Grease	2.3	mg/l	Max 10



Analyzed By
Asst. Chemist (N. Handique)

N. Handique

Pulakesh Dung
Quality Manager

Reviewed and Authorized by
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: TE/23/06/00045

Sample ID No:GZ/TE-133/23

Date of Report: 04/07/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia, Assam		
Sample Description	Type: Surface Water	Source: Downstream of Tirap River (Tirap DCP)	
Sample collected by	Greenzone Representative		
Sample Collection Particulars	Start Date 30/06/2023	Quantity Drawn : 3 L	

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per GSR 422(E).19.05.1993 & 31.12.1993
01	pH	5.8	--	5.5-9.0
02	COD (Chemical Oxygen Demand)	24.0	mg/l	Max 250
03	SS (Suspended Solids)	35.0	mg/l	Max 100
04	Oil & Grease	1.5	mg/l	Max 10



Analysed By
Asst. Chemist (N. Handique)

Reviewed and Authorized By
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****

TEST REPORT

Report No: AAQ/23/06/00010

Date of Report: 15/06/2023

Sample ID No: GZ/AAQ-78/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Tirap East Mine (Tirap OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 12/06/2023	End Date 13/06/2023	Ambient Temperature 23°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	19.2	µg /m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	49.6	µg /m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.2	µg /m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	22.1	µg /m ³	80 (24 Hours Average)
05	Ozone(as O ₃)	BDL[MDL:1.0]*	µg /m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL: 0.01]*	µg /m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg /m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg /m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL: 0.01]*	µg /m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL: 0.1]*	ng /m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL: 0.01]*	ng /m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL: 0.01]*	ng /m ³	20 (Annual Average)

*BDL : Below Detection Limit, *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil


 Analyzed By
 Asst. Chemist (N. Handique)

 Quality Manager
 Reviewed and Authorized By:
 Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

*End of Report**

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/06/00011

Date of Report: 16/06/2023

Sample ID No: GZ/AAQ-79/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Tirap West Mine (Tirap OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 13/06/2023	End Date 14/06/2023	Ambient Temperature 23°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	18.3	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	50.4	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.4	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	23.4	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit , *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analysed By:
Asst. Chemist (N. Handique)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dng)

NOTE

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/06/00012

Date of Report: 16/06/2023

Sample ID No: GZ/AAQ-80/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Sipegaon (Tirap OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 13/06/2023	End Date 14/06/2023	Ambient Temperature 23°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	19.8	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	49.7	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.5	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	24.2	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL(MDL:1.0)*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL(MDL:0.01)*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL(MDL:0.01)*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL(MDL:5.0)*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL(MDL:0.01)*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL(MDL:0.1)*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL(MDL:0.01)*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL(MDL:0.01)*	ng/m ³	20 (Annual Average)

*BDL: Below Detection Limit, *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analysed By
Asst. Chemist (N. Handique)

Quality Manager
Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



381

greener future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/06/00014

Date of Report: 17/06/2023

Sample ID No: GZ/AAQ-82/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia Assam			
Sample Description	Type: Ambient Air Sample	Source: Pacha Gaon (Tirap OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 14/06/2023	End Date 15/06/2023	Ambient Temperature 23°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	18.9	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	48.8	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	9.4	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	21.4	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL: 0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL: 0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL: 0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL: 0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL: 0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit, *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil


 Analyzed By: *H. Handique*
 Asst. Chemist (N. Handique)


 Quality Manager
 Reviewed and Authenticated By:
 Quality Manager (Palakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

*End of Report**



M/s. GREENZONE

Recognized By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AAQ/23/06/00013

Date of Report: 17/06/2023

Sample ID No: GZ/AAQ-81/23

Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Ledo Gaon, Pero Field (Tirap OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 14/06/2023	End Date 15/06/2023	Ambient Temperature 23°C	Analysis Protocol IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	17.4	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	47.8	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.7	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	22.5	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL[MDL:1.0]*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL[MDL:0.01]*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL[MDL:0.01]*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL[MDL:5.0]*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL[MDL:0.01]*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL[MDL:0.1]*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL[MDL:0.01]*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL[MDL:0.01]*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit, *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil



Analyzed By
Asst. Greenzone Representative (Handique)

Quality Manager
Greenzone, Digboi
Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

*End of Report**

TEST REPORT

Report No: AAQ/23/06/00015
Sample ID No: GZ/AAQ-83/23

Date of Report: 18/06/2023
Contract No-GEMC-511687745288609, Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam			
Sample Description	Type: Ambient Air Sample	Source: Malamkhan Gaon (Tirap OCP)		
Sample collected by	Greenzone Representative			
Sample Collection Particulars	Start Date 15/06/2023	End Date 16/06/2023	Ambient Temperature 23°C	Analysis Protocol: IS 5182

ANALYSIS REPORT

Sl. No.	Parameters	Results	Units	Limit as per NAAQS:2009
01	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	19.3	µg/m ³	60 (24 Hours Average)
02	Particulate Matter (size less than 10 µm) PM ₁₀	49.1	µg/m ³	100 (24 Hours Average)
03	Sulphur Dioxide (as SO ₂)	8.3	µg/m ³	80 (24 Hours Average)
04	Nitrogen Dioxide (as NO ₂)	23.7	µg/m ³	80 (24 Hours Average)
05	Ozone (as O ₃)	BDL(MDL:1.0)*	µg/m ³	100 (8 Hours Average)
06	Lead (as Pb)	BDL(MDL:0.01)*	µg/m ³	1.0 (24 Hours Average)
07	Carbon Monoxide (as CO)	BDL(MDL:0.01)*	mg/m ³	4.0 (1 Hours Average)
08	Ammonia (as NH ₃)	BDL(MDL:5.0)*	µg/m ³	400 (24 Hours Average)
09	Benzene (as C ₆ H ₆)	BDL(MDL:0.01)*	µg/m ³	5.0 (Annual Average)
10	Benzo(a)Pyrene (as BaP)- Particulate Phase Only	BDL(MDL:0.1)*	ng/m ³	1.0 (Annual Average)
11	Arsenic (as As)	BDL(MDL:0.01)*	ng/m ³	6.0 (Annual Average)
12	Nickel (as Ni)	BDL(MDL:0.01)*	ng/m ³	20 (Annual Average)

*BDL : Below Detection Limit, *MDL: Minimum Detection Limit

NAAQS-National Ambient Air Quality Standard

Remarks: Nil

Analyt
Asst.Chemist (N Handique)



Quality Manager
Reviewed and Authorized By:
Quality Manager (Pulakesh Dng)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

*End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/04/00009
Sample ID No: GZ/AN-29/23

Date of Report: 25/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area (Tirap OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	22/04/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tirap OCP)	74	68	71.0	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tirap OCP)	70	64	68.8	70



N. Handique

Asst. Analyst (N. Handique)

Pulakesh Dung
Quality Manager
Greenzone, Digboi

Reviewed and Authorized by:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



1443



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00009
Sample ID No: GZ/AN-43/23

Date of Report: 11/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area (Tirap OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	05/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tirap OCP)	72	67	69.5	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
L.	Mine Area (Tirap OCP)	69	62	65.9	70



Asst. Chemist (N. Handique)

Quality Manager
Greenzone Digboi
Reviewed and Authorized By:
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00020
Sample ID No: GZ/AN-54/23

Date of Report: 26/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Mine Area (Tirap OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	19/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tirap OCP)	74	69	71.7	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tirap OCP)	68	61	65.2	70



Analysed by: *N. Handique*
Asst. Chemist (N. Handique)

Reviewed and Authorized By: *Pulakesh Dung*
Quality Manager(Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00009

Sample ID No: GZ/AN-66/23

Date of Report: 08/06/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area (Tirap OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	02/06/2023

ANALYSIS REPORT

(Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCII Guidelines)
1.	Mine Area (Tirap OCP)	73	64	69.9	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCII Guidelines)
1.	Mine Area (Tirap OCP)	69	64	67.1	70



Asst. Chemist (N. Handique)

Reviewed and Authorized By:
Quality Manager (Polakesh Dung)

Quality Manager (Polakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



388

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00020
Sample ID No: GZ/AN-77/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area (Tirap OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tirap OCP)	64	56	62.47	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tirap OCP)	59	52	56.54	70



Analysed by
Assam (N. Handique)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00031

Sample ID No: GZ/AN-88/23

Date of Report: 04/07/2023

Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Mine Area (Tirap OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	30/06/2023

ANALYSIS REPORT

(Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tirap OCP)	74	67	71.0	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Mine Area (Tirap OCP)	67	62	64.5	70



Asst. Analyst (N. Handique)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dng)**NOTE:**

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S-GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/04/00010
Sample ID No: GZ/AN-30/23

Date of Report: 25/04/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Coal Dump Area (Tirap OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	22/04/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Coal Dump Area (Tirap OCP)	73	64	69.0	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Coal Dump Area (Tirap OCP)	65	60	63.7	70



Analysed By
Assam **N. Handique**

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



green future...

AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/05/00010
Sample ID No: GZ/AN-44/23

Date of Report: 11/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Coal Dump Area (Tirap OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	05/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Coal Dump Area (Tirap OCP)	71	69	71.7	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Coal Dump Area (Tirap OCP)	67	62	64.9	70



Analyzed By
Asst. Chemist (Handique)

Quality Manager

Reviewed and Authorized By
Quality Manager(Pulakesh Dung)

NOTE-

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

** End of Report**



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB
TEST REPORT

Report No: AN/23/05/00021
Sample ID No: GZ/AN-55/23

Date of Report: 26/05/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED , Margherita-786181,Dist. Tinsukia ,Assam
Sample Description	Type: Ambient Noise Level Monitoring
	Source: Coal Dump Area (Tirap OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	19/05/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Coal Dump Area (Tirap OCP)	73	62	69.3	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CPCB Guidelines)
1.	Coal Dump Area (Tirap OCP)	69	62	65.9	70



N. Handique
Analyst (N. Handique)

Pulakesh Dung
Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighol.

**** End of Report****



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00010
Sample ID No: GZ/AN-67/23

Date of Report: 08/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Coal Dump Area (Tirap OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	02/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CFCB Guidelines)
1.	Coal Dump Area (Tirap OCP)	73	67	71.0	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	L _{eq} (dB-A)	Limits L _{eq} (dB-A) (As per CFCB Guidelines)
1.	Coal Dump Area (Tirap OCP)	68	62	65.5	70



Analysed By
Asst. Analyst (M. Handique)

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

** End of Report **



M/s. GREENZONE

Recognised By
Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00021
Sample ID No: GZ/AN-78/23

Date of Report: 20/06/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Coal Dump Area (Tirap OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	16/06/2023

ANALYSIS REPORT

(Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq (dB-A) (As per CPCB Guidelines)
1.	Coal Dump Area (Tirap OCP)	74	70	72.2	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq (dB-A) (As per CPCB Guidelines)
1.	Coal Dump Area (Tirap OCP)	65	60	63.7	70



Analyzed By
Asst. S. Handique

Reviewed and Authorized By:
Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Remnant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Digboi.

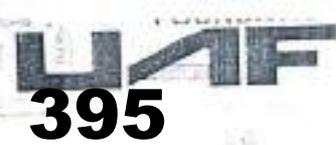
** End of Report**



M/s. GREENZONE

Recognised By

Pollution Control Board, Assam



AN ISO 9001:2015 & ISO 45001:2018 CERTIFIED LAB

TEST REPORT

Report No: AN/23/06/00032
Sample ID No: GZ/AN-89/23

Date of Report: 04/07/2023
Contract No-GEMC-511687745288609 Dtd-14/04/2023

Name & Address of Client	NORTH EASTERN COALFIELDS COAL INDIA LIMITED, Margherita-786181, Dist. Tinsukia, Assam
Sample Description	Type: Ambient Noise Level Monitoring Source: Coal Dump Area (Tirap OCP)
Sample collected by	Greenzone Representative
Sample Collection Particulars	30/06/2023

ANALYSIS REPORT

Day Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
1.	Coal Dump Area (Tirap OCP)	67	59	65.27	75

(Night Time)

Sl. No.	Location	Maximum (dB-A)	Minimum (dB-A)	Leq (dB-A)	Limits Leq(dB-A) (As per CPCB Guidelines)
L	Coal Dump Area (Tirap OCP)	61	56	59.58	70


 Analyzed By
 Asst. Chemist (N. Handique)


 Reviewed and Authorized By:
 Quality Manager (Pulakesh Dung)

NOTE:

1. Results reported are valid at the time of and under the prevailing conditions of measurement.
2. Results refer only to the particular parameters tested.
3. Resonant sample will be destroyed after 20 days from the date of receipt of sample.
4. This test report shall not be reproduced wholly or partly and cannot be used as an evidence in the court of law and should not be used in any advertising media without the written permission of M/S GREENZONE ENVIRONMENTAL LABORATORY, Dighoi.

* End of Report**

MPS/2/2022-MPS
Government of India
Ministry of Coal
(MPS Section)

Room No. 622-A, Shastri Bhawan,
New Delhi, dated 28th October, 2022

Sub: Guidelines for the Management of Mines discontinued/ abandoned/ closed before the year 2009.

A large number of coal mines were discontinued/abandoned/closed before 2009 when 1st mine closure guidelines were issued by the Ministry of Coal. However, these guidelines were silent about them. There is a need to close these mines scientifically in such a manner that they provide benefit to the community, prevent illegal mining, ensure the safety and repurposing of the mined-out land. Therefore, guidelines are being issued to provide guidance to all coal companies (including lignite) having discontinued/ abandoned/ closed mines after the nationalization of coal mines till 27th August 2009 (date of issuance of first coal mines closure guidelines). Copy of the same is enclosed. The guidelines intend to only provide an overall framework for the closure of mines and the details of final implementation plans are to be finalized and approved by the respective Company Boards. The overall goal of the guidelines is to restore the mined-out land as far as possible to its pre-mining stage, bring ecological balance and purposefully reutilise the land for the benefit of the country.

2. It is requested to take further necessary action in compliance of these guidelines and submit ATR to this Ministry on Quarterly basis.

This issues with the approval of the Competent Authority.

Encl: As above



(Hitlar Singh)

Under Secretary to the Govt. of India
E-mail: hitlar.singh85@nic.in

To,

1. The Chairman, CIL, Kolkata
2. CMDs of all Subsidiaries of CIL
3. CMD, SCCL
4. CMD, NLCIL

Copy to:

1. The Secretary, MoEF&CC, New Delhi
2. The Director General, DGMS, Dhanbad
3. The Coal Controller, New Delhi
4. NIC - to upload on portal of MoC
5. All sections of this Ministry

F. No. MPS/02/2022-MPS
Government of India
Ministry of Coal
[MPS Section]

Shastri Bhawan, New Delhi
Dated: 28th October, 2022

OFFICE MEMORANDUM

Subject: Guidelines for the Management of Mines discontinued/abandoned/closed before the year 2009

A large number of coal mines were discontinued/abandoned/closed before 2009 when 1st mine closure guidelines were issued by the Ministry of Coal. However, these guidelines were silent about them. There is a need to close these mines scientifically in such a manner that they provide benefit to the community, prevent illegal mining, ensure the safety and repurposing of the mined-out land. Therefore, the following guidelines are being issued to provide guidance to all coal companies (including lignite) having discontinued/ abandoned/ closed mines after the nationalization of coal mines till 27th August 2009 (date of issuance of first coal mines closure guidelines). The guidelines intend to only provide an overall framework for the closure of mines and the details of final implementation plans are to be finalized and approved by the respective Company Boards. The overall goal of the guidelines is to restore the mined-out land as far as possible to its pre-mining stage, bring ecological balance and purposefully reutilise the land for the benefit of the country.

1. Categorisation of non-operational mines -

In continuation to various circulars issued by DGMS and industry-accepted norms, the following categories will now be defined as specified below -

- 1.1. Discontinued Mines:** Discontinued mines mean such working in a mine as have been discontinued for any reason and are inaccessible or rendered inaccessible but are likely to be worked again. These mines can be re-opened as per provisions of CMR (Reg.-6) and Colliery Control Amendment Rule-2021 (Rule no.9 (ii)).
- 1.2. Abandoned Mines:** Abandoned mines mean such working as have been abandoned with no intention of working in the future for which the owner of the mine has already submitted a notice to the Chief Inspector of Mines, Regional Inspector, and District Magistrate about abandonment in the prescribed format (Reg. no. 5 of CMR, 2017).
- 1.3. Closed Mines:** Closed mines are those mines for which the owner/agent/manager has submitted notice of closure in the prescribed format (under CMR-2017, Reg.-5) to the Chief Inspector of Mines, Regional Inspector and District Magistrate and has also obtained the mine closure certificate from Coal Controller (As per mine closure guidelines-2020).

However, prior to the implementation of Mine Closure guidelines-2009, closed mines may be considered as those mines for which the owner of the mine has already submitted a notice to the Chief Inspector of Mines, Regional Inspector and District Magistrate about the closure in the prescribed format (Form-1 of Regulation – 6 of CMR-1957), and the extractable reserve as per mining plan has been exhausted.

2. Steps to be taken by mine owners to manage the non-operational mines -

2.1. Discontinued/Abandoned mines -

2.1.1. Mine re-operationalization: The owner of the mine shall explore possibilities to operationalize the concerned mines through various models, additional exploration if required and prepare a detailed action plan after due consultation ensuring transparency and objectivity. EC if required may be obtained following the guidelines of MoEFCC for reopening the mines.

2.1.2. Approval of the re-operationalization plan: The re-operationalization plan must be approved by the company board.

2.1.3. Modification in Mining Plan: Concerned Coal Company will modify the mining plan within 1 year of coming into force these guidelines if required.

2.1.4. Temporary mine closure plan: If the mine cannot be operationalized after initiatives taken under Para 2.1.1, then the owner of the mine shall prepare a temporary mine closure plan. A temporary mine closure plan would contain the mine closure activities such as protective works, safety measures, and any other required activity as per Para 8.10.1. of the Guidelines of preparation of Mining Plan & Mine Closure Plan dated 29th May 2020, in such a manner that if technology permits in the future, mining can be restarted. Mine owners should include short-term economic activities in the temporary closure plan without damaging the seams/reserves available.

2.1.5. Approval of temporary mine closure plan: The temporary closure plan must be approved by the company board. Also, the plan must include details of efforts undertaken to operationalize mine as per Para 2.1.1. The coal mine owners are required to obtain the approval for Temporary mine closure plan within one year from the date of issuance of these guidelines. In case temporary mine closure plan is not prepared by CMPDI, then it may be vetted by a third-party expert agency approved by the central government, like Central Mine Planning and Design Institute Ltd. (CMPDI), National Environment Engineering Research Institute (NEERI), Indian Institute of Technology (IIT-ISM) etc. before submitting it to the Company Board.

2.1.6. Implementation of temporary closure plan: After the approval of the mine closure plan, the owner of mine will carry out mine closure activities as detailed in the temporary mine closure plan within 3 years, failing which appropriate action would be taken against the mine owner.

2.1.7. The Government may at any time before the closure of the mine, require certain activities to be included in the mine closure plans, which it may consider necessary for the safety and conservation of the environment or in compliance with any modification/ amendment in the relevant legislation.

2.2. Closed Mines -

2.2.1. Final mine closure plan: In the case of closed mines, the owner of the concerned mine shall prepare a Final mine closure plan. The Final Mine closure plan should be prepared as per the Guidelines for preparing the Mining Plan & Mine Closure plan dated 29th May 2020. However, only the mine closure part is to be prepared in case of these mines.

- 2.2.2. Approval of Final mine closure plan:** The Final mine closure plan has to be approved by the company board. The mine owners shall ensure mine closure as per the mine closure plan approved by the Company Board. The coal mine owners are required to obtain the approval of the Final mine closure plan within one year from the date of issuance of these guidelines. In case final mine closure plan is not prepared by CMPDI, then it may be vetted by a third-party expert agency approved by the central government, like Central Mine Planning and Design Institute Ltd. (CMPDI), National Environment Engineering Research Institute (NEERI), Indian Institute of Technology (IIT-ISM) etc. before submitting it to the Company Board.
- 2.2.3. Implementation of Final mine closure plan:** After the approval of the Company Board, the owner of mine will carry out mine closure activities as detailed in the Final mine closure plan within 5 years failing which appropriate action would be taken against the mine owner.
- 2.2.4. Alternate use of reclaimed Land:** After the closure of the mine, on the reclaimed land various project-specific economic repurposing activities can be carried out or reclaimed land to be leased out as per Ministry of Coal policy guidelines dated 22nd April 2022 for use of land acquired under the Coal Bearing Area (Acquisition & Development) Act, 1957.
- 2.2.5.** The Government may at any time before the closure of the mine require certain activities to be included in the mine closure plans, which it may consider necessary for the safety and conservation of the environment or in compliance with any modification/ amendment in the relevant legislation.

3. Social support measures -

- 3.1.** The air, water, and soil quality of the region surrounding 5 km of the discontinued/ abandoned/ closed mines should be monitored as per MoEFCC/CPCB defined acceptable standards and it is mandated to ensure that the closure plan must include all such activities needed to control the pollution from the concerned mines.
- 3.2.** The health camps must be organized on monthly basis to monitor the health of the population residing within 5 km of the discontinued/ abandoned/ closed mines with a special focus on respiratory diseases such as silicosis etc. The identified patients must be linked to local health administration for further treatment if required.
- 3.3.** A careful consideration is to be given to provide reskilling to the willing workers as per their need for their gainful employment.

4. Financial provision-

The financial provision for the closure activities of both temporary and final mine closure plans of the mines is to be made by the respective Coal Companies. Closure cost is to be estimated based on the required activities as per para 8.10.1 of guidelines for the preparation of the Mining Plan and Mine Closure Plan dated 29th May 2020 for implementing the approved closure plan. However, Coal India Ltd. may consider to levy additional fee on per tonne basis to be paid by the coal consumers to meet the cost of mine closure with the approval of Board and to provide funding for those subsidiaries which are not able to fund the closure of these mines.

5. Exceptions -

- 5.1. In certain cases, there are more than one mine below the same surface land. One mine may have been closed due to exhaustion of resources but other mines are running. In such cases, final mine closure activities related to surface land may have to be deferred till the closing of all the mines.
- 5.2. A mine can be planned and worked covering only a part of a Coal Block. The present mine can be extended to cover the remaining part of the Coal Block in the future. Hence, Final Mine Closure activities for the present mine area may be deferred.
- 5.3. However, progressive closure activities are to be carried out as per Mine closure guidelines 2020 for both the above cases.

6. Maintenance of records & submission of returns -

The owner shall maintain all the records of works done for the closure of the mine and keep them available till the final closure certificate is obtained from the competent authority. DGPS survey of Abandoned/Discontinued mines linked to the national grid to be kept available.

7. Monitoring -

CCO to carry out the inspection of all the mines, check the records maintained by the owner of the work done and give written observation. Concerned mine authorities should submit compliance to the observations made. Also, Coal companies are to submit a quarterly report of work done towards closure to CCO. The Ministry of Coal will do a quarterly review of the progress of the closure of mines.

8. Nothing in present guidelines shall absolve the owner of the mine from fulfilling various statutory requirements under other applicable statutes and obligations. Further, guidelines are without any prejudice to any other relevant rules and regulations, such as those issued by the state government, Ministry of environment, forest & climate change, Ministry of Labour, and employment.


28/10/22
(M. Nagaraju)

Additional Secretary to the Government of India

To,

Mine Owners

Copy to:

1. Secretary, MoEF&CC
2. DG, DGMS
3. Coal Controller



1459
Pollution Control Board:: Assam
Bamunimaidam; Guwahati-21

(Department of Environment & Forests :: Government of Assam)

Phone: 0361-2652774 & 2550258; Fax: 0361-2550259

Website: www.pcbassam.org

ANNEXURE A-7

401



No. PCBA/DIB/T-15/22-23/14

Dated Guwahati, the 5th April, 2023

“CONSENT TO OPERATE”

“CONSENT TO OPERATE” (CTO), under Section 25 of Water (Prevention & Control of Pollution) Act, 1974 and Section 21 of Air (Prevention & Control of Pollution) Act, 1981 as amended and Rules framed thereunder, is granted to:

- i) Name of Industry : M/s Tikak Colliery (Tikak OCP and Tikak Extension OCP) (A unit of North Eastern Coalfields, Coal India Ltd.)
- ii) Name of the Occupier / Applicant and Designation : Sarat Chandra Mukherjee, Agent.
- iii) Address of the unit : North Eastern Coalfields, Coal India Ltd., Tinsukia, Assam- 786182.
- iv) Category/ Type of the project : Open Cast Coal Mining Project (RED category).
- v) Cost of the project : Rs. 15038.84 Lakhs.
- vi) Details of Product :

Sl No.	Product	Capacity
1	COAL	0.4 MMTPA

- vi) DG Set : 1 x 320 KVA

TERMS AND CONDITIONS

1. The Consent to Operate (CTO) has been accorded based on the particulars furnished by the applicant vide Application ID 1627444 and subject to addition of further more conditions if so warranted by subsequent developments. The CTO will automatically become invalid if there is any changes, modification, alteration, expansion or deviation is made in actual practice without prior permission of the Board.
2. The CTO is valid for the period up to 31.03.2027.
3. The CTO may be modified, suspended in whole or in part or withdrawn by the Board during its term for cause including, but not limited to the following:-
 - a) Violation of any Terms and Conditions of this CTO;
 - b) Obtaining the CTO by misrepresentation or failure to disclose fully all relevant facts;
 - c) If any genuine public complaint against the unit is received;
4. The unit shall obtain prior “Consent to Establish” from the Board, for any expansion, alteration, modification, modernization of process or products.
5. The unit shall strictly comply with all the specific and general conditions stipulated by the MoEF&CC, Govt. of India in the Environmental Clearance, accorded to the unit vide No.-J-11015/221/2007-IA.II (M), dtd. 08.07.2014.
6. Maximum production capacity shall not exceed the limit, as prescribed in the EC.

১৫/৪/২৩

- 
7. Topsoil shall be stacked properly with proper slope and shall be used for reclamation and development of green belt.
 8. The land after mining shall be brought back for agriculture purpose.
 9. The unit shall provide well pitched garland drains around Over Burden Dumps (OBD)s.
 10. Regular water sprinkling at the haul roads to suppress road dust generation during plying of heavy vehicles.
 11. The project proponent shall develop a greenbelt/plantation area with native trees covering at least 33% of the total plot area.
 12. The project authority should install a Display Board as per the Boards notification no.PCBA/LGL-95/2021/Notification/01 dtd.11.11.2021. (Appendix-A).
 13. The unit should apply for renewal of "Consent to Operate" at least ninety (90) days before expiry of this CTO. Board renews consent for five (5) years, subject to application submitted with full payment for the entire period.

Specific Conditions:

A) Air / Emission Aspect:-

1. The industry shall comply with the Air Quality Standards, Notified by MoEF&CC, Govt. of India, vide G S R 742 (E), dtd 25.09.2000 (Appendix B) in the coal mines.
2. The industry shall comply with the ambient noise level standards notified by MoEF&CC, Govt. of India, vide G S R 7, dtd. Dec. 1998, as mentioned herein under,

Limit in dB (A) Leq	
Day Time (6:00am-10:00pm)	Night Time (10:00pm-6:00am)
75	70

3. The unit shall follow the Standards and Guidelines for control of Noise Pollution from Stationary Diesel Generator Sets notified by MoEF&CC, Govt. of India, vide GSR.7 dtd. Dec. 22, 1998 (Appendix – C)
4. The Ambient Air Quality within the Plant premises shall be complied with the National Ambient Air Quality Standards notified by MoEF&CC, Govt. of India vide G.S.R.826(E) dtd.16.11.2009, as per (Appendix – D); especially w.r.t. PM_{2.5}, PM₁₀, SO_x & NO_x etc.

B) Water Aspect:-

1. Surface runoff and leachate generated form the coal dumping area shall be neutralized in properly designed neutralization pit.
2. For discharge of treated effluent the unit shall comply with the effluent discharge standards, notified by MoEF&CC, Govt. of India vide G.S.R.742(E) dated 25.09.2000, (Appendix-B)
3. The treated water shall be reused for greenbelt development, gardening purposes etc.

C) Hazardous Waste Aspect:

1. Authorization under Hazardous & Other Waste (Management & Transboundary Movement) Rules, 2016, shall be obtained from the Pollution Control Board, Assam.
2. The project authorities shall comply with the provisions of the said Rules.
3. Adequate facility shall be provided for collection and storage of used /spent oil, which shall be sent to registered recyclers for recycling.



4. The unit shall dispose of any other hazardous waste generated by the unit as per the provisions of the Rules.
5. The unit shall identify and quantify all streams of Hazardous Waste generation as per Schedule -I and maintain proper record in Form -III of the said Rules.
6. The unit should submit annual return in Form -IV under the said rules on or before 30th June every year.

The unit shall submit compliance report of the mandated conditions by April 15 of every year to Member Secretary, PCBA as well as to Regional Office, Dibrugarh, PCBA. The Board will have the liberty to withdraw the CTO if adequate pollution control and safety measures are not taken.

(Shantanu Kr. Dutta)

Member Secretary

Dated Guwahati, the 5 April, 2023

Memo No. PCBA/DIB/T-14/22-23/04-A

Copy to:

M/s Tikak Colliery (Tikak OCP and Tikak Extension OCP) (A unit of North Eastern Coalfields, Coal India Ltd.), North Eastern Coalfields, Coal India Ltd., Tinsukia, Assam -786182, for information & compliance of conditions.

(Shantanu Kr. Dutta)

Member Secretary



**Pollution Control Board, Assam
Bamunimaidam, Guwahati-21**



NOTIFICATION

No. PCBA/LGL-95/2021/Notification/01

Dated Guwahati, the 11th Nov, 2021

In exercise of the powers conferred under Section-5 of the Environment (Protection) Act, 1986 as amended till date and keeping in view the need of public interest towards dissemination of vital information regarding Consent/Authorization of this Board, all industries are hereby directed to install a Display Board of minimum size 5'x4', near the main entrance gate.

The format of the display board is given below:

Name and Address of the Unit : M/s.	
Description of Consent/Authorization	Details
Consent to Establish (CTE)	No.: Date of Issue:
Consent to Operate (CTO)	No.: Date of validity:
Authorization under Hazardous & Other waste (Management & Transboundary Movement) Rules, 2016 (if applicable)	No.: Date of Issue: Date of validity:

Member Secretary

Memo No. PCBA/LGL-95/2021/Notification/01-A
Copy to:

Dated Guwahati, the 11th Nov, 2021

1. The Commissioner & Secretary to the Govt. of Assam, Department of Environment & Forest, Dispur for kind information.
2. P.A. to the Chairman, PCBA for kind appraisal of the Hon'ble Chairman.
3. The All Regional Heads, PCBA for information & necessary action.
4. M/S APS Advertising Pvt. Ltd, Guwahati-1. They are requested to publish the "NOTICE" in "the Assam Tribune" and "Dainandini Barta" on 12.11.2021.
5. Notice Board, Head Office / Website (www.pcbassam.org), PCBA.


Member Secretary

STANDARDS FOR COAL MINES

Notification No. GSR 742(E), Dt: 25th September 2000

(Stipulated by Ministry of Environment and Forests (MoEF), New Delhi)

1. Air Quality Standards

The Suspended Particulate Matter (SPM), Respirable Particulate Matter (RPM), Sulphur dioxide (SO₂) and Oxides of Nitrogen (NO_x) concentration in downwind direction considering predominant wind direction, at a distance of 500 metres from the following dust generation sources shall not exceed the standards specified in the Table I, II and III given below:

Dust Generating Sources:

Loading or unloading, Haul road, coal transportation road, Coal handling plant (CHP), Railway siding, Blasting, Drilling, Overburden dumps, or any other dust generating external sources like coke ovens (hard as well as soft), briquette industry, nearby road etc.

Table - I

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
New Coal Mines (Coal Mines commenced operation after the date of publication of this notification)	Suspended Particulate Matter (SPM)	Annual Average *	360 µg/m ³	- High Volume Sampling (Average flow rate not less than 1.1 m ³ /min)
		24 hours **	500 µg/m ³	
	Respirable Particulate Matter (size less than 10 µm) (RPM)	Annual Average *	180 µg/m ³	- Respirable Particulate Matter sampling and analysis
		24 hours **	250 µg/m ³	
Sulphur Dioxide (SO ₂)	Annual Average *	80 µg/m ³	- Improved West and Gaeke method	
	24 hours **	120 µg/m ³	- Ultraviolet fluorescence	
Oxide of Nitrogen as NO ₂	Annual Average *	80 µg/m ³	- Jacob & Hochheiser Modified (Na-Arsenic) Method	
	24 hours **	120 µg/m ³	- Gas phase Chemiluminescence	



Table - II

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
II Existing Coal Mines (Which commenced operation prior to the date of publication of this notification)	Suspended Particulate Matter (SPM)	Annual Average *	430 $\mu\text{g}/\text{m}^3$	- High Volume Sampling (Average flow rate not less than 1.1 m^3/minute)
		24 hours **	600 $\mu\text{g}/\text{m}^3$	
	Respirable Particulate Matter (size less than 10 μm) (RPM)	Annual Average *	215 $\mu\text{g}/\text{m}^3$	- Respirable Particulate Matter sampling and analysis
		24 hours **	300 $\mu\text{g}/\text{m}^3$	
Sulphur Dioxide (SO_2)	Annual Average *	80 $\mu\text{g}/\text{m}^3$	- Improved West and Gaeke method Ultraviolet fluorescence	
	24 hours **	120 $\mu\text{g}/\text{m}^3$		
Oxide of Nitrogen as NO_2	Annual Average *	80 $\mu\text{g}/\text{m}^3$	- Jacob & Hochheiser Modified (Na-Arsenic) Method - Gas phase Chemiluminescence	
	24 hours **	120 $\mu\text{g}/\text{m}^3$		

Note:

* Annual Arithmetic mean for the measurements taken in a year, following the guidelines for frequency of sampling laid down in clause 2.

** 24 hourly / 8 hourly values shall be met 92% of the time in a year. However, 8% of the time it may exceed but not on two consecutive days.

Unauthorised construction shall not be taken as a reference of nearest residential or commercial place for monitoring.

In case any residential or commercial or industrial place falls within 500 metres of any dust generating sources, the National Ambient Air Quality Standards notified under schedule VII shall be applicable.

Frequency of Sampling

- Air quality monitoring at a frequency of once in a fortnight at the dust generating sources given in clause 1 shall be carried out.
- As a result of monthly monitoring, if it is found that the value of the pollutant is less than 50% of the specified standards for three consecutive months, then the sampling frequency may be shifted to two days in a quarter year (3 months).
- In case, the value has exceeded the specified standards, the air quality sampling shall be done twice a week. If the results of four consecutive weeks indicate that the concentration of pollutants is within the specified standards, then fortnight monitoring may be reverted to.



2. Effluent Standards

The standards for effluent discharge into sewer or stream or land, are given below:

PH	:	5.5 to 9.0
Chemical Oxygen Demand (COD)	:	250 mg/l
Total Suspended Solids (TSS)	:	100 mg/l 200 mg/l (Land for irrigation)
Oil & Grease (O & G)	:	10 mg/l

(Monitoring frequency of these parameters shall be once in a fortnight)

Optional parameters: All other parameters indicated in the general standards for discharge of environment pollutants under Schedule VI, shall be in addition to the effluent standards specified under clause 3.

(Monitoring frequency shall be once in a year for the optional parameters)

3. Noise Level Standards

Time duration : 6.00 AM - 10.00 PM 10.00 PM - 6.00 AM

Noise level : Leq 75 dB(A) Leq 75 dB(A)

(Monitoring frequency for noise level shall be once in a fortnight)

Occupational exposure limit of noise specified by Director General of Mines Safety (DGMS) shall be complied with by the local mines.

২১/৩/১৩

1.66.0 STANDARDS AND GUIDELINES FOR CONTROL OF NOISE POLLUTION FROM STATIONARY DIESEL GENERATOR (DG) SETS.

(A) Notes standards for DG sets (15-500KVA)

The total sound power level LW of DG set should less than $94 + 10 \log 10\text{KVA}$, dB (A), at the manufacturing stage, whether; KVA is the nominal power rating of a DG set.

This level should fall by 5dB (A) every five years, till 2007, i.e. in 2002 and then in 2007.

(B) Mandatory Acoustic enclosure/Acoustic treatment of room for stationary DG sets (5KVA and above):

Noise from the DG set should be controlled by providing an acoustic enclosure on by treating the room acoustically.

The acoustic enclosure/acoustic treatment of the room should be designed for minimum 25 dB (A) insertion Loss or for meeting the ambient noise standards, which ever is on the higher side (if the actual ambient noise is on the higher side, it may not be possible to check the performance of the acoustic enclosure/acoustic treatment. Under circumstances the performance may be checked for noise reduction up to actual ambient noise level, preferably, in the night time). The measurement for insertion Loss may be done at different points at 0.5 from the acoustic enclosure/room, and then averaged. (See the Schematic Diagram).

The DG set should also be provided with proper exhaust muffler with Insertion Loss of minimum 25 dB (A).

Guidelines for the manufacturers Users of DG sets 5KVA and above:

- The manufacture should offer to the user a standard acoustic enclosure of 25dB (A). Insertion Loss and also a suitable exhaust muffler with Insertion Loss of 25dB (A).
- The user should make efforts to bring down the noise levels due to the DG set, outside his premises, within the ambient noise requirements by proper siting and control measures.
- The manufacturer should furnish noise power levels of the unsalaried DG sets as per standards prescribed under (A).
- The total sound power level of a DG set, at the user's and, shall be within 2dB(A) of the total sound power level of the DG set, at the manufacturing stage, as prescribed under (A).
- Installation of DG set must be strictly in compliance with the recommendation of the DG set manufacture.
- A proper routines and preventive maintenance procedure for the DG set manufacturer which would help prevent noise levels of the DG set from deteriorating with use.

2.44.0 NOISE (AMBIENT STANDARDS)

Area Code	Category of Area	Limit in dB (A) Leq.	
		Day time	Night time
A.	Industrial area	75	70
B.	Commercial area	65	55
C.	Residential area	55	45
D.	Silence Zone	50	40

Note – 1 : Day time is reckoned in between 6.00 A.M. and 9.00 P.M.

Note – 2 : Night time is reckoned in between 9.00P.M. and 6.00 A.M.

Note – 3 : Silence zone is defined as areas up to 100 meters around such premises as hospitals, educational institutions and courts. The silence zones are to be declared by the competent Authority.

Note – 4 : Mixed categories of areas should be declared as one of the four above mentioned categories by the competent Authority and the corresponding standard shall apply.

*Source: EPA, 1986
[GSR 7, dated Dec.22, 1998]*



Source: EPA, Notification [GSR 1063 (E), dated Dec., 26, 1998]

3.22.0 DIESEL GENERATOR SETS : STACK HEIGHT

1. The minimum stack height to be provided with each generator set shall be worked out as per the following formula: - $H = h + 0.2 \sqrt{\text{KVA}}$, where H = Total height of stack in meter.

h = Height of the building in meters where generator set is installed.

KVA = Total generator capacity.

Adequate fire fighting measures have to be provided by the occupier of the premises. Based on the above formula the minimum stack height to be provided with different range of generator sets may be categories as follows:

Range of Generator sets	Minimum Stack Height
50 KVA	Ht. of the building + 1.5 metre.
50 - 100 KVA	Ht. of the building + 2.0 metre.
100 - 150 KVA	Ht. of the building + 2.5 metre.
150 - 200 KVA	Ht. of the building + 3.0 metre.
200 - 250 KVA	Ht. of the building + 3.5 metre.
250 - 300 KVA	Ht. of the building + 3.5 metre.

Similarly for higher KVA rating a stack height can be worked out using the above formula.

Source : Evolved by CPCB [Emission Regulations Part-IV: COINDS/26 1986-87]

4. A .32.0 Part - C

Sl. No. 1 Stack Gas : PM - 150 µg/Nm³

B. Ambient Air Standards:

Residential Area	Industrial Area	Sensitive Area
SO ₂ : 80* µg/m³	120* : µg/m³	30* : µg/m³
NO ₂ : 80* µg/m³	120* : µg/m³	30* : µg/m³
CO : 2.0** µg/m³	5.0** : µg/m³	1.0** : µg/m³

*24 hourly; ** 8 hourly

5. SCHEMATIC DIAGRAM OF D.G. SET IN AN ACOUSTIC ENCLOSURE No. Process/71/1998-99.

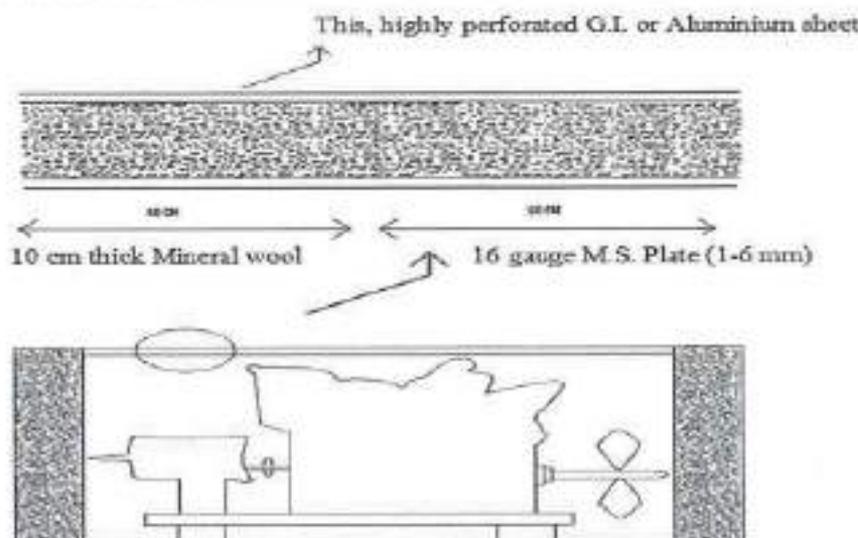


Fig. 4 Schematic Diagram of the DG set in an Acoustic Enclosure

Air required for the ventilation and breathing of the engine will have to be provided by means of intake louvers and exhaust louvers (called parallel baffle mufflers) projecting out of the enclosure.

Handwritten signature

(Shantanu Kr. Dutta)
Member Secretary

Pollution Control Board, Assam



MINISTRY OF ENVIRONMENT AND FORESTS NOTIFICATION

New Delhi, the 16th November, 2009

G.S.R. 826(E).— In exercise of the powers conferred by section 6 and section 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules further to amend the Environment (Protection) Rules, 1986, namely:—

1. (1) These rules may be called the Environment (Protection) Seventh Amendment Rules, 2009.
(2) They shall come into force on the date of their publication in the Official Gazette.
2. In the Environment (Protection) Rules, 1986 (hereinafter referred to as the said rules), in rule 3, in sub-rule (3B), for the words, brackets, figures and letters, "in columns (3) to (5) of Schedule VII", the words, brackets, figures and letters "in columns (4) and (5) of Schedule VII" shall be substituted.
3. For Schedule VII to the said rules and entries relating thereto, the following Schedule and entries shall be substituted, namely:—

**[SCHEDULE VII]
[Sec rule 3(3B)]
NATIONAL AMBIENT AIR QUALITY STANDARDS**

Sl No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO ₂) µg/m ³	Annual* 24 hours**	50 80	20 80	- Improved West and Gaeke - Ultraviolet fluorescence
2	Nitrogen Dioxide (NO ₂) µg/m ³	Annual* 24 hours**	40 80	30 80	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3	Particular Matter (size less than 10 µm) or PM ₁₀ µg/m ³	Annual* 24 hours**	60 100	60 100	- Gravimetric - TOEM - Beta attenuation
4	Particulate Matter (size less than 2.5 µm) or PM _{2.5} µg/m ³	Annual* 24 hours**	40 60	40 60	- Gravimetric - TOEM - Beta attenuation

(1)	(2)	(3)	(4)	(5)	(6)
5	Ozone (O ₃) µg/m ³	8 hours** 1 hour**	100 180	100 180	- UV photometric - Chemiluminescence - Chemical Method
6	Lead (Pb) µg/m ³	Annual* 1 hour**	0.50 1.0	0.50 1.0	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon
7	Carbon Monoxide(CO) mg/m ³	8 hours** 1 hour**	02 04	02 04	- Non Dispersive Infra Red (NDIR) spectroscopy
8	Ammonia(NH ₃) µg/m ³	Annual* 24 hour**	100 400	100 400	- Chemiluminescence - Indophenol blue method
9	Benzene (C ₆ H ₆) µg/m ³	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(α) Pyrene(BaP) – particulate phase only, ng/m ³	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m ³	Annual*	06	06	- AAS ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m ³	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note.— Whenever and wherever monitoring results on two constitutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation".

[F.No –Q-15017/43/2007-CPW]
RAJNEESH DUBE, Jt. Secy.

Note.— The principal rules were published in the Gazette of India, Extraordinary vide number S.O.844(E), dated the 19th November, 1986; and subsequently amended vide numbers S.O. 433(E), dated the 18th April, 1987; G.S.R. 176 (E) dated the 2nd April 1996; and were recently amended vide numbers G.S.R. 97(E), dated the 18th February, 2009; G.S.R. 149(E), dated the 4th March, 2009; G.S.R 512(E), dated the 9th July, 2009; G.S.R. 543(E), dated the 22nd July, 2009; G.S.R. 595(E), dated the 21st August, 2009; and G.S.R. 794(E), dated the 4th November, 2009.



1470 **ANNEXURE A-8**
Pollution Control Board:: Assam
Bamunimaidam; Guwahati-21
(Department of Environment & Forests :: Government of Assam)
Phone: 0361-2652774 & 2550258; Fax: 0361-2550259
Website: www.pcbassam.org

412



No. WB/DIB/T-3926/08-09/279

Dated Guwahati, the 6th May, 2023

“CONSENT TO OPERATE”

“CONSENT TO OPERATE” (CTO), under Section 25 of Water (Prevention & Control of Pollution) Act, 1974 and Section 21 of Air (Prevention & Control of Pollution) Act, 1981 as amended and Rules framed thereunder, is granted to:

- | | | |
|--|---|--|
| i) Name of Unit | : | M/s Tirap Colliery (Tirap OCP), North Eastern Coalfields (A unit of Coal India Ltd.) |
| ii) Name of the Occupier / Applicant and Designation | : | Binod Bihari Sahoo, Agent and Manager. |
| iii) Address of the unit | : | Ledo, Dist. Tinsukia, Assam-786182. |
| iv) Type / Category of the project | : | Coal Mining (RED category). |
| v) Cost of the Project | : | Rs. 1680.60 Lakhs. |
| vi) Details of the Project | : | |

Sl No.	Product	Quantity/ Capacity
1	Coal	6,00,000 MT/ Year.

TERMS AND CONDITIONS:

1. The Consent to Operate (CTO) has been accorded based on the particulars furnished by the applicant vide Application ID **1623485** and subject to addition of further or more conditions if so warranted by subsequent developments. The Consent will automatically become invalid if any change or alteration or deviation is made in actual practice without prior permission of the Board.
2. The CTO is valid for a period up to **31.03.2024**, subject to obtaining the **Environmental Clearance (EC)** for the unit from **MoEF & CC, Govt. of India**, immediately.
3. **The unit shall not continue their mining activities without obtaining the EC from MoEF&CC.**
4. The CTO may be modified, suspended in whole or in part or withdrawn by the Board during its term for cause including, but not limited to the following:-
 - a) Violation of any Terms and Conditions of this CTO;
 - b) Obtaining the CTO by misrepresentation or failure to disclose fully all relevant facts;
 - c) If any genuine public complaint against the unit is received;
5. The unit shall obtain prior “Consent to Establish” from the Board for any expansion, modification or modernization of the project.
6. **The unit shall strictly comply with all the specific and general conditions stipulated by the MoEF&CC, Govt. of India in the Terms of Reference, accorded to the unit.**
7. **Topsoil shall be stacked properly with proper slope and shall be used for reclamation and development of green belt.**
8. **The land after mining shall be brought back for agriculture purpose.**
9. **The unit shall provide well pitched garland drains around Over Burden Dumps (OBD)s.**
10. The unit shall apply for renewal of “Consent to Operate” at least **Ninety (90)** days before expiry of this CTO. Board renews consent for **five (5)** years, subject to application submitted with full payment for the entire period.
11. **The project proponent shall develop a greenbelt / plantation area with native trees covering at least 33% of the total plot area.**
12. **Proper housekeeping shall be maintained. Burning of any Wastes within the premises is strictly prohibited.**

13. The project authority should install a Display Board as per the Boards Notification no. PCBA/LGL-95/2021/Notification/01 dtd.11.11.2021. (Annexure-A)

Specific Conditions:

A. Air / Emission Aspect:-

1. The unit shall comply with the Air Quality Standards, notified by MoEF&CC, Govt. of India vide GSR 742 (E), dtd. 25.09.2000 (Appendix – B) in the coal mines.
2. The unit shall comply with the ambient noise level standards, Notified by MoEF&CC, Govt. of India, vide GSR 742, dtd.25.09.2000, as mentioned herein under:-

Area Code	Category of Area	Limit in dB(A) Leq	
		Day time (6.00 AM-10.00 PM)	Night time (10.00 PM-6.00 AM)
A	Industrial area	75	75

3. The Ambient Air Quality within the unit premises shall be complied with the **National Ambient Air Quality Standards**, Notified by MoEF&CC, Govt. of India vide G.S.R.826(E) dtd.16.11.2009, with respect to PM_{2.5}, PM₁₀, SO_x, NO_x etc. (Appendix-C).
4. Major haul roads and material transfer points shall be fitted with water sprinkler system to check fugitive emissions at the transfer points, haulage roads etc.
5. Vehicular emissions shall be kept under control and regularly monitored. The Dumpers / Trucks shall have **Pollution under Control (PUC)** certificate.

B. Water Aspect:

1. Discharge of effluent from the unit shall meet with the industry specific effluent discharge standards, notified by MoEF&CC, Govt. of India vide G.S.R.742(E) dated 25.09.2000, (Appendix-B).
2. The treated water shall be reused for greenbelt development, gardening purposes etc.
3. Regular monitoring of ground water level and quality near the coal dumping / storage areas shall be carried out.
4. (i) Storm water shall not be allowed to mix with effluent and/or floor washings.
(ii) Storm water within the battery limits of coal dumping yard shall be channelized through separate drain/pipe passing through an Oil & Grease catch pit cum Sedimentation Tank.
(iii) For storm water discharge the unit shall meet with general effluent discharge parameters standard, notified by MoEF&CC, Govt. of India vide G.S.R. 422 (E), dtd. 19.05.1993 (Appendix – D).

C. E - Waste Aspect:

Electronic wastes generated in the unit shall be disposed of as per the provisions of the E-Waste (Management) Rules, 2022.

D. Hazardous Waste Aspect:

1. Authorization under Hazardous & Other Waste (Management & Trans boundary Movement) Rules, 2016, shall be obtained from the Board.
2. The project authorities shall comply with the provisions of the said Rules.
3. Adequate facility shall be provided for collection and storage of used oil/spent oil, which shall be sent to registered recyclers for recycling.
4. The unit shall dispose of any other hazardous waste generated by the unit as per the provisions of the Rules.
5. The unit shall identify and quantify all streams of Hazardous Waste generation as per Schedule –I and maintain proper record in Form –III of the said Rules.
6. The unit should submit annual return in Form –IV under the said rules on or before 30th June every year.

The unit shall submit compliance report of the mandated conditions by April 15 every year to Member Secretary, PCBA as well as to Regional Office, Dibrugarh, PCBA. The Board will have the liberty to withdraw the CTO if adequate pollution control and safety measures are not implemented by the unit.

(Shantanu Kr. Dutta)

Member Secretary

Dated Guwahati, the 2nd May, 2023

Memo No. WB/ DIB/T-3926/08-09/279 -A, 21/5

Copy to, ✓ M/s Tirap Colliery, (Tirap OCP) NE Coalfields, Coal India Ltd., Ledo, Dist: Tinsukia, Assam- 786182, for information & compliance of conditions.

(Shantanu Kr. Dutta)

Member Secretary



Pollution Control Board, Assam
Bamunimaidam, Guwahati-21



NOTIFICATION

No. PCBA/LGL-95/2021/Notification/01

Dated Guwahati, the 11th Nov, 2021

In exercise of the powers conferred under Section-5 of the Environment (Protection) Act, 1986 as amended till date and keeping in view the need of public interest towards dissemination of vital information regarding Consent/Authorization of this Board, all industries are hereby directed to install a Display Board of minimum size 5'x4', near the main entrance gate.

The format of the display board is given below:

Name and Address of the Unit : M/s.	
Description of Consent/Authorization	Details
Consent to Establish (CTE)	No.: Date of Issue:
Consent to Operate (CTO)	No.: Date of validity:
Authorization under Hazardous & Other waste (Management & Transboundary Movement) Rules, 2016 (if applicable)	No.: Date of Issue: Date of validity:

Member Secretary

Memo No. PCBA/LGL-95/2021/Notification/01-A

Dated Guwahati, the 11th Nov, 2021

Copy to:

1. The Commissioner & Secretary to the Govt. of Assam, Department of Environment & Forest, Dispur for kind information.
2. P.A. to the Chairman, PCBA for kind appraisal of the Hon'ble Chairman.
3. The All Regional Heads, PCBA for information & necessary action.
4. M/S APS Advertising Pvt. Ltd, Guwahati-1. They are requested to publish the "NOTICE" in "the Assam Tribune" and "Dainandini Baris" on 12.11.2021.
5. Notice Board, Head Office / Website (www.pcbassam.org), PCBA.

[Signature]
Member Secretary

STANDARDS FOR COAL MINES

Notification No. GSR 742(E), Dt: 25th September 2000

(Stipulated by Ministry of Environment and Forests (MoEF), New Delhi)



1. Air Quality Standards

The Suspended Particulate Matter (SPM), Respirable Particulate Matter (RPM), Sulphur dioxide (SO₂) and Oxides of Nitrogen (NO_x) concentration in downwind direction considering predominant wind direction, at a distance of 500 metres from the following dust generation sources shall not exceed the standards specified in the Table I, II and III given below:

Dust Generating Sources:

Loading or unloading, Haul road, coal transportation road, Coal handling plant (CHP), Railway siding, Blasting, Drilling, Overburden dumps, or any other dust generating external sources like coke ovens (hard as well as soft), briquette industry, nearby road etc.

Table - I

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
New Coal Mines (Coal Mines commenced operation after the date of publication of this notification)	Suspended Particulate Matter (SPM)	Annual Average *	360 µg/m ³	- High Volume Sampling (Average flow rate not less than 1.1 m ³ /min)
		24 hours **	500 µg/m ³	
	Respirable Particulate Matter (size less than 10 µm) (RPM)	Annual Average *	180 µg/m ³	- Respirable Particulate Matter sampling and analysis
		24 hours **	250 µg/m ³	
Sulphur Dioxide (SO ₂)	Annual Average *	80 µg/m ³	- Improved West and Gaeke method	
	24 hours **	120 µg/m ³	- Ultraviolet fluorescence	
Oxide of Nitrogen as NO ₂	Annual Average *	80 µg/m ³	- Jacob & Hochheiser Modified (Na-Arsenic) Method	
	24 hours **	120 µg/m ³	- Gas phase Chemiluminescence	

Table - II

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
II Existing Coal Mines (Which commenced operation prior to the date of publication of this notification)	Suspended Particulate Matter (SPM)	Annual Average *	430 $\mu\text{g}/\text{m}^3$	- High Volume Sampling (Average flow rate not less than 1.1 m^3/minute)
		24 hours **	600 $\mu\text{g}/\text{m}^3$	
	Respirable Particulate Matter (size less than 10 μm) (RPM)	Annual Average *	215 $\mu\text{g}/\text{m}^3$	- Respirable Particulate Matter sampling and analysis
		24 hours **	300 $\mu\text{g}/\text{m}^3$	
Sulphur Dioxide (SO_2)	Annual Average *	80 $\mu\text{g}/\text{m}^3$	- Improved West and Gaeke method Ultraviolet fluorescence	
	24 hours **	120 $\mu\text{g}/\text{m}^3$		
Oxide of Nitrogen as NO_2	Annual Average *	80 $\mu\text{g}/\text{m}^3$	- Jacob & Hochheiser Modified (Na-Arsenic) Method - Gas phase Chemiluminescence	
	24 hours **	120 $\mu\text{g}/\text{m}^3$		

Note:

* Annual Arithmetic mean for the measurements taken in a year, following the guidelines for frequency of sampling laid down in clause 2.

** 24 hourly / 8 hourly values shall be met 92% of the time in a year. However, 8% of the time it may exceed but not on two consecutive days.

- Unauthorised construction shall not be taken as a reference of nearest residential or commercial place for monitoring.

In case any residential or commercial or industrial place falls within 500 metres of any dust generating sources, the National Ambient Air Quality Standards notified under schedule VII shall be applicable.

Frequency of Sampling

- Air quality monitoring at a frequency of once in a fortnight at the dust generating sources given in clause 1 shall be carried out.
- As a result of monthly monitoring, if it is found that the value of the pollutant is less than 50% of the specified standards for three consecutive months, then the sampling frequency may be shifted to two days in a quarter year (3 months).
- In case, the value has exceeded the specified standards, the air quality sampling shall be done twice a week. If the results of four consecutive weeks indicate that the concentration of pollutants is within the specified standards, then fortnight monitoring may be reverted to.

2. Effluent Standards

The standards for effluent discharge into sewer or stream or land, are given below:

PH	:	5.5 to 9.0
Chemical Oxygen Demand (COD)	:	250 mg/l
Total Suspended Solids (TSS)	:	100 mg/l 200 mg/l (Land for irrigation)
Oil & Grease (O & G)	:	10 mg/l

(Monitoring frequency of these parameters shall be once in a fortnight)

Optional parameters: All other parameters indicated in the general standards for discharge of environment pollutants under Schedule VI, shall be in addition to the effluent standards specified under clause 3.

(Monitoring frequency shall be once in a year for the optional parameters)

3. Noise Level Standards

Time duration : 6.00 AM - 10.00 PM 10.00 PM - 6.00 AM

Noise level : Leq 75 dB(A) Leq 75 dB(A)

(Monitoring frequency for noise level shall be once in a fortnight)

Occupational exposure limit of noise specified by Director General of Mines Safety (DGMS) shall be complied with by the local mines.

mr 3/2 43

MINISTRY OF ENVIRONMENT AND FORESTS NOTIFICATION

New Delhi, the 16th November, 2009

G.S.R. 826(E).— In exercise of the powers conferred by section 6 and section 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules further to amend the Environment (Protection) Rules, 1986, namely:—

1. (1) These rules may be called the Environment (Protection) Seventh Amendment Rules, 2009.
(2) They shall come into force on the date of their publication in the Official Gazette.
2. In the Environment (Protection) Rules, 1986 (hereinafter referred to as the said rules), in rule 3, in sub-rule (3B), for the words, brackets, figures and letters, "in columns (3) to (5) of Schedule VII", the words, brackets, figures and letters "in columns (4) and (5) of Schedule VII" shall be substituted.
3. For Schedule VII to the said rules and entries relating thereto, the following Schedule and entries shall be substituted, namely:—

[SCHEDULE VII]

[Sec rule 3(3B)]

NATIONAL AMBIENT AIR QUALITY STANDARDS

Sl No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO ₂) µg/m ³	Annual* 24 hours**	50 80	20 80	- Improved West and Gaeke - Ultraviolet fluorescence
2	Nitrogen Dioxide (NO ₂) µg/m ³	Annual* 24 hours**	40 80	30 80	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3	Particular Matter (size less than 10 µm) or PM ₁₀ µg/m ³	Annual* 24 hours**	60 100	60 100	- Gravimetric - TOEM - Beta attenuation
4	Particulate Matter (size less than 2.5 µm) or PM _{2.5} µg/m ³	Annual* 24 hours**	40 60	40 60	- Gravimetric - TOEM - Beta attenuation

(1)	(2)	(3)	(4)	(5)	(6)
5	Ozone (O ₃) µg/m ³	8 hours** 1 hour**	100 180	100 180	- UV photometric - Chemiluminescence - Chemical Method
6	Lead (Pb) µg/m ³	Annual* 1 hour**	0.50 1.0	0.50 1.0	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using Teflon
7	Carbon Monoxide(CO) mg/m ³	8 hours** 1 hour**	02 04	02 04	- Non Dispersive Infra Red (NDIR) spectroscopy
8	Ammonia(NH ₃) µg/m ³	Annual* 24 hour**	100 400	100 400	- Chemiluminescence - Indophenol blue method
9	Benzene (C ₆ H ₆) µg/m ³	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(a) Pyrene(BaP) – particulate phase only. ng/m ³	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m ³	Annual*	06	06	- AAS ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m ³	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note.— Whenever and wherever monitoring results on two constitutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation".

[F.No –Q-15017/43/2007-CPW]
RAJNEESH DUBE, Jt. Secy.

Note.— The principal rules were published in the Gazette of India, Extraordinary vide number S.O.844(E), dated the 19th November, 1986; and subsequently amended vide numbers S.O. 433(E), dated the 18th April, 1987; G.S.R. 176 (E) dated the 2nd April 1996; and were recently amended vide numbers G.S.R. 97(E), dated the 18th February, 2009; G.S.R. 149(E), dated the 4th March, 2009; G.S.R 512(E), dated the 9th July, 2009; G.S.R. 543(E), dated the 22nd July, 2009; G.S.R. 595(E), dated the 21st August, 2009; and G.S.R. 794(E), dated the 4th November, 2009.

General Standards for discharge of environment Pollutants Part-A: Effluents

S. No.	Parameter	Standards			
		Inland surface water	public Sewers	Land for irrigation	Marine coastal areas
1	2	3			
		(a)	(b)	(c)	(d)
1	Color and Odor	5 to 25 Agreeable	-	5 to 25 Agreeable	5 to 25 Agreeable
2	Suspended Solids mg/l, Max.	100	600	200	(a) For process waste water-100 (b) For Cooling water effluent 10 percent above total suspended matter of influent
3	Particular size of suspended solids	Shall pass 850 micron IS Sieve	-	-	(a) Floatable solids, max. 3 mm (b) Settleable solids, max 850 microns
4*	---	-	-	---	-
5	pH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6	Temperature	Shall not exceed 5°C above the receiving water temperature	-	-	Shall not exceed 5°C above the receiving water temperature
7	Oil and grease mg/L Max	10	20	10	20
8	Total residual chlorine mg/l, Max	1.0	-	-	1.0
9	Ammonical nitrogen (as N), mg/l max.	50	50	-	50
10	Total Kjeldahl nitrogen (as NH ₃) mg/l, Max	100	-	-	100
11	Free Ammonia (as NH ₃) mg/l, Max	5.0	-	-	5.0
12	Biochemical oxygen demand (5 days at 20°C), mg/l Max	30	350	100	100
13	Chemical Oxygen demand, mg/l Max	250	-	-	250
14	Arsenic (as As) mg/l Max	0.2	0.2	0.2	0.2
15	Mercury (As Hg), mg/l max)	0.01	0.01	-	0.01
16	Lead (as Pb) mg/L, Max	0.1	1.0	-	2.0
17	Cadmium (as Cd) mg/l, Max	2.0	1.0	-	2.0
18	Hexavalent chromium, (as Cr) mg/l, Max	0.1	2.0	-	1.0
19	Total chromium (as Cr) mg/l, Max	2.0	2.0	-	2.0

20	Copper (as Cu) g/l, Max	3.0	3.0	-	3.0
21	Zinc (as Zn) mg/l, Max	5.0	15	-	15
22	Selenium (as Se) mg/l, Max	0.05	0.05	-	0.05
23	Nickel (as Ni) mg/l, Max	3.0	3.0	-	5.0
24*	-	-	-	-	-
25*	-	-	-	-	-
26	-	-	-	-	-
27	Cyanide (as CN), mg/l Max	0.2	2.0	0.2	0.2
28*	-	-	-	-	-
29	Fluoride (as F) mg/l Max	2.0	15	-	15
30	Dissolved Phosphates (as P), mg/l Max	5.0	-	-	-
31*	-	-	-	-	-
32	Sulphide (as S) mg/l Max	2.0	-	-	5.0
33	Phenolic Compounds (as C ₆ H ₅ OH) mg/l Max	1.0	5.0	-	5.0
34	Radioactive materials:				
	(a) Alpha emitter micro curie/ml	10 ⁻⁷	10 ⁻⁷	10 ⁻⁸	10 ⁻⁷
	(b) Beta emitter micro curie/ml	10 ⁻⁶	10 ⁻⁶	10 ⁻⁷	10 ⁻⁶
35	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
36	Manganese (as Mn)	2 mg/l	2 mg/l	-	2 mg/l
37	Iron (as Fe)	3 mg/l	3 mg/l	-	3 mg/l
38	Vanadium (as V)	0.2 mg/l	0.2 mg/l	-	0.2 mg/l
39	Nitrate Nitrogen	10 mg/l	-	-	20 mg/l
40	-	-	-	-	-

* Omitted by Rule 2 (d) (i) of the Environment (Protection) Third Amendment Rules, 1993 vide Notification No. G.S.R 801 (E) dated 31.12.1993

॥TRUE COPY॥