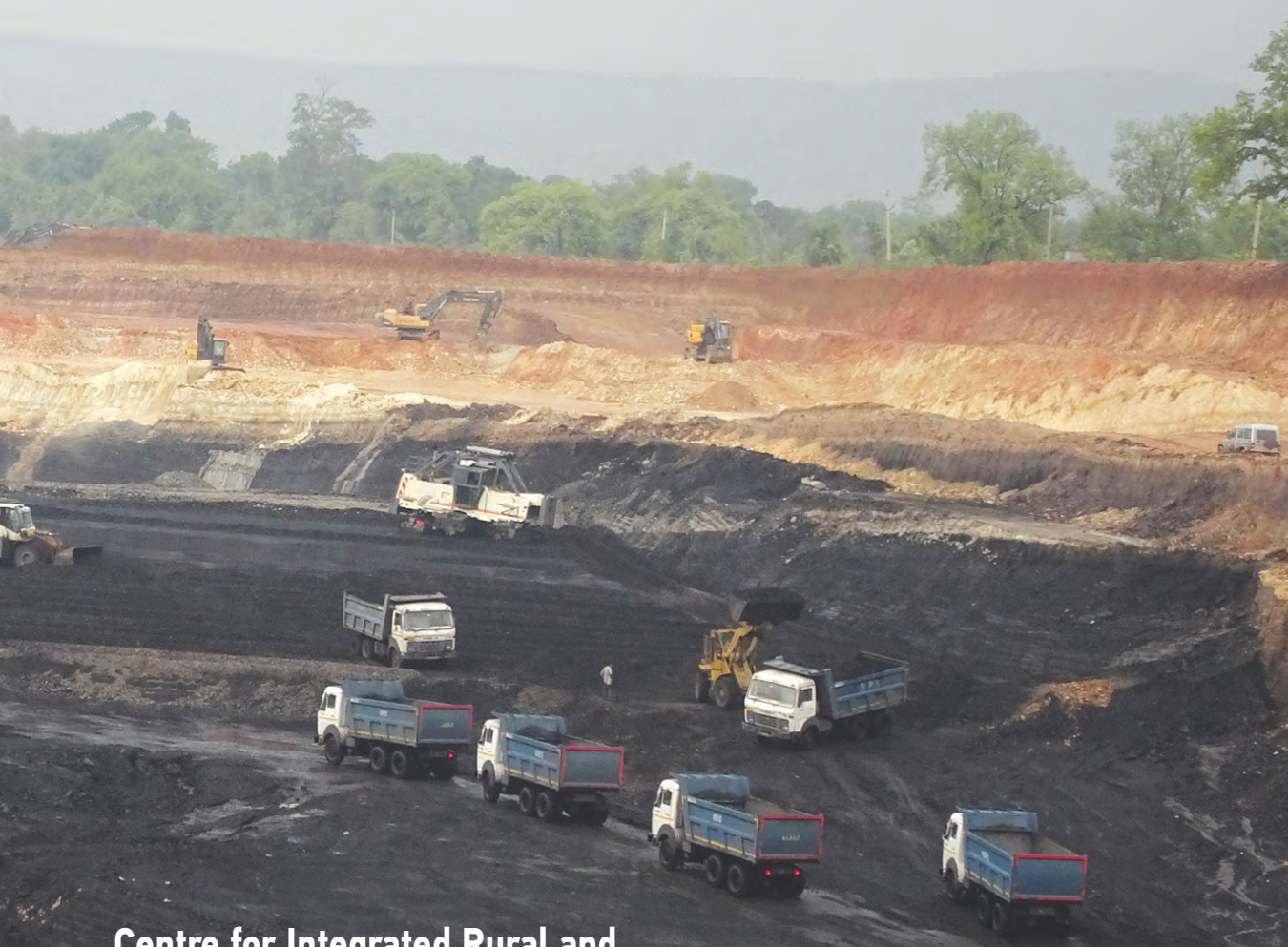
CLOSING THE ENFORCEMENT GAP: COMMUNITY-LED GROUNDTRUTHING STUDY OF ENVIRONMENTAL VIOLATIONS IN SUNDARGARH, ODISHA



Centre for Integrated Rural and Tribal Development (CIRTD), Rangadhipa, Sundargarh
Centre for Policy Research (CPR)– Namati Environmental Justice Program, New Delhi

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Design : Yashwant Rawat

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Contact information:

cirtdsngteam@gmail.com
namati-india@namati.org

CLOSING THE ENFORCEMENT GAP:

Community-Led Groundtruthing Study of Environmental Violations in Sundargarh, Odisha

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LIST OF ACRONYMS

CIRTD	-	Centre for Integrated Rural and Tribal Development
COD	-	Chemical Oxygen Demand
CPR	-	Centre for Policy Research
CTE	-	Consent to Establish
CTO	-	Consent to Operate
EC	-	Environmental Clearance
EIA	-	Environment Impact Assessment
HAEM	-	Hemgir Adivasi Ekta Manch
MCL	-	Mahanadi Coalfields Limited
MoEFCC	-	Ministry of Environment, Forest and Climate Change
NTFPs	-	Non-Timber Forest Products
O&G	-	Oil and Grease
OB	-	Overburden
OCP	-	Open Cast Project
RTI	-	Right to Information
SPCB	-	State Pollution Control Board
SPM	-	Suspended Particulate Matter
TSS	-	Total Suspended Solids

PREFACE

This publication highlights the non-compliances to environmental regulation and the impacts it has on the lives and livelihoods of affected communities due to coal mining projects undertaken by Mahanadi Coalfields Limited (MCL) in Hemgir block of Sundargarh district in the state of Odisha. A participatory process called "groundtruthing" was initiated with the cooperation of community leaders, activists from the Centre for Integrated Rural and Tribal Development (CIRTD), Sundargarh and researchers from the Centre for Policy Research (CPR)-Namati Environmental Justice Program, New Delhi.

Through the process of groundtruthing, it was found that conditions that environmental regulatory authorities have fixed for mining projects are not complied with. As a result, a number of issues and adverse impacts have emerged, impacting the lives and livelihoods of people living in the areas surrounding the mines. It was learned that affected people, community representatives or activists could collect information and data from the field as well as from the concerned authorities to find the gap between regulatory conditions and compliance with them. They cooperated with each other to find out the gaps and then sought remedial measures by approaching the concerned regulatory authorities. Through this groundtruthing process the people of affected communities were empowered as they learnt the law, how to collect evidence of non-compliance and which institution to approach. It could go on to help in strengthening not only the regulatory mechanism to frame new rules and conditions for redressing grievances of aggrieved people,. We are thankful to the concerned authorities who provided the required information and their subsequent responses towards providing remedial measures.

EXECUTIVE SUMMARY

Amidst local people's struggle against the issues of displacement and alienation from their agricultural land, community forests and other common property resources, the Ministry of Environment, Forest and Climate Change (MoEFCC), New Delhi granted clearance to the Kulda Open Cast Project (OCP) on December 24, 2002. Owned by Mahanadi Coalfields Limited (MCL), it is located in Hemgir block, Sundargarh district, Odisha. This Environmental Clearance (EC) was subject to compliance with certain conditions given in the EC letter. Other conditions to be complied with were given by the Odisha State Pollution Control Board (SPCB) in the Consent to Establish (CTE) issued on November 28, 2001 and the most recent Consent to Operate (CTO) dated March 27, 2017.

Soon after the mining operations started in 2002, the same local people faced problems related to contamination of air, water and soil that was directly impacting their livelihoods and daily activities. In addition, access through and around the mining area impacted and risks associated with the same came about as well.

A community-led "groundtruthing" process was initiated by the Centre for Integrated Rural and Tribal Development (CIRTD), Hemgir Adivasi Ekta Manch (HAEM) and the Centre for Policy Research (CPR)-Namati Environmental Justice Program. Through discussions, it was revealed that multiple problems and cross cutting issues had emerged due to the Kulda OCP's mining operations. The major ones that were prioritised were the following:

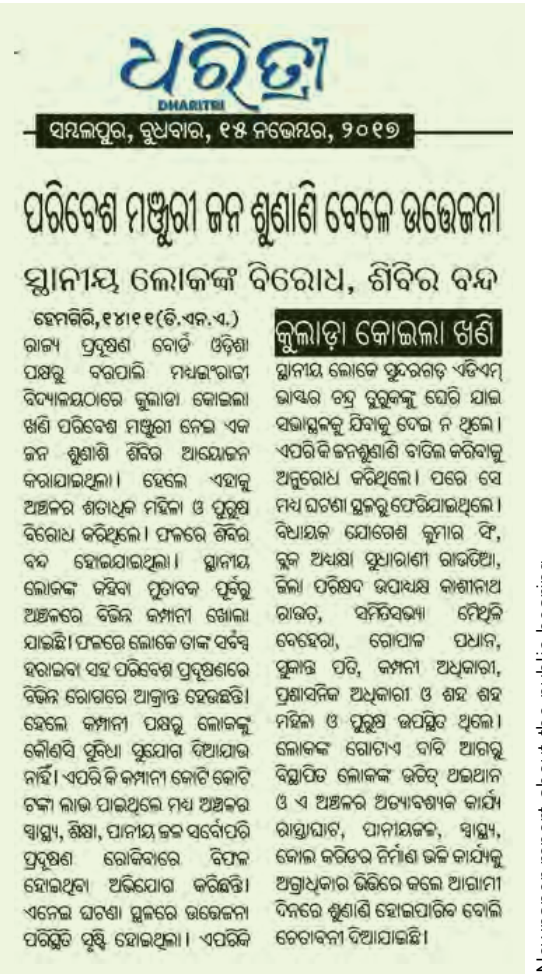
1. Excessive dust: This was mainly due to transportation of coal by uncovered vehicles. Further, all roads in the mining area had not been blacktopped or concretised. Sprinkling of water on these roads was not done regularly. Consequently, fugitive coal particles and dust covered not only the roads, but also agricultural land, water bodies and forests located alongside.
2. Spontaneous and continuous fire in coal mixed overburden (OB) dumps: This generated excessive heat and smoke in the area. At times, fire from the OB dumps spread towards villages and cropland. No guard wall or retaining wall had been constructed along the OB dumps to check the entrance of stray animals.
3. Water pollution of Basundhara *Nallah*: This was due to the discharge of contaminated or polluted water from mine sumps and lack of proper channelisation or maintenance of garland drains and sedimentation ponds. Rainwater that flowed over OB dumps was also polluting water bodies, agricultural land and forest land.

Conditions were identified in the CTE, EC and CTO issued under different laws that were directly linked with the impacts mentioned above. This was done with the purpose of understanding whether the impacts being faced by the communities were legally permissible or due to non-compliance with the law. Through the groundtruthing process, evidence was collected in instances where illegalities were found.

Complaint letters with evidence in connection to problems and specifying the non-compliance with certain conditions were filed by the concerned community volunteers with the Regional Office, SPCB, Jharsuguda and the Regional Office of the MoEFCC in Bhubaneswar. Follow up complaint letters were later filed the Regional Offices of the SPCB and MoEFCC.

On October 25, 2017 the Regional Officer, SPCB, Jharsuguda, after a field visit, responded positively to the complaints in connection with dust pollution due to transportation of coal by uncovered vehicles. Directions were given to MCL's General Manager, Bansundhara Garjanbahal area, to take necessary steps for the transportation of coal with tarpaulin covers. An order for sprinkling water more frequently on mine haulage roads as well as roads used for transportation of coal was also given. During his visit, the Regional Officer had observed a fire in one of the backfilled areas. In light of this, a further direction was given to segregate coal from the OB material before it was taken for backfilling. This would also help in checking fires in the OB dumps. The Regional Officer even called for a meeting with the officers of the mining project and the complainants.

The complaints about the contamination of water in Basundhara *Nallah* and other water bodies in the mine area and non-construction of a retaining wall are yet to be addressed.



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ସ୍ଥାନୀୟ ଲୋକଙ୍କ ବିରୋଧ, ଶିବିର ବନ୍ଦ

ହେମଗିରି,୧୪।୧୧(ତି.ଏନ.ଏ.)
ରାଜ୍ୟ ପ୍ରଦୂଷଣ ବୋର୍ଡ ଓଡ଼ିଶା ପକ୍ଷରୁ ବରପାଲି ମଧ୍ୟଙ୍ଗରାଜୀ ବିଦ୍ୟାଳୟଠାରେ କୁଲାଡା କୋଇଲା ଖଣି ପରିବେଶ ମାଞ୍ଚୁରୀ ନେଇ ଏକ ଜନ ଶୁଣାଣି ଶିବିର ଆୟୋଜନ କରାଯାଇଥିଲା। ହେଲେ ଏହାକୁ ଅଞ୍ଚଳର ଶତାଧିକ ମହିଳା ଓ ପୁରୁଷ ବିରୋଧ କରିଥିଲେ। ଫଳରେ ଶିବିର ବନ୍ଦ ହୋଇଯାଇଥିଲା। ସ୍ଥାନୀୟ ଲୋକଙ୍କ ଜଣିବା ପୂର୍ବରୁ ଅଞ୍ଚଳରେ ବିଭିନ୍ନ କମ୍ପାନୀ ଖୋଲା ଯାଇଛି। ଫଳରେ ଲୋକେ ତାଙ୍କ ସର୍ବସ୍ୱ ହରାଇବା ସହ ପରିବେଶ ପ୍ରଦୂଷଣରେ ବିଭିନ୍ନ ରୋଗରେ ଆକ୍ରାନ୍ତ ହେଉଛନ୍ତି। ହେଲେ କମ୍ପାନୀ ପକ୍ଷରୁ ଲୋକଙ୍କୁ କୌଣସି ସୁବିଧା ସୁଯୋଗ ଦିଆଯାଉ ନାହିଁ। ଏପରି କି କମ୍ପାନୀ କୋଟି କୋଟି ଟଙ୍କା ଲାଭ ପାଇଥିଲେ ମଧ୍ୟ ଅଞ୍ଚଳର ସ୍ୱାସ୍ଥ୍ୟ, ଶିକ୍ଷା, ପାନୀୟ ଜଳ ସର୍ବୋପରି ପ୍ରଦୂଷଣ ରୋକିବାରେ ବିଫଳ ହୋଇଥିବା ଅଭିଯୋଗ କରିଛନ୍ତି। ଏନେଇ ଘଟଣା ସ୍ଥଳରେ ଉତ୍ତେଜନା ପରିସ୍ଥିତି ସୃଷ୍ଟି ହୋଇଥିଲା। ଏପରିକି

କୁଲାଡ଼ା କୋଇଲା ଖଣି

ସ୍ଥାନୀୟ ଲୋକେ ସୁନ୍ଦରଗଡ଼ ଏଡିଏମ୍ ଭାସ୍କର ଚନ୍ଦ୍ର ଗୁରୁଙ୍କୁ ଘେରି ଯାଇ ସଭାସ୍ଥଳକୁ ଯିବାକୁ ଦେଇ ନ ଥିଲେ। ଏପରିକି ଜନଶୁଣାଣି ବାତିଲ କରିବାକୁ ଅନୁରୋଧ କରିଥିଲେ। ପରେ ସେ ମଧ୍ୟ ଘଟଣା ସ୍ଥଳରୁ ଫେରିଯାଇଥିଲେ। ବିଧାୟକ ଯୋଗେଶ କୁମାର ସିଂ, ବ୍ଲକ ଅଧକ୍ଷା ସୁଧାରାଣୀ ରାଉତିଆ, ଜିଲା ପରିଷଦ ଉପାଧ୍ୟକ୍ଷ କାଶୀନାଥ ରାଉତ, ସମିତିସଭ୍ୟା ମୈଥିଳି ବେହେରା, ଗୋପାଳ ପଧାନ, ସୁକାନ୍ତ ପତି, କମ୍ପାନୀ ଅଧିକାରୀ, ପ୍ରଶାସନିକ ଅଧିକାରୀ ଓ ଶହ ଶହ ମହିଳା ଓ ପୁରୁଷ ଉପସ୍ଥିତ ଥିଲେ। ଲୋକଙ୍କ ଗୋଟାଏ ଦାବି ଆଗରୁ ବିସ୍ଥାପିତ ଲୋକଙ୍କ ଉଚିତ୍ ଅଇଥାନ ଓ ଏ ଅଞ୍ଚଳର ଅତ୍ୟାବଶ୍ୟକ କାର୍ଯ୍ୟ ରାସ୍ତାଘାଟ, ପାନୀୟଜଳ, ସ୍ୱାସ୍ଥ୍ୟ, ଜୋଲ କରିଡର ନିର୍ମାଣ ଭଳି କାର୍ଯ୍ୟକୁ ଅଗ୍ରାଧିକାର ଭିତ୍ତିରେ ଜଲେ ଆଗାମୀ ଦିନରେ ଶୁଣାଣି ହୋଇପାରିବ ବୋଲି ଚେତାବନୀ ଦିଆଯାଇଛି।

Newspaper report about the public hearing

During the time of finalisation of the groundtruthing report, the findings were also shared with the concerned officials. The submissions drew upon the main issues discussed above-dust pollution, fire in OB dumps and water pollution. The public hearing to be held on November 14, 2017 in relation to expansion of the Kulda coal mine was postponed to January 10, 2018.

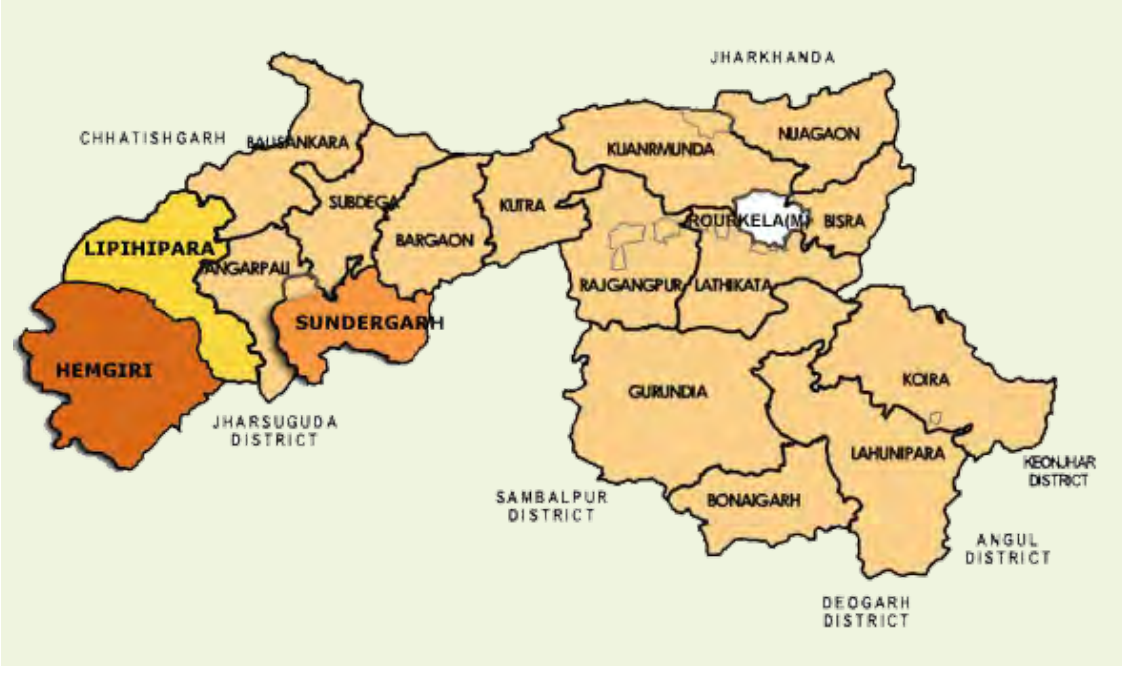
SECTION 1: BACKGROUND OF THE REGION AND THE ISSUES

About the area

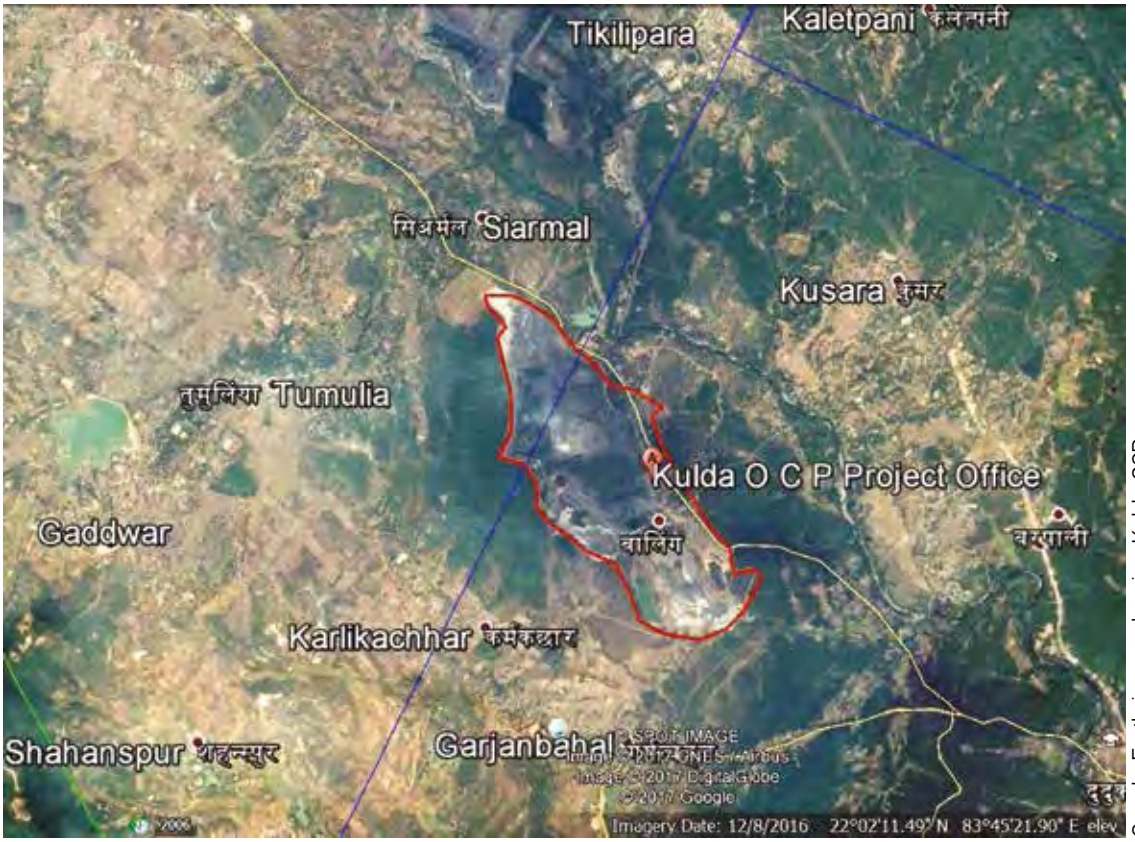
Odisha has huge mineral ore reserves. It is estimated that it is second to Jharkhand in terms of the quantity of coal reserves. As per records of the state government, mining in Odisha started during the 1900s. The first mining activity took place in the Ib Valley of Odisha. Due to the increasing demand for coal from both the public as well as private sector, the excavation of coal accelerated. There are two major coalfields in Odisha- Ib Valley Coalfield and Talchar Coalfield. These two coalfields come under Mahanadi Coalfields Limited (MCL), which is a subsidiary of Coal India, formed for Odisha.

Sundergarh district covers 16.96% of the total area covered by the state and it occupies a place of prominence in the mineral ores map of Odisha. The mineral ores of manganese, limestone, dolomite and iron constitute a major cover of the district, while bauxite, coal, soap stone/talc, lead, zinc and copper are found as well. Depending upon the quantum of reserves and the grades available of the exploitable minerals ores, mining activities are mostly under progress in small or large opencast mines, except in a few old underground mines for coal. Methods of open cast mining may be manual, semi-mechanised or mechanised.

The landscape of Hemgir, as its name implies, is really "hem" or cool. Hills and valleys are clad with dense deciduous forest species along with a good number of streams and rivers. While the river Ib is a major tributary of the river Mahanadi, Basundhara is the major tributary of Ib. The rivers Basundhara, Chaturdhara and Saptadhara contribute water to Ib and by extension, Mahanadi. The coal mining projects tend to be named after rivers in the surrounding area. In this region, the pre-historic cave called Manikmoda, contains artwork which depicts the equipments and animals that might have been used for agricultural operations. From the



Map pf Odisha



Google Earth image showing Kulda OCP

pre-historic age till today, the local people have been depending on agriculture along with the collection of forest produce to eke out a living. The area is also home to many types of wild animals, the most prominent being elephants. Due to disturbance in the elephant corridor, the issue of conflict between humans and elephants has emerged. Consequently, there has been a loss of human lives. Elephants are often seen wandering by the sides of OB dumps and also damaging crops in the peripheral villages.

About the Project

The people living in the Hemgir block of Sundargarh district have been affected by the Kulda OCP and have been struggling with the issues of displacement and contamination of air, water and soil for more than 15 years. The Kulda OCP involves displacement of 233 families comprising 1,210 persons from the seven villages of Balinga, Bankibahal, Karlikachar, Kulda, Siarmal, Tikilipara and Tumulia. The project is located in the area bordering Chhattisgarh, where also people are struggling with issues of deforestation, mining, pollution and loss of land and natural resources.

Under the Environment Impact Assessment (EIA) Notification, 1994, an Environmental Clearance (EC) for open cast operations for a capacity of 10 MTY was issued on December 24, 2002.

Over the years, the people living near the mine had approached the authorities of MCL as well as the district administration time and again for remedial measures. However, their appeals were not responded to. Due to disregard for safeguard measures, there has been extensive

Table 1: Clearances obtained

Clearance	Date and specific detail (if any)	Law authorising the clearance
CTE (see ***Annexure III***)	November 28, 2001 vide letter number 19954 of SPCB	Air (Prevention and Control of Pollution) Act, 1981 and Water (Prevention and Control of Pollution) Act, 1974
EC (see ***Annexure IV***)	December 24, 2002 vide letter number J/11015/10/95-IA.II (M) for 878.29 hectares	EIA Notification, 1994
Forest Clearance	August 8, 2007 for 227.89 hectares	
	Forest (Conservation) Act, 1980	
CTO (see ***Annexure V***)	March 27, 2017 vide letter number 4615, valid for the period up to March 31, 2018	Air (Prevention and Control of Pollution) Act, 1981 and Water (Prevention and Control of Pollution) Act, 1974

loss of lives and livelihood, which are directly related to the use of land, water and forests. Studies in the past have pointed out the impact of a nearby mine on the lives and livelihoods of the people in the area[1].

People have also borne impacts from the operations of an adjoining MCL mine, Basundhara East. Basundhara East and the Kulda OCP are two separate mines of MCL operating in close proximity[2].

A study conducted on the impact of pollution caused by the Basundhara East mine in 2012 showed the negative impact the mining activity had on the health and agricultural productivity of the area[3]. From the year 2002 onwards, the same people have faced similar impacts with MCL's Kulda OCP. Today, both the mines are on the verge of expanding their operations.

[1]Amnesty International India (2016). *When land is lost, do we eat coal? Coal mining and violations of Adivasi rights in India*. India: Amnesty International India.

[2] The villages of Balinga, Bankibhal, Kulda, Siarmal, Tiklipara, Sardega and Tumulia are affected by Kulda OCP, Basundhara East affects Tilklipara and Sardega.

[3] Mishra, S. K. (2012). Coal mining externalities: A study of Basundhara Coal Field in India. *Hyderabad Social Development Papers, 1*(1), 1-28. Hyderabad: Council for Social Development.

SECTION 2: ABOUT THE ORGANISATIONS

Considering the need to address certain socio-environmental issues that have been negatively impacting the life of people in and around the coal mines of Hemgir, Sundargarh, a team of activists from the Centre for Integrated Rural and Tribal Development (CIRTD) working in local communities and researchers from the Centre for Policy Research (CPR)-Namati Environmental Justice Program decided in a meeting in the month of April 2017 to conduct a groundtruthing exercise. It was further decided that results from this exercise would be compared with data in the compliance reports submitted by MCL with respect to the Kulda OCP.

Hemgir Adivasi Ekta Manch (HAEM)

HAEM, a people's organisation, was formed by young men and women, community leaders and volunteers belonging to villages where the native people are prohibited to sell or purchase any private land, not even to meet their important needs/expenses such as higher education of their children, medical or health care services or marriages of their heirs. They are all too familiar with the similar struggles of their kith and kin in neighbouring mining areas of Chhattisgarh and Jharkhand, with their issues of getting compensation for their land acquired by mining companies and continuous suffering from the problems of air, water and soil pollution. Seeing all these problems in neighbouring areas, the people of 20 villages from Gopalpur, Jharpalam, Sumura, Tikilipara, and Tumulia Gram Panchayats in Odisha raised their voice against such pollution.

HAEM has also been helping people to claim both individual and community forest rights.

Centre for Integrated Rural and Tribal Development (CIRTD)

CIRTD has been raising awareness on constitutional provisions guaranteed through laws/acts that are helpful for ensuring people's rights over vital resources like land, water and forests. It has helped 4,600 households to submit claims as per the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. As a result of its efforts, nearly 2,000 claimants have got individual forest rights. However, very few communities/villages have been conferred with community forest rights. CIRTD has been working with people through Farmers' Clubs and Women's Self Help Groups to help them attain livelihood security.

Centre for Policy Research (CPR)-Namati Environmental Justice Program

The CPR-Namati Environmental Justice Program is a collaborative project that works with a network of grassroots legal professionals who research on questions regarding environmental law implementation and citizen's empowerment, by participating in the process of resolving environmental non-compliance and related impacts that affect communities. Through this process, the Program builds an epistemic community geared towards finding solutions to environmental challenges.

SECTION 3: METHODOLOGY

Training : First, a training was organised with members from communities that had been facing the impacts of the Kulda OCP. Their issues were discussed and the concept of groundtruthing was explained. Some documents of regulatory authorities such as CTE, EC and CTO were referred to to start off the process. These documents were translated from English to Odia so they could be understood by all participants.

Identification of community representatives : 13 community leaders and volunteers were identified as representatives during the training and village level meetings (see ***Annexure I***). These volunteers had been active in taking up and highlighting the people's problems and issues.

Identification of major impacts : Village/community level meetings were held in which adult villagers, especially women in large numbers, pointed out their problems such as scarcity of pure drinking water, OB dump fires and pollution of water bodies like *nallahs*, ponds and wells.

Collection of data : In order to present evidence for non-compliance with certain regulatory conditions, relevant data was collected. This comprised photographs, newspaper clippings and copies of Monitoring Reports and Compliance Reports collected by filing Right to Information (RTI) applications.

Filling of complaints : Based upon the data gathered, including facts and figures reflected in the reports of the concerned authorities, complaint letters were drafted. Community representatives submitted these letters along with evidence to the concerned authorities and departments for necessary action.

Seeking remedies : The main objective of such a groundtruthing process was to empower the project affected people and to seek solutions for the problems being faced.

Suggestions for policy : During the participatory process, some suggestions were put forth by the participants. As a next step, such suggestions could be included as provisions or conditions for compliance and monitoring by the concerned authorities. Additionally, the data generated through the groundtruthing process could be a valuable source of information on the performance of environmental law, for both the government and the people.

SECTION 4: THE PROCESS OF GROUNDTRUTHING

As stated in Section 3, the need to address certain socio-environmental issues negatively impacting the life of people in and around coal mines in Hemgir led a team from CIRTD and the CPR-Namati Environmental Justice Program to decide in April 2017 to conduct a groundtruthing exercise with respect to the Kulda OCP of MCL.

Along with seeking remedies, the purpose of the groundtruthing exercise was to generate a database of relevant documents and evidence, and to empower the communities on the ground with regard to legal hooks under the purview of environmental law that could be engaged with. The purpose of generating information through qualitative methods was to find out the problems faced by the affected people due to the mining activities. The process of interaction was spread over many days and extended conversations backed by groundtruthed data helped to elicit the remedies that were eventually sought.

From May 17-19, 2017, a training programme on the community-led groundtruthing exercise was conducted for the community volunteers and members from HAEM and CIRTD by resource persons from the CPR-Namati Environmental Justice Program. The concept of groundtruthing was discussed to document the non-compliance with environmental conditions. Field visit meetings were conducted in the affected villages of Tikilipara and Tumulia. The participants visited the mining sites, OB dumps, mine sumps, drainage area and railway siding to observe the extent of air, water and soil pollution.

Meeting with the affected people

After the training programme, CIRTD conducted the process of identification of community representatives for carrying out the study. Those identified were volunteers affected by the problems occuring due to mining by Kulda OCP. 13 community representatives were selected from the villages of Tikilipara, Tumulia, Bilaemunda, Kaletpaen, Masinadhipa, Jhupurunga, Ratanpur and Mundarkhet in Hemgir. The community representatives were provided with support to file RTI applications, collect data and evidence, consolidate data from various sources and draft complaints.

Identification and prioritisation of issues

In the meetings held in the villages of Sardega, Tikilipara and Tumulia, the villagers pointed out various issues they were facing such as water pollution, dust pollution due to uncovered transportation of coal, difficulty in travelling on public roads, forest rights not recognised, fire in the OB dumps, an increase in diseases, cracks in buildings caused by blasting at the mine and the loss of soil due to topsoil not being separated from the OB dumps. With special regard to dust pollution, they shared that agricultural production was decreasing and grazing land was being lost. According to them, the production and size of non-timber forest products (NTFPs) like jackfruit, *Mahua* flower and oilseeds like *Kusuma* and *Karanja* had also diminished. When dust settled in water bodies like ponds and open wells, it resulted in the siltation of the same.

The perennial stream called Basundhara *Nallah* had been polluted as the contaminated water of the mine sump was discharged into it without treatment and rainwater flowing over the OB dumps entered drains with outlets into the *Nallah*. There was also depletion of groundwater

Training conducted on groundtruthing

since the mining started, affecting the irrigation and drinking water facilities of the communities. Most of the ponds were now dry throughout the year. Though the Kulda OCP provided water to the villages through tankers, it did not meet the consumption needs of the families.

Of these issues, three were prioritised based on impacts on the community that arose from non-compliance with legally mandated safeguards. It was decided to work on the issues of excessive dust during the transportation of coal, regular fires in the OB dumps and contamination of water bodies.

The team of community representatives took up various responsibilities from collecting data to filing RTI applications and orienting the people about the issues and gaps with respect to compliance. Village, Gram Sabha and Panchayat meetings were held to discuss the impacts of the pollution and the remedial measures to be taken by the Project. Apart from issues and remedial measures, the communities underwent orientation on the legal hooks under the purview of environmental law.

Through RTI applications, documents were collected from various administrative authorities. Copies of Gram Sabha resolutions, previous complaints made by the villagers, residential school and market committees, census data, photos and newspaper clippings were also collected. The CTE, EC and CTO documents were translated to Odia and disseminated among the villagers for better understanding of the conditions and non-compliance pertaining to the Kulda OCP.

Seeking remedies

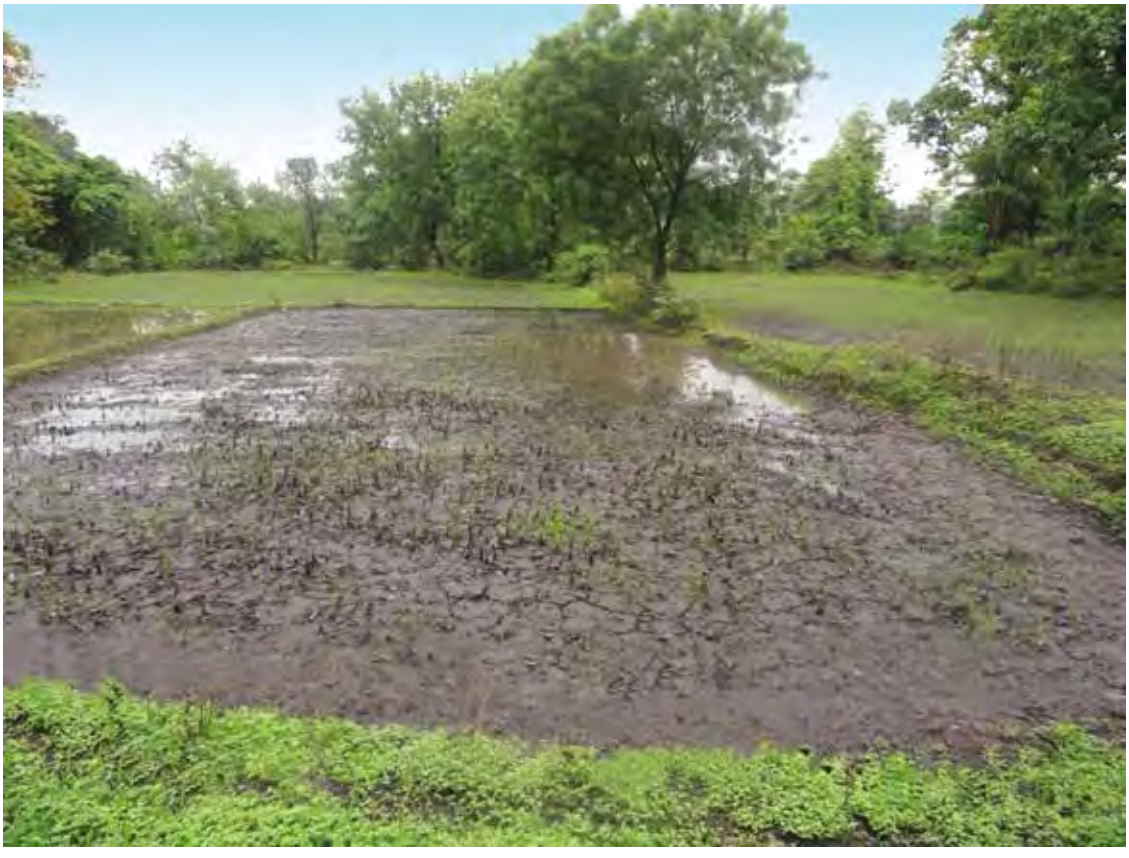
All collected documents and information was studied by the community representatives. Based on the findings and instances of non-compliance, complaint letters were drafted and submitted to the Regional Office, SPCB, Rourkela and Jharsuguda, Member Secretary, SPCB, Bhubaneswar and Regional Office, MoEFCC, Bhubaneswar.

SECTION 5: FINDINGS OF THE COMMUNITY-LED GROUNDTRUTHING

1. Excessive dust due to transportation of coal in violation of two conditions of EC and six conditions of CTO

During the village level meetings held, there were many complaints of dust pollution due to the mining activities. The complaints were of the following nature:

- Children studying in schools located along the roads and people using the roads on foot faced difficulties due to excessive dust in dry conditions and clay on rainy days.
- Farmers suspected that the dust falling on the agricultural fields was impacting the crop production.
- The Sarpanch of Tikilipara, Chandrakanti Naik, said that dust pollution was causing siltation in water bodies like ponds, open wells and *nallahs*.
- The villagers had noticed that along with production, the size of jackfruits, *Mahua* flower, oilseeds like *Kusuma* and *Karanja* and other NTFPs was diminishing, although they did not have evidence that this was directly linked with the dust pollution.
- While they could not show any direct attribution, the villagers said there were increasing health hazards.



TUncovered truck carrying coal from Kulda OCP

It was established that trucks transporting coal travelled uncovered on a daily basis from the Kulda OCP site to the railway siding of Kanika through Bankibahal and Balinga, to Jharsuguda via Sundargarh town and to Raigarh through Gopalpur, Garjanjore and Tapria. The roads were also not in a good condition and had ruts and potholes.

The CTE, EC and CTO were studied to understand whether the impacts were arising out of any legal non-compliance. The conditions listed below were identified as clearly prescribed standards that were to be followed, but due to non-compliance had caused the impacts felt by the people.

EC conditions violated

Specific Condition (viii): Coal handling plant (CHP) should be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.

General Condition (iv): Fugitive dust emissions from all the sources should be controlled regularly, monitored and data recorded properly. Water spraying arrangements on haul roads, wagon loading, dump trucks (loading & unloading) should be provided and properly maintained.

CTO conditions violated

Special Condition 15: Action shall be taken for removal of residual coal going along with over burden so that spontaneous fire in the dump can be eliminated.

Special Condition 16*:* Water sprinkling arrangements shall be provided at the coal seam faces to control fire. Action shall be taken to prevent fire in exposed coal seams.

Special Condition 19: Coal Transportation through roads shall be done in covered vehicles.

Special Condition 20: All internal coal transportation roads shall be black topped/ concreted. Necessary dust suppression measures shall also be taken in these roads to prevent generation of dust during movement of coal transportation vehicles. Plantation of thick leaf trees on both sides of the roads shall be done.

Special Condition 21: Mobile water sprinkling shall be provided for dust suppression on the temporary quarry haul roads and sprinkling of water shall be done at desired intervals so as to prevent generation of fugitive dust.

Special Condition 22: All internal coal transportation roads, temporary mine haul roads and other material transportation roads of the mine shall be maintained properly to avoid creation of ruts and pot holes.

Through groundtruthing, evidence was collected in the form of photographs which clearly showed that the trucks carrying coal were travelling uncovered

Photographs were also taken which showed that the roads in the mine area had not been blacktopped or concretised, due to which dust particles gathered in the ruts and potholes. Copies of previous complaints by affected people on the non-sprinkling of water were also collected.

Uncovered trucks in Kulda OCP

Complaints following the groundtruthing

A complaint with the corresponding evidence was filed on July17, 2017 with the Regional Office, SPCB, Jharsuguda, highlighting the violations and asking it to pass directions to MCL to construct blacktopped internal roads, cover the vehicles carrying coal and to have water sprinkling take place at regular intervals.

A follow up complaint was filed on August 16, 2017, wherein previous instances of non-compliance by the Kulda OCP were highlighted. It drew data from previous show cause notices issued and inspection reports, showing that there was non-compliance with some of these conditions since 2010. For example, in 2010 and 2014, the Odisha SPCB observed that there was no water sprinkling system installed even though it was mandatory as per Special Condition 21 of the CTO[4]. In 2017 it was observed that the frequency of water sprinkling was not adequate, resulting in visible fugitive dust emissions during the movement of heavy vehicles. In the inspection report in this regard, it was also stated that on a daily basis, around 2,000 trucks were going to the railway siding without proper tarpaulin coverage and in the absence of water sprinkling on the public roads[5].

[4] Regional Office, Odisha State Pollution Control Board, Jharsaguda. (2010). *Site inspection report*. Odisha: Odisha State Pollution Control Board.

Regional Office, Odisha State Pollution Control Board, Jharsaguda. (2014). *Site inspection report*. Odisha: Odisha State Pollution Control Board.

[5] Regional Office, Odisha State Pollution Control Board, Jharsaguda. (2017). *Site inspection report*. Odisha: Odisha State Pollution Control Board.

Further, as per an inspection report dated January 4, 2017, the Suspended Particulate Matter (SPM) was beyond the prescribed standards[6]. SPM is an air pollutant comprising solids or liquids that remain suspended in the air for a long period of time. These particles when breathed in can cause lung damage and respiratory problems[7]. While the standard prescribed by the Central Pollution Control Board is 500 SPM, the SPCB in its site inspection report noted that the SPM near the project's office was 724.

Annexure II lists the chronology of the non-compliance observed by the SPCB since 2010 with respect to the conditions related to dust pollution.

Institutional response and remedial action

On October 25, 2017 the Regional Officer, SPCB, Jharsuguda, after his visit to the field, responded positively to the complaints in connection with dust pollution caused due to the uncovered transportation of coal by vehicles. Directions were given to MCL's General Manager, Bansundhara-Garjanbahal area to take necessary steps for the transportation of coal with tarpaulin covers. An order was also given for sprinkling water more frequently on mine haulage roads as well as roads used by the vehicles transporting the coal.

Pending remedy

The internal and transportation roads used are yet to be blacktopped or concretised. These roads have to be repaired to avoid ruts and potholes.

Necessary steps have to be taken to control the speed of the vehicles transporting the coal.

2. Fire in OB dumps in violation of one condition of CTE, one condition of EC and three conditions of CTO

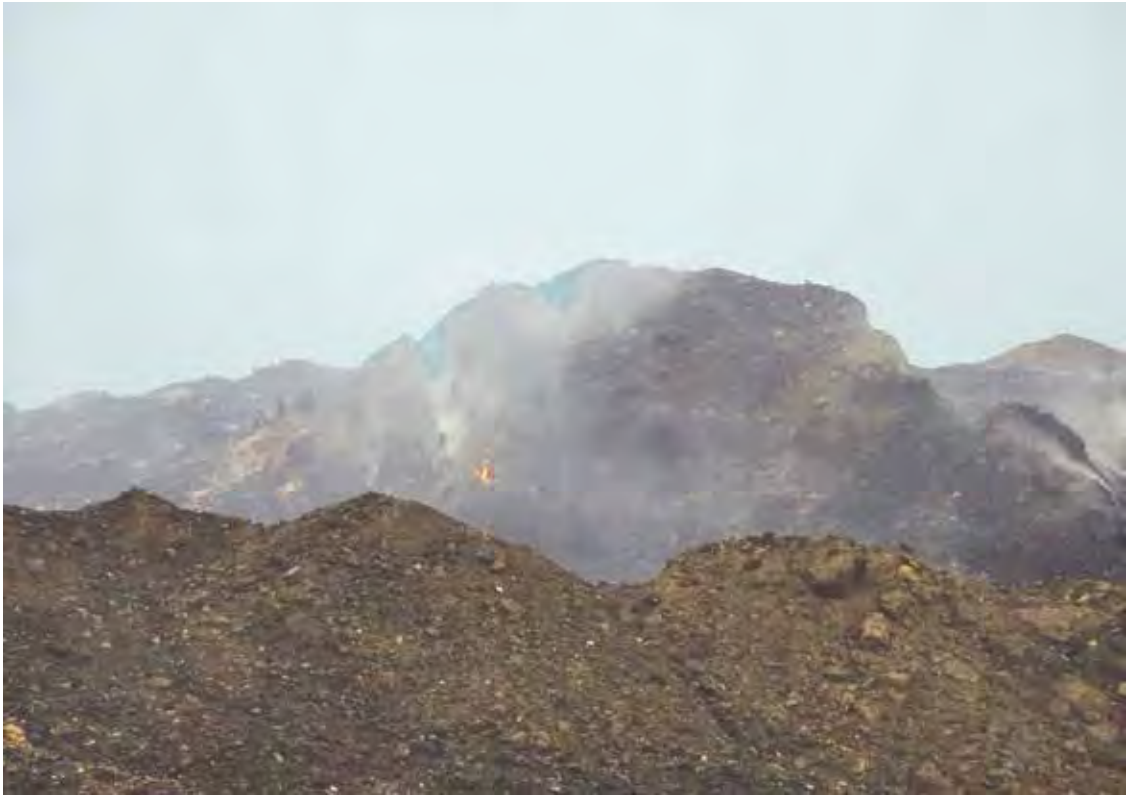
It was discussed in the village Sardega that there was a continuous fire in the OB dump near their village.

- Nalini Sa, a former Sarpanch, said that since many years there had been a continuous fire in the OB dump near Sardega and a lot of heat and smoke was carried by air to their residential area and agricultural land. Other villagers said that stray cattle and wild animals like elephants came to such OB dump sites as there was no retaining wall along them.
- The villagers also felt that there was a constant threat of collapse of the dump as its particles loosened up with the burning of coal. They recalled that in the year 2013 there was such an accident due to collapse of the OB dump in the village Kulda and 30 men and women had been buried. Machines were not properly used during the rescue operations and only 13 dead bodies could be dug out of the accident site.

The conditions of the CTE, EC and CTO were studied to see whether there were any conditions that had to be followed with regard to preventing fires in the OB dumps. It was found that the conditions listed below were directly linked with OB dumps and were being violated.

[6] Regional Office, Odisha State Pollution Control Board, Jharsaguda. (2017). *Site inspection report*. Odisha: Odisha State Pollution Control Board.

[7] Air and its major pollutants. (n.d.). Retrieved from http://edugreen.teri.res.in/explore/air/major.htm



Coal fire in the over burden to OB

CTE condition violated

Special Condition 25 : All precautions shall be taken to prevent the spontaneous fire hazards in the coal storage yard, mine pit, OB dumps and in the other places. Details action plan shall be submitted to the Board within one month.

EC condition violated

Specific Condition (ii) : OB dumps should be stacked at earmarked dump site(s) only and should not be kept active for long period. The total height of the dumps should not exceed 90m, each stage should preferably be of 15m but should not exceed 20m. Overall slope of the dump should not exceed 28°. Concurrent back-filling should be started from the fourth year of operation. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests on yearly basis.

CTO conditions violated

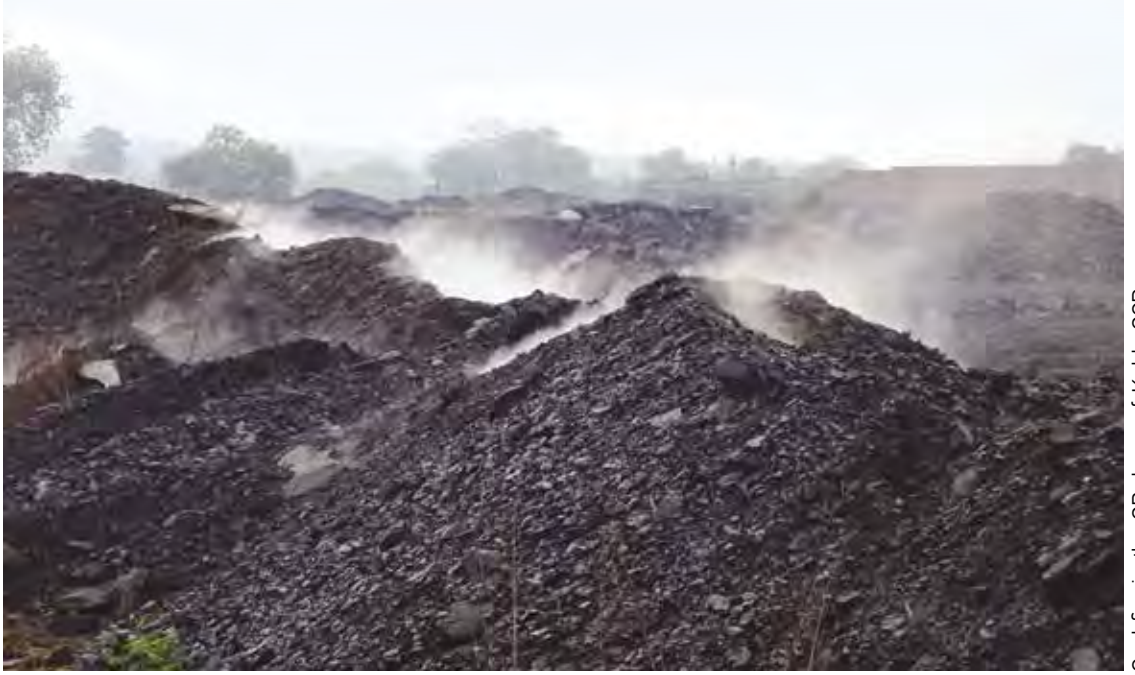
Special Condition 11 : The top soil and overburden shall be removed separately and stored it in a separate heaps, duly covered with grass and vegetation or utilized for backfilling of mined out area.

Special Condition 15 : Action shall be taken for removal of residual coal going along with over burden so that spontaneous fire in the dump site can be eliminated.

Special Condition 16 : Water sprinkling arrangements shall be provided at the coal seam faces to control fire. Action shall be taken to prevent fire in exposed coal seams.

Groundtruthing of these conditions revealed that the OB material at dump sites in Kulda was kept for long periods of time, increasing the risk and consequent occurrence of fires. These fires had impacts on both human beings and domestic animals grazing in the same area.

The Odisha SPCB through seven inspection reports between 2012 and 2017 had also repeatedly pointed out this issue (see ***Annexure II***). As per an inspection report on January 4, 2017, directions were given to the Kulda OCP to stop dumping topsoil over the OB dumps, to remove the residual coal from them and to provide more fixed sprinkler water hydrants/water tankers for firefighting near all coal stockyards to handle any spontaneous combustion of coal[8].



Coal fire in the OB dump of Kulda OCP

Complaints

Complaints were filed with the SPCB on July 17 and August 16, 2017 based on the findings.

Institutional response and remedial action

On October 25, 2017 the Regional Officer, SPCB, Jharsuguda, after his visit to the field, gave directions to segregate coal from the OB material before it was taken for backfilling. He had observed a fire in one of the backfilled areas of the mine, so this direction was meant to not only check fire in the OB dumps, but also in backfilled areas. He also called for a meeting with the officers of the mining project and the complainants.

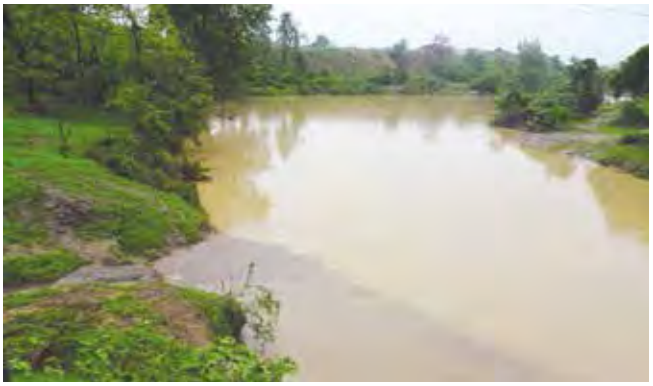
3. Water contamination in violation of one condition of CTE, two conditions of EC and one condition of CTO

It was discussed in the village Tikilipara that there was contamination of the water in Basundhara *Nallah* and other water bodies. During the groundtruthing process it was revealed that this was due to violation of a number of regulatory provisions under the CTE, EC and CTO.

[8] Regional Office, Odisha State Pollution Control Board, Jharsaguda. (2017). *Site inspection report*. Odisha: Odisha State Pollution Control Board.

The following impacts were clearly visible:

- Basundhara *Nallah* had been polluted with contaminated untreated water of the mine sump discharged into it.
- Rainwater flowing through the OB dumps entered drains that had outlets into the Basundhara *Nallah*.
- The siltation/sedimentation pond was full of weeds and did not completely purify the wastewater from the mine. Untreated effluents were discharged into Basundhara *Nallah* and other water courses.
- Catch drains were not properly maintained and this too led to effluents being discharged into the nearby water bodies.



Runoff water polluting Basundhara *Nallah*

Primary settlement tank inside the mine

CTE condition violated

Special Condition 13: Garland drains of appropriate size should be constructed to collect the surface run-off from the overburden dumps and the other dumps. The collected run off shall be diverted to the sedimentation tank of adequate size before discharge to out side and the treated effluent shall confirm to the standard prescribed for discharge of effluent to inland surface water.

EC conditions violated

Specific Condition (iii): Catch drains, and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows form soil, OB and mineral dumps. The water so collected should be utilised for watering the mine area, roads, green belt development etc. The drains should be regularly desilted and maintained properly.

Garland drains (size, gradiant and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material.

Specific Condition (iv): Dimension of the retaining wall at the toe of dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.

CTO condition violated

Special Condition 5: The surface run off of the mine generated during monsoon shall be diverted to adequate size of sedimentation pond or mine sump for storage and use. Systems shall be in place for collection and channelizing the surface runoff to the sedimentation pond/mine sump.

The rainwater flowing over OB dumps entered drains with outlets into the Basundhara *Nallah*. The water from Basundhara *Nallah* was used for bathing and other domestic purposes by the people living downstream. One volunteer named Dhruba said that there was gully formation (erosion of soil) in the OB dumps about 200 metres from Balinga *basti* and the runoff water flowing from the OB dump polluted the nearby forest land.

The inspection report dated January 4, 2017 by the Regional Office, SPCB, Jharsuguda stated that there was no retaining wall all along the external OB dump[9]. It was apprehended in the report that runoff generated from the external dump was flowing outside the mining lease area and being discharged into Basundhara *Nallah*. While some amount of water was first going into an Oil and Grease (O&G) trap, the rest was directly discharged into a sedimentation pond. Eventually, all of it was discharged into Basundhara *Nallah*.

The EC and CTO for Kulda OCP give the prescribed standard for Total Suspended Solids (TSS), i.e. the dry weight of particles trapped by a filter, to be within 100 mg/l. TSS is a water quality parameter that is used to assess the quality of wastewater after getting treated. As per the report by the SPCB, the actual TSS level measured in the inlet and outlet of the O&G trap was found to be 432 mg/l and 428 mg/l respectively. As can be seen in ***Table 2***, The actual levels of O&G and Chemical Oxygen Demand (COD) were also found to be high against their respective standards of 10 mg/l and 250 mg/l.

Table 2: Comparison of actual and prescribed water standards

Sampling Points		pH	mg/l		
			TSS	O&G	COD
	O&G trap inlet	8.4	432	18	592
	O&G trap outlet	8.2	428	16	586
	Standard[10]	*5.5 to 9*	*100*	*10*	*250*

Complaint

Based on the above, a complaint was filed with the Regional Office, MoEFCC, Bhubaneswar on August 16, 2017 on the contamination of water in Basundhara *Nallah* and other water bodies.

Institutional response and remedial action

The community is awaiting institutional response and remedial action with regard to this complaint.

[9]Regional Office, Odisha State Pollution Control Board, Jharsaguda. (2017). *Site inspection report*. Odisha: Odisha State Pollution Control Board.

[10]The standards are as given in the Environment (Protection) Rules, 1986.

Annexure I: List of Community Representatives

1. Bansidhar Kaudi (Male), Village: Ratanpur
2. Rajendra Nayak (Male), Village: Ratanpur
3. Jyotrimayee Nayak (Female), Village: Tikilipara
4. Sukadev Pradhan (Male), Village: Mundarkhet
5. Uttar Naik (Male), Village: Bilaemunda
6. Janma Oram (Female), Village: Masinadhipa
7. Rohita Kumar Choudhury (Male), Village: Tumulia
8. Loknath Dandasena (Male), Village: Jhupurunga
9. Krushna Chandra Naik (Male), Village: Tikilipara
10. Baijanti Podh (Female), Village: Tikilipara
11. Kuber Chandra Patel (Male), Village: Tumulia
12. Romancha Seth (Male), Village: Tikilipara
13. Sundarmani Ekka (Female), Village: Kaletpaen

Annexure II: Tabulation of Repeated Non-Compliance

Table 1: Non-compliance with conditions related to dust pollution

Date of Inspection	Date of Show Cause Notice	Inspecting Authority	Observations in the Notice/Inspection Report	Non-compliance with CTE/EC/CTO Conditions
06.08.2010		Regional Office, SPCB, Jharsuguda	The Mine have not installed the fixed water sprinkling arrangements along the haulage and transportation road for which there was heavy fugitive emission observed during plying of vehicles.	CTO Special Condition 21: Mobile water sprinkling shall be provided for dust suppression on the temporary quarry haul roads and sprinkling of water shall be done at desired intervals so as to prevent generation of fugitive dust.
	30th January 2014, 7th August 2014	Regional Office, SPCB, Jharsuguda, Regional Office, SPCB, Sambalpur	-Instant water shower at exit point of quarry has not yet been provided. -No action has been taken for installation of fixed water sprinklers along side the permanent haulage road -No action has been taken for plantation on both side of permanent haulage road. -Frequency of water sprinkling on haulage road is not adequate -The ambient air quality is not meeting the prescribed standard. -Ruts and Potholes are observed in the transportation road. -No Plantation activities has been carried out since last 3 years by the mine	CTO Special Condition 16: Water sprinkling arrangements shall be provided at the coal seam faces to control fire. Action shall be taken to prevent fire in exposed coal seams EC General Condition No 4: Fugitive dust emissions from all the source should be controlled regularly, monitored and data recorded properly. Water spraying arrangements on haul roads, wagon loading, and dump trucks (loading & unloading) should be provided and properly maintained
30.01.2014 & 07.08.2014	01.03.2014 & 11.09.2014	Regional Office, SPCB, Jharsuguda & Regional Office, SPCB, Sambalpur	-Instant water shower at exit point of quarry has not yet been provided.	CTO Condition 21: Mobile water sprinkling shall be provided for dust suppression on the temporary quarry hual roads and sprinkling of water shall be done at desired intervals so as to prevent generation of fugitive dust

-No action has been taken for installation of fixed water sprinklers along side the permanent haulage road.			Fugitive emission was observed due to unloading of coal at the hoper in CHP which indicates inadequacy of the system in place. Further, a screening plant is in operation without air pollution control equipments. Ruts and Potholes are observed in the haulage road and deposition of coal dust also observed on coal transportation road. Frequency of water sprinkling on haulage road is not adequate resulting visible fugitive dust emission during movement of heavy vehicle Around 2000 Trucks are going to Railway siding without proper tarpaulin coverage and without water sprinkling in public road (Recommendation- Deploy Mechanical Sweeper and Engage dedicated team exclusively for cleaning of the public road in regular basis	EC Specific Condition no 8: Coal Handling Plant should be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transport points should also have efficient dust control elements. These should be properly maintained and operated EC Specific Condition no 8: Coal Handling Plant should be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transport points should also have efficient dust control elements. These should be properly maintained and operated
-No action has been taken for plantation on both side of permanent haulage road.	4th January 2017	Regional Office, SPCB, Jharsuguda	Coal carrying heavy vehicles were allowed to go outside without sprinkled. Permanent sprinklers installed at hopper of CHP were not working. Most of the vehicles were not properly covered by tarpaulin. Thick layer of dust was observed over the concrete road The distance of the Kanika Railway siding of M/s. MCL from the Mine is 35 KM. It was learnt that more than 2,000 (two thousands) coal carrying vehicles/day are going to the siding from both the mine (Kulda OCP &Basundhara OCP of M/s. MCL). On the day of inspection most of the vehicles were going to siding area without proper tarpaulin coverage and without sprinkled in the public road. Spillage was observed at some places in the public road.	EC Specific Condition no 8: Coal Handling Plant should be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transport points should also have efficient dust control elements. These should be properly maintained and operated

Table 2: Non-compliance with conditions related to fire in the OB dumps

Date of Inspection	Inspecting Authority	Observations in the Inspection Report	Non-compliance with CTE/EC/CTO Conditions
06.08.2012	Regional Office, SPCB, Sambalpur	The Heap of the Coal stock should be covered completely with earth so that the fire hazards of the mine will be decreased. Frequency of water sprinkling shall be increased in the coal stock yard.	CTO Special Condition 16: Water sprinkling arrangements shall be provided at the coal seam faces to control fire. Action shall be taken to prevent fire in exposed coal seams.
06.08.2012	Regional Office, SPCB, Sambalpur	The heap of the coal stack should be covered completely with earth so that the fire hazard of the mine will decrease. Frequency of the water sprinkling shall be increased in the coal stockyard.	CTO Special Condition 11: The top soil and overburden shall be removed separately and stored it in a separate heaps, duly covered with grass and vegetation or utilized for backfilling of mined out area.
30.01.2014	Regional Office, SPCB, Jharsuguda	Necessary precautions have not been taken to prevent fire in coal stock yard as a result coal fire has been observed in the stack yard during visit.	EC Specific Condition (ii): OB dumps should be stacked at earmarked dump site(s) only and should not be kept active for long period. The total height of the dumps should not exceed 90m, each stage should preferably be of 15m but should not exceed 20m. Overall slope of the dump should not exceed 28°. Concurrent back-filling should be started from the fourth year of operation. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests on yearly basis.
07.08.2014	Regional Office, SPCB	Necessary precautions have not been taken to prevent fire in coal stock yard and minimum stock of coal has not been maintained inside the mine as a result coal fire has been observed in the stack yard during visit.	CTO Special Condition 15: Action shall be taken for removal of residual coal going along with over burden so that spontaneous fire in the dump site can be eliminated.

05.02.2016	Regional Office, SPCB, Jharsuguda	Fire is observed in backfilled area and all coal stock yards. Fire fighting arrangements is not provided in the coal stock yard except stock yard No: 5. Fire was observed in all coal stock yard i.e, stock 01,02,03,04,05 in this way mine is not only burning national property but also emitting green house gasses like CO2, CH4.	CTE Special Condition 25: All precautions shall be taken to prevent the spontaneous fire hazards in the coal storage yard, mine pit, OB dumps and in the other places. Details action plan shall be submitted to the Board within one month. CTO Special Condition 11: The top soil and overburden shall be removed separately and stored it in a separate heaps, duly covered with grass and vegetation or utilized for backfilling of mined out area.
04.01.2017	Regional Office, SPCB, Jharsuguda	Top soil not stored in separate heaps but spread over external dump of the mine which affects the biological reclamation of the OB Dump. Fire observed at some places in the backfilled area. Fire was observed in the coal stock yard no.4. Drain from coal stock 1 has not been channelised to main sump. Sedimentation pond was filled with weeds. Gully formation was observed in the external OB dump. Mine has not constructed retaining wall all along the external OB dump. Mine may be advised to provide garland drain and retaining wall all along the external OB dump. Fire was observed in the coal stockyard no.04. However, mine has provided fire fighting arrangement for coal stockyard no.04. it was learnt that coal stacked at stack no.04 has exceeded its incubation period. Mine may be advised to despatch coal within its incubation period and provide more fixed sprinkler/water hydrant/water tankers for the firefighting near all coal stockyard to handle spontaneous combustion of coal. The drain from measure external OB dumps was not connected with any sedimentation pond.	CTE Special Condition 25: All precautions shall be taken to prevent the spontaneous fire hazards in the coal storage yard, mine pit, OB dumps and in the other places. Details action plan shall be submitted to the Board within one month. EC Specific Condition (ii): OB dumps should be stacked at earmarked dump site(s) only and should not be kept active for long period. The total height of the dumps should not exceed 90m, each stage should preferably be of 15m but should not exceed 20m. Overall slope of the dump should not exceed 28°. Concurrent back-filling should be started from the fourth year of operation. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests on yearly basis. CTO Special Condition 11: The top soil and overburden shall be removed separately and stored it in a separate heaps, duly covered with grass and vegetation or utilized for backfilling of mined out area. CTO Special Condition 16: Water sprinkling arrangements shall be provided at the coal seam faces to control fire. Action shall be taken to prevent fire in exposed coal seams.

Table 3: Non-compliance with conditions related to water pollution

Date of Inspection	Date of Show Cause Notice	Inspecting Authority	Observations in the Inspection Report	Non-compliance with CTE/EC/CTO Conditions
06.08.2010		Regional Office, SPCB, Sambalpur	Not constructed the O&G trap for the treatment of workshop effluents. Surface run off from OB dump area was not reaching the sedimentation tank as the garland drains were blocked.	EC Specific Condition (iii): Catch drains, and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows form soil, OB and mineral dumps. The water so collected should be utilised for watering the mine area, roads, green belt development etc. The drains should be regularly desilted and maintained properly. Garland drains (size, gradiant and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material.
06.08.2012		Regional Office, SPCB, Sambalpur	The unit should provide garland drain around the coal storage yard so that at any point of time the surface run off during rainy season shall not enter to the nearby area, The mine authority shall take immediate step for dispatch of the old coal stock within specified period as early as possible.	CTE Special Condition 13: Garland drains of appropriate size should be constructed to collect the surface run-off from the overburden dumps and the other dumps. The collected run off shall be diverted to the sedimentation tank of adequate size before discharge to out side and the treated effluent shall confirm to the standard prescribed for discharge of effluent to inland surface water.
07.08.2014	11.09.2014	Regional Office, SPCB, Jharsuguda	Check dams have not yet been constructed at strategic points in order to guide all surface run-off water containing sediments of settlement of suspended solid before discharge on land or surface water body during monsoon. The provision of collection of surface run-off from different area like external OB Dumps through Garland drain to settling ponds has not been provided.	EC Specific Condition (iii): Catch drains, and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows form soil, OB and mineral dumps. The water so collected should be utilised for watering the mine area, roads, green belt development etc. The drains should be regularly desilted and maintained properly. Garland drains (size, gradiant and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material.

30.01.2014	01.03.2014	Regional Office, SPCB, Jharsu-guda	Check dams have not yet been constructed at strategic points in order to guide all surface run-off water containing sediments of settle-ment of suspended solid before discharge on land or surface water body during monsoon. The settling ponds provide for treatment of mine drainage water have been found to be full of weeds.	CTE Special Condition 13: Garland drains of appropriate size should be constructed to collect the surface run-off from the overburden dumps and the other dumps. The collected run off shall be diverted to the sedimentation tank of adequate size before discharge to out side and the treated effluent shall confirm to the standard pre-scribed for discharge of effluent to inland surface water.
04.01.2017		Regional Office, SPCB, Jharsu-guda	Mine has not provided retaining wall all along the external dump. It was apprehended that run-off generated from external dump are going to the outside of mining lease area and finally discharge at Basundhara Nallah. Some amount of water goes to an O&G trap and rest of the water bye passed and directly discharges to a sedimentation pond. Finally the water discharge to Basundhara Nallah. As per water sample collected from inlet and outlet of O & G trap as follows*	CTO Special Condition 5: The surface run off of the mine generated during monsoon shall be diverted to adequate size of sedimentation pond or mine sump for storage and use. Systems shall be in place for collection and channelizi-ng the surface runoff to the sedimentation pond/mine sump.

Sampling Points		**PH**	**Mg/l**		
			TSS	O & G	COD
	O&G trap inlet	8.4	432	18	592
	O&G trap outlet	8.2	428	16	586
	Standard	5.5 to 9	100	10	250

Annexure III: Copy of Consent to Establish

BY REGD. POST

OFFICE OF THE
ORISSA STATE POLLUTION CONTROL BOARD,

A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar-751 012.

No._____/NOC-1239 Dated _____/

Dr. M. Patra,
Member Secretary

OFFICE MEMORANDUM

In consideration of the application for obtaining Consent to Establish to set up an open cast coal mine (MCL) of M/s. Kulda Open Cast Project, MCL the State Pollution Control Board Orissa has been pleased to convey its Consent to Establish under section 25 of Water (Prevention and Control of Pollution) Act, 1974 and section 21 of Air (Prevention and Control of pollution) Act, 1981 for manufacture/production of Coal, Quantity – 10 Million TPA at G.P.Balinga, Vill. Kulda in the district of Sundargarh subject to the following conditions.

GENERAL CONDITIONS

1. This Consent to establish is specific for the product, quantity, manufacturing process and raw materials as mentioned in the application and valid for a period of one year from the date of issue of this letter.

2. Adequate effluent treatment facilities are to be provided such that the quality of sewage and trade effluent satisfies the standards as prescribed under EP Rule or as prescribed by the Central Pollution Control Board and/or State Pollution Control Board or otherwise stipulated in the special conditions.

3. All emission from the industry as well as the ambient air quality and noise are to conform to the standards as laid down under EP Rule/ Central Pollution Control Board/ State Pollution Control Board of otherwise stipulated in the special conditions.

4. Adequate method of disposal of solid waste is to be adopted to avoid environmental pollution.

5. The industry is to comply to the provisions of EP Act, 1986 and the rules made there under with their amendments from time to time such as the Hazardous Chemical/Manufacture, Storage and Import Rule, 1989 etc. The industry is also to comply with the provisions of Public Liability Insurance Act, 1991, if applicable.

6. The industry is to obtain permission from the local authorities as applicable.

7. The industry is to take up the plantation of the indigenous species around the available vacant areas inside the factory premises @ 25000 trees/ hectare.

8. The industry is to apply for grant of consent to operate under section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 & Air (Prevention and Control of Pollution) Act, 1981 (If coming under air pollution control area) at least 3 (three) months before the commercial production and obtain Consent to operate

SPECIAL CONDITIONS:

1. Maximum height of overburden dump should be restricted as per the Mine Act, Benches of adequate width should be provided and slope should be maintained below 28 degree. Overburden and top soil should be dumped separately in the earmarked area using proper techniques and precautions.

2. The overburden dumps should not be kept active for long period. The inactive dumps should be reclaimed and suitably planted all over.

3. A time bound action plan for reclamation detailing measures to stabilise the dumps, monitoring and management of rehabilitated areas until the vegetation is self-sustained and funds earmarked for implementing the plan should be submitted to the Board within 3 months.

4. Ambient Air Quality Monitoring stations should be established in the core zone as well as buffer zone for SPM, RPM, SO_2, NO_x and CO. Location of the Ambient Air Quality stations should be decided based on the meteorological data, topographical features, environmentally and ecologically sensitive targets in consultation with the Orissa Pollution Control Board.

5. Ambient Air Quality shall be regularly monitored as per EP Act, 1986 report thereof submitted to the State Pollution Control Board every month.

6. Drills should be operated with dust extractors.

7. Fugitive emissions from all the sources should be controlled, regularly monitored and data recorded properly. The material transfer points at Coal Handling Plant should be fitted with proper dust control arrangements such as multiclone or bag filters. Automatic water spraying arrangements on haul roads, wagon loading, sidings shall be provided and properly maintained.

8. The mine shall confirm to the standards prescribed under National Ambient Air Quality as per EP Act, 1986.

9. Adequate measures should be taken for control of noise levels to meet the standards prescribed under E(P) Act,1986. Workers engaged in blasting /drilling operations, operation of HGMM etc. should be provided with ear plugs/muffs.

10. Industrial wastewater (work shop & wastewater from the mine) should be properly collected, treated so as to confirm to the standards prescribed for discharge of effluent to inland surface water. The treated effluent shall be utilised to the maximum for spraying on haul roads and plantation purposes.

11. Sewage treatment plant shall be provided for the treatment of domestic effluent generated from colony & mines so as to meet the prescribed standard of the Board for discharge to inland surface water.

12. Acid mine water, if any, has to be treated and disposed after confirming to the standards described by the Board.

13. Garland drains of appropriate size should be constructed to collect the surface run-off from the overburden dumps and other dumps. The collected run off shall be diverted to the sedimentation tank of adequate size before discharge to out side and the treated effluent shall confirm to the standard prescribed for discharge of effluent to Inland surface water.

14. Check Bunds should be provided along the nearby nallah or river if any in between the mine and river/nallah to prevent the flow of run-off and O.B. materials into the water bodies.

15. Ground water quality should be regularly monitored and the data recorded should be furnished to the Orissa Pollution Control Board quarterly.

16. Depth of lagoon if any, should not be more than 40 m. at the time of abandoning of the mine.

17. All efforts shall be taken to protect the existing water bodies in the surrounding.

18. A green belt of adequate width by planting the native species should be raised around the lease area, township roads, over burden dump sites etc The density of the trees should be at-least 2500 plants/Ha.

19. Environmental laboratory should be established with adequate number of type of pollution monitoring and analysis equipments in consultation with the Orissa Pollution Control Board.

20. Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on necessary safety and health aspects.

21. Occupational health surveillance programme of the workers should be under taken periodically to observe any health hazards due to exposure to dust and take corrective measures, if needed.

22. A separate environmental management cell with suitable qualified personnel from the field of Environmental Engineering or Science should be set up under the control of Senior Executive, who will report directly to the head of the organisation.

23. The funds earmarked for environmental protection measures should kept in a separate account and should not be diverted for any other purpose and year-wise expenditure from the fund should be reported to the Board.

24. Black top roads shall be made inside the mine as well as all designed dumps and stockyards. Lay out plan to this effect to be submitted to Pollution Control Board within a month.

25. All precautions shall be taken to prevent the spontaneous fire hazards in the coal storage yard, mine pit, O.B dumps and in the other places. Details action plan shall be submitted to the Board within one month.

26. The mine shall take up peripheral development of the locality.

27. Operation of the mine shall be commensurate with that of the linked power plant.

28. Obligation for back filling of the mine with fly ash from linked power plant shall find a definite place in the fuel supply agreement. Copy of such document shall be furnished to Board within 3 months.

29. The plan for back filling of mine voids with fly ash shall be suitably incorporated in mining plan and duly approved by competent authority. A copy of the report shall be submitted along with application for consent to operate.

MEMBER SECRETARY

To

Sri M.K.Panda, Nodal Env.Officer,
M/S Kulda Open Cast Project (MCL),
Jagriti Vihar, Burla,
Sambalpur.

Memo No. 17957, Dated 28/11/07

Copy forwarded to:

1. Regional Officer, S.P.C.Board, Rourkela
2. Collector Sundargarh
3. District Industries Centre, Sundargarh
4. Consent Section
5. Chief Inspector of Factories & Boilers, Bhubaneswar
6. Guard file (consent to establish register)

27/11/07
SR. ENV.ENGINEER

NC/13/11/01

Annexure IV: Copy of Environmental Clearance

No.J-11015/10/95-IA.II(M)
Government of India
Ministry of Environment & Forests

Paryavaran Bhawan,
C.G.O.Complex, Lodi Road,
New Delhi-110 003.

Dated the 24th December 2002

To

Shri A.N.Sinha,
Chief Genral Manager (Env.),
Mahanadi Coalfields Ltd.,
Jagriti Vihar, P.O.UCE., Burla,
District Sambalpur,
ORISSA- 768 018.

Subject: Kulda opencast coal mine (10.0 MTY) of M/s Mahanadi Coalfields Ltd. located at Village(s) Tikilipara, Bankibahal, Balinga, Karlikachar, Tumulia, Siarmal and Kulda, Tehsil Hemgiri, District Sundergarh of Orissa – environmental clearance - reg.

Sir,

This has reference to the Ministry of Coal's letter No. 43011/13/95-CPA dated 16.05.1995 and MCL letter dated 17.05.1995 and subsequent communications dated 03.08.1995, 15.09.1995, 18.09.1995, 05.04.1996, 07.08.2001, 15.11.2001, 26.02.2002, 24.04.2002, 24.08.2002, 07.10.2002, 31.10.2002 and 22.11.2002 on the subject mentioned above. The Ministry of environment & Forests has examined the application. It has been noted that the total envisaged mine lease area is 929.60 ha, of which 279.20 ha is forestland and 650.40 ha is Govt. and tenancy land. Out of 279.20 ha of forestland, diversion of 227.89 ha of forestland in the first phase for 20 years of mine operation has been obtained (50.72 ha of forestland was approved on 25.07.2001 and 177.17 ha of forest land was approved on 22.01.2002). Therefore the environmental clearance is restricted to 878.29 ha only. Township is outside the mine lease area, about 4-km from mine site comprising an area of 37.50 ha. Annual production capacity of the mine is 10.0 million tonnes. Working will be opencast by mechanised method. The project involves displacement of 233 families comprising 1210 persons from seven villages, namely Balinga, Karlikachar, Tumulia, Siarmal, Kulda, Banikbahal, and Tikilipara. The R&R will be followed as per the norms of the State Government of Orissa and CIL. It has been mentioned that about 329.89 million m^3 of total Overburden (OB) will be generated out of which 266.58 million m^3 will be backfilled. Back-filling will start from the 4th year. Peak water requirement is 2990m3/d which will be met from Basundhra river through diversion of water through construction of 3 Pick up weirs, State Government's approval has been obtained. Consent to Establish of the Orissa State Pollution Control Board has been obtained on 28.11.2001. The Ministry of Coal has given its approval on 26.08.2002. Capital cost of the project is Rs. 699.36 crores.

The Ministry of Environment and Forests hereby accords environmental clearance to the above mentioned mechanised opencast coal mine of M/s Mahanadi Coalfields Limited for 10.0 million TPA production involving lease area of 878.28 ha only under the provisions of the Environment Impact Assessment Notification, 1994 as

amended on 04.05 1997 and 10.04.1997 subject to the compliance of the terms and conditions mentioned below:

A. Specific conditions

(i) Top soil should be stacked properly with proper slope at earmarked site(s) with adequate measures and should be used for reclamation and rehabilitation of mined out areas.

(ii) OB dumps should be stacked at earmarked dump site(s) only and should not be kept active for long period. The total height of the dumps should not exceed 90m, each stage should preferably be of 15m but should not exceed 20m. Overall slope of the dump should not exceed 28°. Concurrent back-filling should be started from the fourth year of operation. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests on yearly basis.

(iii) Catch drains, and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected should be utilised for watering the mine area, roads, green belt development etc. The drains should be regularly desilted and maintained properly.

Garland drains (size, gradiant and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material.

(iv) Dimension of the retaining wall at the toe of dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.

(v) A detailed mine decommissioning plan should be submitted to the Ministry of Environment and forests 5 years in advance of closure for approval.

(vi) A green belt of adequate width should be raised by planting the native species around the ML area, coal handling plant, roads, OB dump sites, etc., in consultation with the local DFO/Agriculture Department. The density of the tree should be around 2500 plants per ha.

(vii) Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers. The monitoring should be done four times a year in pre-monsoon (April/May), monsoon (August), post-monsoon (November) and winter (January) seasons. Data thus collected should be submitted to the Ministry of Environment & Forests and Central Ground water Board quarterly.

(viii) Coal handling plant (CHP) should be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the

transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.

(ix) Drill should be wet operated or with dust extractors and Controlled blasting should be practiced.

(x) Project authority should undertake sample survey to generate data on pre-project community health status within a radius of 1 km from proposed mine.

(xi) Coal Drills should be operated with dust extracted or should be wet operated.

(xii) A comprehensive R&R plan should be submitted to the Ministry as per the final package finalized in consultation with the State Government for rehabilitation of project effected families within 3 months.

(xiii) Digital processing of the entire lease area using remote sensing techningue should be done regularly once in three years for monitoring land use pattern and report submitted to MOEF and its Regional Office.

(xiv) Before commencing the work, the proponent should obtain the sanction of the power from the concerned authorities and submit the same to the Ministry.

(xv) Sewage Treatment Plant should be installed for the colony. ETP should also be provided for workshop and CHP waste water.

(xvi) Consent to operate should be obtained from SPCB before starting mining activities.

B. General Conditions

(i) No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and Forests.

(ii) No change in the calendar plan including excavation, quantum of mineral coal and waste should be made.

(iii) Five ambient air quality monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO_2, NO_x, and CO monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board.

Data on ambient air quality (RPM, SPM, SO_2, NO_x, and CO) should be regularly submitted to the Ministry including its Regional Office at Bhubneshwar and to the State Pollution Control Board/Central Pollution Control Board once in six months.

(iv) Fugitive dust emissions from all the sources should be controlled regularly monitored and data recorded properly. Water spraying arrangements on haul roads, wagon loading, dump trucks (loading & unloading) should be provided and properly maintained.

(v) Adequate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operations of HEMM, etc., should be provided with ear plugs/muffs.

(vi) Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422(E) dated 19th May 1993 and 31st December 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of effluents from workshop.

(vii) Acid mine water, if any has to be treated and disposed of after conforming to the standard prescribed by the competent authority.

(viii) Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.

Occupational health surveillance programme of the workers should be undertaken periodically to observe any contractions due to exposure to coal dust and take corrective measures, if needed.

(ix) Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board.

(x) A separate environmental management cell with suitable qualified personnel should be set up under the control of a senior Executive, who will report directly to the Head of the organization.

(xi) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year-wise expenditure should be reported to the Ministry and its Regional Office located at Bhubneshwar.

(xii) The Regional Office of this Ministry located at Bhubneshwar shall monitor compliance of the stipulated conditions. The Project authorities should extend full cooperation to the officer(s) of the Regional Office by furnishing requisite data/information/monitoring reports.

(xiii) A copy of the clearance letter will be marked to the concerned Panchayat /local NGO, if any, from whom any suggestions/representation has been received while processing the proposal.

(xiv) The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.

(xv) State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industry Centre and Collector's/Tehsildar's Office for 30 days.

(xvi) The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and may also be seen at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubneshwar.

3. The Ministry or any other competent authority may stipulate any further condition for environmental protection.

4. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance.

5. The above conditions will be enforced, *inter-alia*, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules.

Yours faithfully,

(Dr.T.Chandini)
Additional Director

Annexure V: Copy of Consent to Operate

BY REGD. POST WITH AD

STATE POLLUTION CONTROL BOARD, ODISHA

A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012
Phone-2561909, Fax: 2562822, 2560955 E-mail: paribesh1@ospcboard.org, Website: www.ospcboard.org

CONSENT ORDER

No. 4615 / IND-I-CON- 5125 Dt. 27.03.17 /

CONSENT ORDER NO. 2288

Sub: **Consent for discharge of sewage and trade effluent under section 25/26 of Water (PCP) Act, 1974 and for existing / new operation of the plant under section 21 of Air (PCP) Act, 1981.**

Ref : **Your online application No. 1471965 Dated 20-01-2017 and Online reply dated 10.3.2017**

Consent to operate is hereby granted under section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of Air (Prevention & Control of Pollution) Act, 1981 and rules framed thereunder to

Name of the Industry: **KULDA OCP OF M/S. MCL**

Name of the Occupier & Designation: **SRI RAJ KUMAR, PROJECT OFFICER**

Address: **AT: BALINGA, PO: BASUNDHARA, DIST: SUNDERGARH.**

This consent order is valid for the period up to **31.03.2018**

This consent order supersedes the earlier consent order issued vide letter No. 4965 dated 21.03.2016.

Details of Products Manufactured

Sl. No.	Product	Quantity
1.	*Coal*	*10 MTPA*

This consent order is valid for the specified outlets, discharge quantity and quality, specified chimney/stack, emission quantity and quality of emissions as specified below. This consent is granted subject to the general and special conditions stipulated therein.

A. **Discharge permitted through the following outlet subject to the standard**

Outlet No.	Description of outlet	Point of discharge	Quantity of discharge KL/hr	Pre-scribed Standard				
				pH	TSS (mg/l)	Oil & Grease (mg/l)	BOD (mg/l)	COD (mg/l)

B. **Emission permitted through the following stack subject to the prescribed standard**

Chimney Stack No.	Description of Stack	Stack height (m)	Quantity of emission	Prescribed Standard			
				PM (mg/Nm^3)	SO_2	NO_x	
						--	

C. **Disposal of solid waste permitted in the following manner**

Sl. No.	Type of Solid waste	Quantity generated (TPD)	Quantity to be reused on site(TPD)	Quantity to be reused off site(TPD)	Quantity disposed off (TPD)	Description of disposal site.
	Top soil/over burden	*As per approved mining plan*	--	--	--	*As per approved mining plan*

D. GENERAL CONDITIONS FOR ALL UNITS

1. The consent is given by the Board in consideration of the particulars given in the application. Any change or alternation or deviation made in actual practice from the particulars furnished in the application will also be the ground liable for review/variation/revocation of the consent order under section 27 of the Act of Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 and to make such variations as deemed fit for the purpose of the Acts.

2. The industry would immediately submit revised application for consent to operate to this Board in the event of any change in the quantity and quality of raw material / and products / manufacturing process or quantity /quality of the effluent rate of emission / air pollution control equipment / system etc.

3. The applicant shall not change or alter either the quality or quantity or the rate of discharge or temperature or the route of discharge without the previous written permission of the Board.

4. The application shall comply with and carry out the directives/orders issued by the Board in this consent order and at all subsequent times without any negligence on his part. In case of non-compliance of any order/directives issued at any time and/or violation of the terms and conditions of this consent order, the applicant shall be liable for legal action as per the provisions of the Law/Act.

5. The applicant shall make an application for grant of fresh consent at least 90 days before the date of expiry of this consent order.

6. The issuance of this consent does not convey any property right in either real or personal property or any exclusive privileges nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Central, State laws or regulation.

7. This consent does not authorize or approve the construction of any physical structure or facilities or the undertaking of any work in any natural water course.

8. The applicant shall display this consent granted to him in a prominent place for perusal of the public and inspecting officers of this Board.

9. An inspection book shall be opened and made available to Board's Officers during the visit to the factory.

10. The applicant shall furnish to the visiting officer of the Board any information regarding the construction, installation or operation of the plant or of effluent treatment system / air pollution control system / stack monitoring system any other particulars as may be pertinent to preventing and controlling pollution of Water / Air.

11. Meters must be affixed at the entrance of the water supply connection so that such meters are easily accessible for inspection and maintenance and for other purposes of the Act provided that the place where it is affixed shall in no case be at a point before which water has been taped by the consumer for utilization for any purposes whatsoever.

12. Separate meters with necessary pipe-line for assessing the quantity of water used for each of the purposes mentioned below:

    a) Industrial cooling, spraying in mine pits or boiler feed.
    b) Domestic purpose
    c) Process

13. The applicant shall display suitable caution board at the lace where the effluent is entering into any water-body or any other place to be indicated by the Board, indicating therein that the area into which the effluents are being discharged is not fit for the domestic use/bathing.

14. Storm water shall not be allowed to mix with the trade and/or domestic effluent on the upstream of the terminal manholes where the flow measuring devices will be installed.

15. The applicant shall maintain good house-keeping both within the factory and the premises. All pipes, valves, sewers and drains shall be leak-proof. Floor washing shall be admitted into the effluent collection system only and shall not be allowed to find their way in storm drains or open areas.

16. The applicant shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems install or used by him to achieve with the term(s) and conditions of the consent.

17. Care should be taken to keep the anaerobic lagoons, if any, biologically active and not utilized as mere stagnation ponds. The anaerobic lagoons should be fed with the required nutrients for effective digestion. Lagoons should be constructed with sides and bottom made impervious.

18. The utilization of treated effluent on factory's own land, if any, should be completed and there should be no possibility of the effluent gaining access into any drainage channel or other water courses either directly or by overflow.

19. The effluent disposal on land, if any, should be done without creating any nuisance to the surroundings or inundation of the lands at any time.

20. If at any time the disposal of treated effluent on land becomes incomplete or unsatisfactory or create any problem or becomes a matter of dispute, the industry must adopt alternate satisfactory treatment and disposal measures.

21. The sludge from treatment units shall be dried in sludge drying beds and the drained liquid shall be taken to equalization tank.

22. The effluent treatment units and disposal measures shall become operative at the time of commencement of production.

23. The applicant shall provide port holes for sampling the emissions and access platform for carrying out stack sampling and provide electrical outlet points and other arrangements for chimneys/stacks and other sources of emissions so as to collect samples of emission by the Board or the applicant at any time in accordance with the provision of the Act or Rules made therein.

24. The applicant shall provide all facilities and render required assistance to the Board staff for collection of samples / stack monitoring / inspection.

25. The applicant shall not change or alter either the quality or quantity or rate of emission or install, replace or alter the air pollution control equipment or change the raw material or manufacturing process resulting in any change in quality and/or quantity of emissions, without the previous written permission of the Board.

26. No control equipments or chimney shall be altered or replaced or as the case may be erected or re-erected except with the previous approval of the Board.

27. The liquid effluent arising out of the operation of the air pollution control equipment shall be treated in the manner and to ion of standards prescribed by the Board in accordance with the provisions of Water (Prevention and Control of Pollution) Act, 1974 (as amended).

28. The stack monitoring system employed by the applicant shall be opened for inspection to this Board at any time.

29. There shall not be any fugitive or episodal discharge from the premises.

30. In case of such episodal discharge/emissions the industry shall take immediate action to bring down the emission within the limits prescribed by the Board in conditions/stop the operation of the plant. Report of such accidental discharge /emission shall be brought to the notice of the Board within 24 hours of occurrence.

31. The applicant shall keep the premises of the industrial plant and air pollution control equipments clean and make all hoods, pipes, valves, stacks/chimneys leak proof. The air pollution control equipments, location, inspection chambers, sampling port holes shall be made easily accessible at all times.

32. Any upset condition in any of the plant/plants of the factory which is likely to result in increased effluent discharge/emission of air pollutants and / or result in violation of the standards mentioned above shall be reported to the Headquarters and Regional Office of the Board by fax / speed post within 24 hours of its occurence.

33. The industry has to ensure that minimum three varieties of trees are planted at the density of not less than 1000 trees per acre. The trees may be planted along boundaries of the industries or industrial premises. This plantation is stipulated over and above the bulk plantation of trees in that area.

34. The solid waste such as sweeping, wastage packages, empty containers residues, sludge including that from air pollution control equipments collected within the premises of the industrial plants shall be disposed off scientifically to the satisfaction of the Board, so as no to cause fugitive emission, dust problems through leaching etc., of any kind.

35. All solid wastes arising in the premises shall be properly classified and disposed off to the satisfaction of the Board by :
    i) Land fill in case of inert material, care being taken to ensure that the material does not give rise to leachate which may percolate into ground water or carried away with storm run-off.
    ii) Controlled incineration, wherever possible in case of combustible organic material.
    iii) Composting, in case of bio-degradable material.

36. Any toxic material shall be detoxicated if possible, otherwise be sealed in steel drums and buried in protected areas after obtaining approval of this Board in writing. The detoxication or sealing and burying shall be carried out in the presence of Board's authorized persons only. Letter of authorization shall be obtained for handling and disposal of hazardous wastes.

37. If due to any technological improvement or otherwise this Board is of opinion that all or any of the conditions referred to above requires variation (including the change of any control equipment either in whole or in part) this Board shall after giving the applicant an opportunity of being heard, vary all or any of such condition and thereupon the applicant shall be bound to comply with the conditions so varied.

38. The applicant, his/heirs/legal representatives or assignees shall have no claim whatsoever to the condition or renewal of this consent after the expiry period of this consent.

39. The Board reserves the right to review, impose additional conditions or condition, revoke change or alter the terms and conditions of this consent.

40 Notwithstanding anything contained in this conditional letter of consent, the Board hereby reserves to it the right and power under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 to review any and/or all the conditions imposed herein above and to make such variations as deemed fit for the purpose of the Act by the Board.

41. The conditions imposed as above shall continue to be in force until revoked under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 and section 21 A of Air (Prevention & Control of Pollution) Act, 1981.

42. In case the consent fee is revised upward during this period, the industry shall pay the differential fees to the Board (for the remaining years) to keep the consent order in force. If they fail to pay the amount within the period stipulated by the Board the consent order will be revoked without prior notice.

43. The Board reserves the right to revoke/refuse consent to operate at any time during period for which consent is granted in case any violation is observed and to modify/ stipulate additional conditions as deemed appropriate

GENERAL CONDITIONS FOR UNITS WITH INVESTMENT OF MORE THAN Rs 50 CRORES, AND 17 CATEGORIES OF HIGHLY POLLUTING INDUSTRIES (RED A).

1. The applicant shall analyse the emissions every month for the parameters indicated in TABLE .B & C as mentioned in this order and shall furnish the report thereof to the Board by the 10th of the succeeding month.

2. The applicant shall provide and maintain at his own cost three ambient air quality monitoring stations for monitoring Suspended Particulate Matter, Sulphor Dioxide, Oxides of Nitrogen, Hydro-Carbon, Carbon-Monixide and monitor the same once in a day/week/fortnight/month. The data collected shall be maintained in a register and a monthly extract be furnished to the Board.

3. The applicant shall provide and maintain at his own cost a meteorological station to collect the data on wind velocity, direction, temperature, humidity, rainfall, etc. and the daily reading shall be recorded and the extract sent to the Board once in a month.
4. The applicant shall forward the following information to the Member Secretary, State Pollution Control Board, Orissa, Bhubaneswar regularly.
   a. Report of analysis of stack monitoring, ambient air quality monitoring meteorological data as required every month.
   b. Progress on planting of trees quarterly.

5. The applicant shall install mechanical composite sampling equipment and continuous flow measuring / recording devices on the effluent drains of trade as well as domestic effluent. A record of daily discharge shall be maintained.
6. The following information shall be forwarded to the Member Secretary on or before 10th of every month.

   a. Performance / progress of the treatment plant.
   b. Monthly statement of daily discharge of domestic and/or trade effluent.

7. **Non-compliance with effluent limitations**

   a) If for any reason the applicant does not comply with or is unable to comply with any effluent limitations specified in this consent, the applicant shall immediately notify the consent issuing authority by telephone and provide the consent issuing authority with the following information in writing within 5 days of such notification.

      i) Causes of non-compliance

      i) A description of the non-compliance discharge including its impact on the receiving waters.

      ii) Anticipated time of continuance of non-compliance if expected to continue or if such condition has been corrected the duration or period of non-compliance.

      iii) Steps taken by the applicant to reduce and eliminate the non-complying discharge and

      iv) Steps to be taken by the applicant too prevent the condition of non-compliance.

   b) The applicant shall take all reasonable steps to minimize any adverse impact to natural waters resulting from non-compliance with any effluent limitation specified in this consent including such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.

   c) Nothing in this consent shall be construed to relieve the applicant from civil or criminal penalties for non-compliance whether or not such non-compliance is due to factors beyond his control, such as break-down, electric failure, accident or natural disaster.

8. The applicant shall at his own cost get the effluent samples collected both before and after treatment and get them analysed at an approval laboratory every month for the parameters indicated in Part-D and shall submit in duplicate the report thereof to the Board.

9. The addition of various treatment chemicals should be done only with mechanical dosers and proper equipment for regulation of correct dosages determined daily and for proper uniform feeding. Crude practices such as dumping of chemicals in drains or sumps or trickling of acids or alkalies arbitrarily and utilizing poles for stirring etc. should not be resorted to.

10. In the disposal of treated effluent on land for irrigation, the industry shall keep in view of the need for;

    Rotation of crops

    Change of point of application of effluent on land

    A portion of land kept fallow.

11. The adoption of these would avoid soil becoming sick or slate, the industry may ensure this in consultation with the Agriculture Department.

12. It is the sole responsibility of the industry to ensure that there are no complaints at any time from the royats in the surrounding areas as a result of discharge of sewage or trade effluent if any.

13. Proper housekeeping shall be maintained by a dedicated team.

14. The industry must constitute a team of responsible and technically qualified personnel who will ensure continuous operation of all pollution control devices round the clock (including night hours) and should be in a position to explain the status of operation of the pollution control measures to the inspecting officers of the Board at any point of time. The name of these persons with their contact telephone numbers shall be intimated to the concerned. Regional Officer and Head Office of the Board and in case of any change in the team it shall be intimated to the Board immediately.

E. **SPECIAL CONDITIONS :**

1. Excavation of coal shall be done using surface miners. The surface miner shall be operated along with dust control measures.

2. Drills shall either be operated with dust extractors or equipped with water injection system to minimize dust generation in the work environment. Controlled blasting shall be done for removal of overburden (OB) and blasting shall be carried out during day time only.

3. The annual coal production and compliance status report of the stipulated conditions shall be submitted to the Board latest by 30th April every year.

4. The environmental statement report for the financial year ending 31st March shall be submitted to the Board in form-V on or before 30th September every year.

5. The surface runoff generated from the mining area as well as railway siding during monsoon shall be diverted to adequate size of sedimentation pond or mine sump for storage and use. Systems shall be in place for collection and channelizing the surface runoff to the sedimentation pond/mine sump.

6. Strata water generated during mining operation shall be diverted to the available sump for storage and use.

7. **No disposal of strata water & surface runoff to outside shall be allowed under any circumstances. Zero Liquid Discharge shall be ensured.**

8. Workshop from where water pollution due to wash out of oil and grease and suspended solids is expected, Effluent Treatment Plant (ETP) shall be provided and treated wastewater shall be reused for vehicle washing. No

wastewater from workshop shall be allowed to be discharged to outside under any circumstances.

9. Domestic effluents shall be treated in a sewage treatment plant (STP) and or shall be discharged to soak pit via septic tank constructed as BIS specification. The treated wastewater quality of STP shall remain within the following standards and shall be used for plantation:

pH	-	6.5 -9.0
TSS	-	10 mg/l
BOD	-	10 mg/l
Fecal Coliform	-	<230 MPN/100 ml.
COD	-	50 mg/l

10. The top soil and overburden shall be removed separately and stored it in separate heaps, duly covered with grass and vegetation or utilized for backfilling of mined out area.

11. Concurrent backfilling of mined out area shall be done. The backfilled area shall be technically and biologically reclaimed.

12. Acid mine drainage water if any, shall be treated adequately and used only for sprinkling activity.

13. Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells. The monitoring should be done four times a year in pre-monsoon (April/May), monsoon (August), post-monsoon (November) and winter (January) seasons. Data thus collected should be submitted to the Board quarterly.

14. Action shall be taken for removal of coal going along with over burden so that spontaneous fire in the dump site can be eliminated. Water sprinkling arrangements shall also be provided at the exposed coal seam faces and other vulnerable areas for control of spontaneous fire if any.

15. Instant water shower system at the exit point of the quarry shall be provided and all heavy vehicles loaded with coal shall move through the instant shower system. Wheel washing facility for coal transport vehicles at the exit point of the quarry or at the coal stack yard as per the requirement shall be provided.

16. Coal handling plant/ Crusher unit shall be operated with adequate dust extraction system or dry fog system for dust suppression. Loading, unloading areas and conveyor systems including all transfer points shall have adequate dust suppression measures.

17. The railway sidings, if any, shall have adequate fixed water sprinkling system for suppression of dust generated during unloading and loading activities. In addition to this, firefighting system shall be in place to control fire in the coal stack yard of railway sidings.

18. Coal transportation through roads shall be done in covered vehicles.

19. All internal coal transportation roads shall be black topped/concreted. Necessary dust suppression measures shall also be provided for these roads to suppress the dust generated during movement of vehicles. Plantation of thick leaf trees on both sides of the road shall be done.

20. Mobile water sprinkling shall be provided for dust suppression on the temporary quarry haul roads and sprinkling of water shall be done at desired intervals so as to prevent generation of fugitive dust.

21. All internal coal transportation roads, temporary mine haul roads and other material transportation roads of the mine shall be maintained properly and creation of ruts.and pot holes shall be avoided.

22. Action should be taken for transportation of coal through rail.

23. All necessary precaution shall be taken to prevent fire in coal stack yards and coal seams. Necessary precautionary measures, inter alia,

maintaining a minimum stock shall be taken to avoid fire hazards in the coal stack yard.

24. Ambient air quality measured at a distance of 500m from the dust generating sources {Loading or un-loading, haul road, coal transportation road, coal handling plant (CHP), Railway siding, Blasting, Drilling, overburden dumps or any other dust generating source like nearby roads etc.} in the down wind direction shall meet the following standards.

Pollutant		**Concentration in µg/m^3 (24 hourly value)**
SPM	-	500
RPM	-	250
SO_2	-	120
NO_2	-	120

In case any residential or commercial or industrial place falls within 500 metres of any generating sources, the National Ambient Air Quality Standards for industrial area notified shall be applicable.

25. Continuous Ambient Air Quality Monitoring Stations (at least 03 nos. keeping in view the cumulative impact of all mines) shall be installed with data transfer facility to SPCB Server in Basundhara-Garjanbahal Area for monitoring of PM_{10}, $PM_{2.5}$,SO_2 and NO_2 by June-2017. The location of CAAQMS shall be finalized in consultation with the Regional Officer, State Pollution Control Board.

26. Adequate measures shall be taken for control of noise levels below the following limits.

(6.00 AM – 10.00 PM)	-	Leq 75 dB(A)
(10.00PM – 6.00 AM)	-	Leq 70 dB(A)

27. Ambient air quality monitoring data, noise monitoring data and wastewater quality monitoring data shall be electronically displayed at the entry point of the mine or at a suitable location of the mine

28. The mine shall take action to increase the supply of drinking water in the peripheral villages.

29. Plantation of trees shall be undertaken in the colony/ township, over top soil dumps, OB dumps, back filled areas, along the side of internal coal transportation road and in other areas of the mines not being utilized for mining activities. The mine shall take up avenue plantation and plantation in nearby village areas in consultation with DFO/Horticulture Department. The plantation details shall be submitted to the Board before end of March every year.

30. Mining operation is subject to availability of all other statutory clearances.

31. The mine shall submit a declaration by 30th of April every year that all pollution control systems are in good condition, operated and ambient air quality as well as wastewater quality conforms to the prescribed standards.

27/3/12

MEMBER SECRETARY
STATE POLLUTION CONTROL BOARD, ODISHA

To,

SRI RAJ KUMAR, PROJECT OFFICER,
KULDA OPENCAST PROJECT OF M/S. MCL,
AT: BALINGA, PO: BASUNDHARA,
DIST: SUNDERGARH-770076.

Memo No. 4616 /Dt. 27-03-12 /

Copy forwarded to :

i) Regional Officer, State Pollution Control Board, **Jharsuguda.**
ii) District Collector **Sundargarh**
iii) Director of Mines, Govt. of Odisha, Bhubaneswar
iv) Director, Environment-cum-Special Secretary, F & E. Dept. Govt. of Odisha, Bhubaneswar.
v) D.F.O **Sundargarh**
vi) Deputy Director of Mines, **Rourkela**
vii) Sr. Env. Engineer-L-I (C) (Hazardous waste cell)
viii) Sr. Env. Scientist –L-I (L), Central Lab. SPCB, Bhubaneswar
ix) Consent Register
x) Cess Section (Head Office)

SR. ENV. SCIENTIST (MINES)
STATE POLLUTION CONTROL BOARD, ODISHA

GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS

Annexure VI: Sample Inspection Report

Inspection Report of
Kulda OCP of M/s. Mahanadi Coalfields Ltd., Basundhara-Garjanbahal Area
At-Balinga, PO:- Basundhara, Dist-Sundargarh-770 076

Kulda Open Cast Project of M/s. Mahanadi Coalfields Ltd. was inspected on 17.03.2017 by Sri Debadutta Mohanty (AEE), Sri C.S. Chauhan (AEE) and Sri D.K. Sahoo (JSA) to verify the compliance of points raised during inspection conducted by Board officials on dated 04.01.2017 and to verify the status of implementation for Zero discharge system adopted by the Mine.. Sri Raj Kumar (Project Officer), Sri Raji Josua (Area Environment Officer), and Sri Sujay Das (Nodal Officer, Environment) of the mine were accompanied during the site visit. Mine was in operation on the day of visit.

Sl. No.	Conditions	Compliance
01.	Water sprinklers are provided for dust suppression at the hopper of CHP. But the water sprinklers are not working properly as observed during visit.	Mine has two (02) numbers of CHP of capacity (400 X 2) TPH. One CHP was operating on the day of inspection and permanent sprinklers installed at hopper of that CHP for dust suppression was working properly. Another CHP was not in operation on the day of inspection.
02.	Instant water shower system installed at the exit point of the mine was noticed to be non-operational and as a result wetting of coal carrying vehicles are not done.	Mine has two numbers of instant showers. One is near CHP exit point and another is near Mine exit point. On the day of inspection both the instant showers were in operational.
03.	No facility for wheel washing facility has been done.	Mine has no wheel washing facility. The authority of the Mine informed that indent for wheel washing facility is under process and is expected to be set up in the FY 2017-18.
04.	Fire was observed in one stockyard [coal stockyard no.4] and backfilling area on the day of inspection. It was presumed that the fire may be due to storing the coal beyond incubation period.	Fire was not observed in the coal stockyard no. 04 and in the backfilling area. It was learnt that all old coal stored near stockyard no.04 which had exceeded their incubation period have been liquidated completely.
05.	AAQ monitoring was conducted at two different locations during the visit. The RSPM & SPM concentration was found to be not meeting the prescribed standard at one location i.e. near project office. Prescribed standard as per SPCB consent order issued vide Memo no. 4966 dated 21.03.16 is as follows: **Pollutant Con. in**	Ambient Air Quality monitored on 17.03.2017. After analysis result is as follows: Sampling Locations: Near Project Office Parameters in (micro gram/m^3): SPM – 468, RPM – 242

	(microgram/m^3)(24hr.) SPM - 500 RPM - 250 SO_2 - 120 NO_X - 120		
06.	Regarding installation of CAAQMS in the area by MCL, only site for 03 locations have been finalized.	Locations of continuous monitoring stations have been decided keeping in view the impact of coal mine (Kulda OCP & Basundhara OCP) in consultation with Regional Officer, SPCB Jharsuguda. Three locations are as follows: 1. Near Jagannath Temple (22^0 3' 42.57" N & 83^0 44' 36.89" E) 2. BG Area sub-station (22^0 0' 57.37" N & 83^0 46' 11.58" E) 3. Gopalpur (22^0 3' 14.84" N & 83^0 42' 18.50" E) Three nos. of CAAQMS have not been installed yet.
07.	Various actions as per recommendation of feasibility report prepared by NIT, Rourkela required for implementation of zero liquid discharge has not yet been completed.	Detail inspection report regarding zero discharge status of the Mine has been mentioned below.
08.	The oil & grease trap was found to not functioning properly as its outlet contains high concentration of TSS and oil& grease. This waste water is discharged to outside.	During inspection vehicle washing was not carried out and waste water was not discharged to outside. So water sample could not be collected for analysis.
09.	Electronic display board installed for display of environmental parameters was not operational.	Electronic display board was operating on the day of inspection.

STATUS OF TIME BOUND ACTION PLAN TO MAKE ZERO DISCHARGE FOR KULDA OCP OF M/S. MCL, B-G AREA, HEMGIRI, SUNDARGARAH,

Sl. No.	Actions Recommended by NIT Rourkela for Making the Mine Zero Discharge	Progress as on 17.03.2017
1.	Run-off from R4 and R5 should be channeled into the Main Sump by garland drains.	Concrete drain of length 500m constructed from Coal Stock-1 to Oil & Grease trap. Then an earthen type drain has been constructed from Oil & Grease trap to main sump.

2.	The run-off from R3, especially from the major external OB dump is flowing outwards. A garland drain should be constructed to channelize this runoff into a new sedimentation pond constructed in the western region, which can be subsequently pumped back to the Main Sump or proposed MDTP. The capacity of this sedimentation pond should be of 80m x 80m and a depth of 4 m. This water can also be used fire-fighting in coal stocks.	It was observed that Mine has constructed garland drain to check run-off flowing outwards from R3, especially from the major external OB dump. The garland drain has been connected to a low lying area in the western side of external OB dump. The mine authority informed that they have proposed to install a pump near low lying area and that excess water will be pumped back to main sump and shall be reused for fire-fighting in coal stocks and other use. Further, authority of the mine informed that considering safety factor of external OB dump it is not possible to construct any permanent structure / MDTP close to OB dump inside their lease area. However, they have proposed to develop the low lying area present in western side of the external OB dump to accommodate sufficient water during monsoon.
3.	Run-off from coal stocks located in the south of the OCP beyond the existing mine boundary should also be channelized to the Main Sump or the above proposed sedimentation tank.	Coal stock No - 05 has been liquidated completely. However, it is concluded from the topography that run-off from the area is partly goes to main sump and rest amount goes to low lying area near external OB dump. Authority of the mine informed that considering safety factor of external OB dump it is not possible to construct any permanent structure / MDTP close to OB dump inside their lease area. However, they have proposed to develop the low lying area present in western side of the external OB dump to accommodate sufficient water during monsoon. The mine authority informed that they have proposed to install a pump near low lying area and that excess water will be pumped back to main sump and shall be reused for fire-fighting in coal stocks and other use.
4.	The capacity of the main sump is not sufficient to accommodate the entire runoff generated during the monsoon season. Provisions should be made to increase the sump capacity by increasing the size of the sump or creating new sumps to ensure zero discharge from this mine.	This work is under process along with the development of size of the mine.
5.	Alternatively, excess water from the main sump can be pumped to Basundhara	The authority of the mine informed that there will not be requirement of

	East Sump instead of discharging it directly into the river.	discharge by making abc arrangements.
6.	The mine authority may explore the possibility of utilizing nearly 10.0 Lakh m^3 of water from the mine sumps in the proposed coal washery in Basundhara area.	It was learnt that requirement washery shall be met from Main Sump itself, when it will be in operational.
7.	If adequate arrangements to accommodate the excess runoff generated in Kulda OCP are not implemented, water can also be discharged to the Basundhara River after treating it in an MDTP with a capacity of 2.63 Lakh m^3. This MDTP can be constructed at a suitable location near R4 and R5. An online monitoring station may be installed at the discharged end of the proposed MDTP.	Mine has not constructed any MDTP near R4 and R5 region.

Remark:

On the day of inspection, water was not discharged to outside of the Mine premises. In view of above a decision may be taken for renewal of consent to operate of the mine.

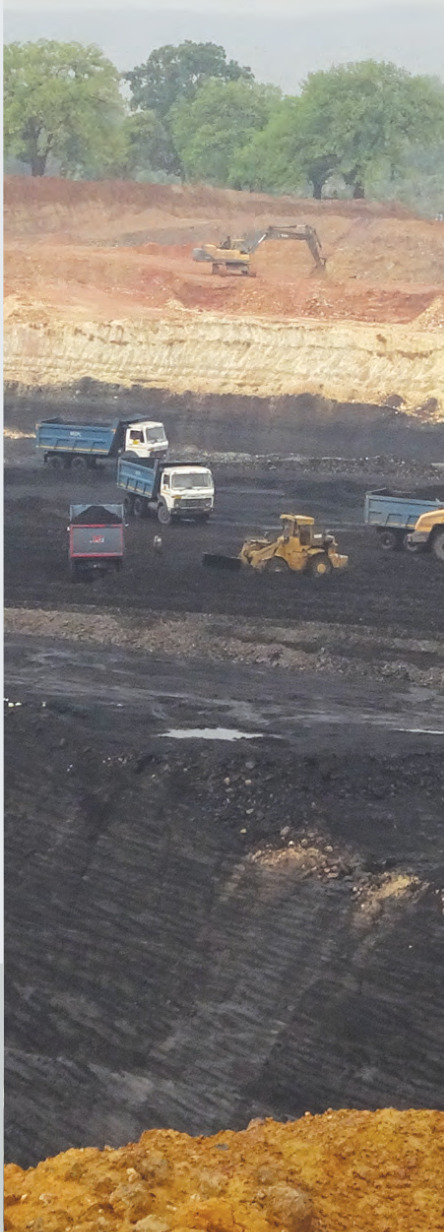
Sri C. S. Chauhan
(Asst. Env. Engineer)

Sri D. Mohanty
(Asst. Env. Engineer)

CLOSING THE ENFORCEMENT GAP: Community-Led Groundtruthing Study of Environmental Violations in Sundargarh, Odisha

Closing the Enforcement Gap: Groundtruthing of Environmental Violations in Sundargarh, Odisha highlights a community-led groundtruthing exercise carried out in relation to operations of the Kulda Open Cast Mining Project in Sundargarh, Odisha. Through the process of groundtruthing, discussions about the impacts faced by people living around the project area were carried out and the conditions that have been placed on the project under the environmental regulatory framework were studied. Issues were identified based on the impacts arising out of non-compliances of these conditions. Evidence was collected of these non-compliances and presented to specific regulatory authorities for action. This document explains the process of groundtruthing, nature of violations and the remedies sought.

Along with Closing the Enforcement Gap: Findings of a Community-led Ground Truthing of Environmental Violations in Mundra, Kutch, Closing the Enforcement Gap: Findings of a Community-led Groundtruthing in Sarguja, Chhattisgarh and a methodology note on groundtruthing, this document can be used as a guide to carry out more such efforts to attain mandated compliance of other projects.



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