

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT
AND
ENVIRONMENTAL MANAGEMENT PLAN
OF
SAND MINING PROJECT ON SURSAR RIVER (SAHARSA SURSAR
RIVER UNIT - 03 SAND GHAT) DIST – SAHARSA (BIHAR)**

SAND BLOCK	SAHARSA SURSAR RIVER UNIT – 03 (Sahsaul Sand Ghat Block 01 , Sahsaul 1 Sand Ghat Block 02 & Nanauti Sand Ghat Block 03)		
PROPOSAL NO	SIA/BR/MIN/414396/2023		
ToR No	SIA/1(a)/ 2387/2023		
AREA	Sahsaul Sand Ghat Block 01	4.90 Ha	
	Sahsaul 1 Sand Ghat Block 02	1.0 Ha	
	Nanauti Sand Ghat Block 03	3.90 Ha	
	Total	9.80 Ha	
PRODUCTION	58800 cum/year or 94080 TPA		
LOCATION	SAHARSA SURSAR RIVER UNIT - 03 Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha, Dist – Saharsa (Bihar)		
KHATA No	978, 978, 672		
KHASRA No	1317, 1697,423, 423, 1317, 1697, 3327		

APPLICANT

M/S Ratan Coal Supplier Pvt. Ltd.

Prop. Prashant Kumar

S/o –Shiv Ratan Prasad

At- QTR. No. 29/2-2, Aaldanga Housing Colony

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A QCI –NABET Accredited Organization



Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhopatia & Kanp District- Saharsa, (Bihar).

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SL NO.	ANNEXURE
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ABBREVIATIONS

AAQ	Ambient Air Quality
bgl	Below Ground Level
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
CPCB	Central Pollution Control Board
CSR	Corporate Social Responsibility
dB	Decibel
DO	Dissolved Oxygen
EAC	Expert Appraisal Committee
EIA	Environmental Impact Assessment
EMC	Environmental Management Cell
EMP	Environment Management Plan
EPA	The Environment Protection Act
GLC	Ground Level Concentration
Ha	Hectare
Ham	Hectare Meter
HFL	High Flood Level
KLD	Kilo litre Per Day
Km	Kilo Meter
Leq	Equivalent Noise Level
LFL	Low Flood Level
LOS	Level of Service
MoEF	Ministry of Environment and Forest & Climate Change
NABET	National Accreditation Board for Education and Training
NGO	Non Governmental Organisation
NH	National Highway
NOC	No Objection Certificate
OSHA	Occupational Safety and Health Administration
PCU	Passenger Car Unit
PM	Particulate Matter
PUC	Pollution Under Control
QCI	Quality Council of India
R & R	Rehabilitation & Resettlement
RBM	River Bed Material
RL	Reduced Level
SEAC	State Expert Appraisal Committee
SH	State Highway
SPCB	State Pollution Control Board
T/cum	Tons Per Cubic Meter
TKN	Total Kjeldahl Nitrogen
TOR	Term of Reference
TPA	Tonnes Per Annum
UNFC	United Nations Framework Classification
VWG	Village Working Group

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

1.0 PURPOSE OF THE REPORT

Environment Impact Assessment (EIA) is a process used to identify the environmental, social & economic impacts of a project prior to decision making. It aims to predict environmental impacts at an early stage of project planning & design, find ways & means to reduce adverse impacts. By using EIA, we can decide the suitable mitigation measures for implementation to maintain healthy working environment and contain pollution within permissible limits.

River plays an important role in the lives of the people. The river systems provide irrigation, potable water, transportation, electricity, and the livelihoods for a large number of people all over the country and to rural areas. Apart from this, river is also a good source of construction grade material as sand & gravel.

As transportation and construction infrastructure expanded since last few decades, the demand for construction grade sand also increased exponentially. The market demand of river sand is high throughout the nation. Sand is extracted directly from the river channel and it doesn't require processing other than size grading. But it is now well understood that continued and indiscriminate sand mining can cause serious environmental impacts, particularly if the river being mined is eroded.

Environmental Impact Assessment is one of the proven management tools for integrating environmental concerns in development process and for improved decision making as there is a need to harmonize the developmental activities with the environmental concerns into the larger interest of the society. The growing awareness, over the years, on environmental protection and sustainable development, has given further emphasis to the implementation of sound environmental management practices for mitigating adverse impacts from developmental activities. EIA study plays a vital role in sustainable development of a country. Recognizing its importance, the Ministry of Environment and Forest, Government of India had formulated policies and procedures governing the industrial and other developmental activities to prevent indiscriminate exploitation of natural resources and to promote integration of environmental concern in project development.

Environmental Impact Assessment report is prepared to comply with the Terms of Reference (TOR)

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received from SEIAA, Bihar under EIA notification of the MoEF & CC dated 14th September, 2006 and its subsequent amendment there-off and also the EIA Guidance Manual for Mining of Minerals of MoEF & CC, Govt. of India, for seeking environmental clearance for mining of Sand in the applied mining lease area.

1.1 IDENTIFICATION OF PROJECT, PROJECT PROPONENT

The Proposed Sand Mining Project is located on Saharsa Sursar River Unit 03 Sand Ghat (Sahsaul Sand Ghat Block 01 , Sahsaul 1 Sand Ghat Block 02 & Nanauti Sand Ghat Block 03) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha, Distt.- Saharsa, Bihar.

The Proposed Production is 58800 Cum/Year or 94080 Tonnes per annum and Area of the project site is 9.80 ha.

As per the Director of Geology, Bihar, the modification of mining plan has been approved .As per EIA notification 2016 and subsequent amendments, the project is coming under category ‘**B**’ (**B1**) and the lease area is more than 5.0 Ha, approved Mining Plan, Pre-feasibility Report and EMP are required for Environment Clearance in respect of the said quarry lease. Copy of letter is enclosed as **Annexure No. II.**

The proposed project is of River bed sand mining and falls under Category- “B1” as per EIA Notification 2006 and its subsequent amendments by Ministry of Environment Forests & Climate Change, GOI.

The details of the project are given below:

Name & Address of the Mine	Saharsa Sursar River Unit 03	Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).
River	Sursar	
Mineral	Sand	
Area (ha)	Saharsa Sursar River	9.80 ha (Sahsaul Sand Ghat Block 01 = 4.90 ha + Sahsaul 1 Sand Ghat Block 02 = 1.0 ha + Nanauti

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	Unit 03	Sand Ghat Block 03 = 3.90 ha)
Production	Saharsa Sursar River Unit 03	58800 Cum/Year or 94080 TPA
Postal Address	Saharsa Sursar River Unit 03	M/S Ratan Coal Supplier Pvt. Ltd. Prop. Prashant Kumar S/o –Shiv Ratan Prasad At- QTR. No. 29/2-2, Aaldanga Housing Colony Post – Chirkunda Nirsa cum Chirkunda, Dist – Dhanbad, Jharkhand Pin - 828202
Status of Mine	Fresh application for Environmental Clearance.	
Project Cost	Rs- 68,62,000 /-	
CER Cost	CER cost will be 2% of the total project cost. This amount will be used for social welfare. CER COST is Rs. 68,62,000 x 2% = Rs. 1,37,240/-	

1.2 BRIEF DESCRIPTION OF PROJECT

The proposed project is open cast semi-mechanized mining of sand with a proposed production of 94080 TPA for applied lease. Detail has been given below:

The proposed project is over an area 9.80 ha. Details are summarized in Table no 1.1

As per MoEF, New Delhi Gazette dated 14th September 2006 and amended thereof, the proposed mining project is categorized as **Category ‘B-1’**. The estimated project cost for the proposed project is **given below:** (including auction cost)

Table: 1.1 Project cost & Production

Sand Ghat Block	Area (Ha.)	Khata No	Khesra No	Production	Auction Cost
Block 01	4.90	978	1317, 1697,423	94080 TPA	52,92,000/-
Block 02	1.0	978	423, 1317, 1697		
Block 03	3.90	672	3327		
Total	9.80			94080 TPA	52,92,000/-

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The proposed mining lease area falls in Survey of India Toposheet 72K/13 & 72K/14. The mine lease co-ordinates and connectivity details are listed below:

Table: 1.2 Mine lease Pillar Co-ordinates (Saharsa Sursar River Unit 03)

Sand Ghat Area		Co-ordinates			Ghat/ Address	River
Sahsaul Sand Ghat Block 01	4.90	A	25°42'35.63"N	86°46'36.85"E	Mauja – Sahsaul, Anchal – Sonvarsha, Dist – Saharsa (Bihar)	Sursar
		B	25°42'37.60"N	86°46'40.91"E		
		C	25°42'40.31"N	86°46'59.05"E		
		D	25°42'37.92"N	86°46'59.18"E		
		E	25°42'34.31"N	86°46'38.04"E		
Sahsaul 1 Sand Ghat Block 02	1.0	A	25°42'38.02"N	86°46'16.08"E	Mauja – Sahsaul, Anchal -Sonvarsha, Dist – Saharsa (Bihar)	Sursar
		B	25°42'34.02"N	86°46'26.25"E		
		C	25°42'33.56"N	86°46'26.22"E		
		D	25°42'34.71"N	86°46'19.75"E		
		E	25°42'37.08"N	86°46'15.92"E		
Nanauti Sand Ghat Block 03	3.90	A	25°42'41.57"N	86°47'44.87"E	Mauja – Nanauti, Anchal – Sonvarsha, Dist – Saharsa (Bihar)	Sursar
		B	25°42'43.94"N	86°48'12.75"E		
		C	25°42'42.64"N	86°48'13.28"E		
		D	25°42'40.16"N	86°47'44.56"E		

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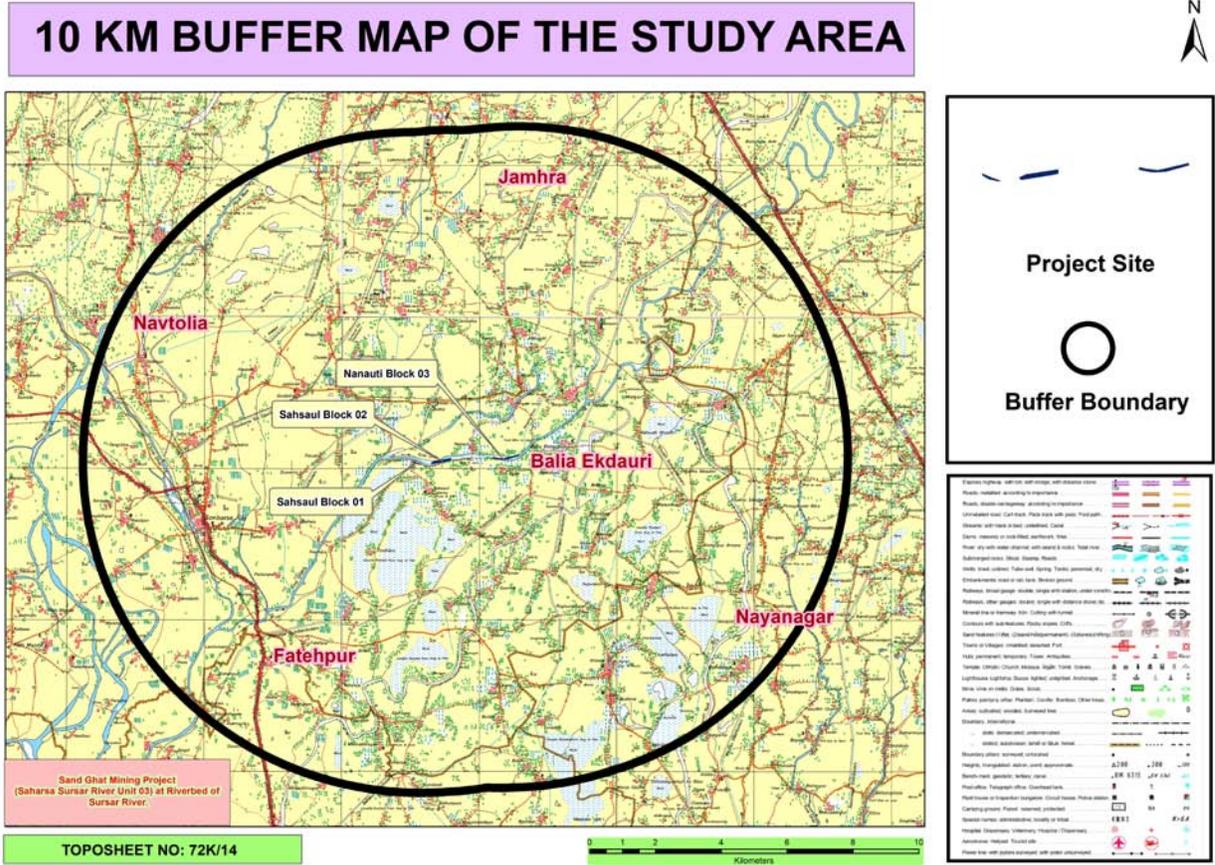


Figure 1.1, 10 km buffer map

Table: 1.3, Connectivity Details given below

Nearest Habitation/ town	Blocks	Village	Distance (Km) Direction
	Block 01	Sahsaul	Approx. 0.90 km, towards SSW direction.
	Block 02	Sahsaul	Approx. 0.85 km, towards SSE direction.
	Block 03	Nanaity	Approx. 0.75 km, towards WNW direction.
Nearest Railway Station	Blocks	Railway Station	Distance (Km) Direction
	Block 01, Block 02 & Block 03	Madhepura Railway Station	approx. 23.0 km towards North direction.
Nearest Airport	Blocks	Airport	Distance (Km) Direction

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	Block 01	JPN International Airport, Patna	Approx. 170.0 km towards W direction.
	Block 02	JPN International Airport	Approx. 169 km towards W direction.
	Block 03	JPN International Airport	Approx. 172 km towards W direction.
Nearest Highway	NH-131: Approx. 9.50 KM towards ENE direction. NH-231: Approx. 6.50 KM towards SW direction. SH-59: Approx. 6.90 KM towards West direction.		

1.3 Details of environmental settings

Sl. No.	Particulars	Details
1	Ecological Sensitive Areas (National Park, Wildlife Sanctuaries)	There is no any Ecological Sensitive Areas Like National Park, Wildlife Sanctuaries, etc are found within 10 km of the study area.
2	Nearest water body	Project site is located on Sursar River.
3	Seismic Zone	Zone- IV <i>Source: BMTC</i>

The EIA-EMP report is prepared as per the TOR granted under the EIA Notification. In order to assess the impact on environment due to proposed mine, it is necessary to ascertain present status of environment prevailing at the project site and identification and assessment of impacts on the environment of the proposed operation.

Project's importance to the country and the region

Sands are ubiquitous material; available everywhere and is being used from the time immemorial for wide applications in our daily life; infrastructures, building construction, highways, roads, townships, multiplexes, foundations of buildings and industrial units etc. and is an integral part of development.

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Life without sand is unthinkable. Over the millennia, the weathering effect, the flow of water at high velocities in rivers and the pressure of water from the high mountainous reservoirs converted and pushed the hard ground underneath into sands, etc. which travelled as sediments with the flow. This sand got deposited along the river course wherever conditions were favorable. In the deep past this settled sand was not extracted in a quantity in which it deposited; since due to less population the requirements was not enough. As a result of continuous deposit of sand , the rivers went on changing their course, widening by itself, eroding the fields and expanding, resulting in flooding, inundation and breaking their banks, causing devastation of property and loss of life. There has been a severe impact on every aspect of the environment. The rivers thus, needed channelization and therefore, extraction of these minor minerals through mining was expedient. The haphazard mining of sands being practiced now for long, through unregulated, uncontrolled and illegal way added almost an irreversible damage to the environment, which became a cause of serious concern to everyone. Though sands are very important mineral source for development, its mining through scientific methods has also become equally imperative.

It is for this purpose that ‘mining plan’ is being drawn so that all its aspects are taken care of justifiably, according to law, protecting the environment, removing all adverse impacts and creating a direct and indirect employment opportunities, improving socio-economic conditions of the local inhabitants and all-around status of life, achieving thereby a sustainable development.

Besides the above, the process of mining of minor minerals (Sand) is a constant source of revenue generation to the State Government through Royalty.

1.4 SCOPE OF THE STUDY

The project proposal was submitted to State Level Environment Impact Assessment Authority-Bihar for its appraisal. Based on which, presentation was held for Terms of Reference (TOR). Based on the data provided and presentation made, the SEIAA-Bihar has issued the Terms of Reference attached as **Annexure-1**.

Followings are the point wise compliance of the ToR provided by the SEIAA Bihar.

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**Table: 1.4 Point wise compliance for TOR
(ToR File No- SIA/1(a)/ 2387/2023)**

S. No	TOR	Compliance	Reference in the Report
1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.	This is fresh LOI, Mine is yet to be opened. It will open only after getting environmental clearance.	--
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	State Govt. has given consent for mining vide letter no. 932/khanan, Saharsa, dated. 22.11.2022.	Annexure II, LOI
3	All documents including approved mine plan, EIA and public hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management and mining technology and should be in the name of the lessee.	The documents including mine plan and EIA report submitted are compatible with one another w.r.t. to following information: Mining Lease Area- 9.80 Hectare Lessee: M/S Ratan Coal Supplier Pvt. Ltd. Prop. Prashant Kumar S/o –Shiv Ratan Prasad Address- QTR. No. 29/2-2, Aaldanga Housing Colony, Post – Chirkunda Nirsa cum Chirkunda, Dist –	Annexure- III Mine plan All details has been complied in chapter-2

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		<p>Dhanbad, Jharkhand Pin 828202</p> <p>Waste generation-</p> <p>No waste will be generated.</p> <p>Mining Method-Opencast semi-mechanized method</p>	
4	<p>All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery /toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).</p>	<p>All Corner Coordinates of mining lease area superimposed on Toposheet Map has been incorporated in EIA/EMP Report.</p>	<p>Refer Chapter 2</p> <p>Fig: 2.1, Corner Coordinates map</p>
5	<p>Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.</p>	<p>The land use map showing salient features of the area is given in the report.</p> <p>The geological map of the mine lease area is also given in the report showing geomorphology</p>	<p>Land-use of the study area Figure 3.1.</p>
6	<p>Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.</p>	<p>The Lease area is dry part of River bed. This is a barren land.</p> <p>The mining process will be done by land use policy of the State & no land diversion has been proposed.</p>	<p>Chapter II & III</p>

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7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating processes /procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions?. The hierarchical system or administrative order of the company to deal with the environmental issues and for insuring compliances with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.	Yes, the proponent Company has a well laid down Environment Policy. The hierarchical system or administrative order of the company has been given in the EIA report.	Chapter VIII Section 8.1 Corporate Environment Policy
8	Issues relating to Mine safety ,including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	Issue related to mine safety has been given in of chapter 7.	
9	The study area will comprise of 10 km	The 10 km zone from periphery	Chapter I

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	<p>zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine/lease period.</p>	<p>of the lease has been considered as the study area. The Buffer map of the study area is attached with report.</p> <p>All the details in the EIA report are for the life of the mine period.</p> <p>The details of mining & production have been given in the report.</p>	<p>Figure 1.1</p>
10	<p>Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p>	<p>Land use pattern of 10 km from the periphery of the lease area has been prepared and incorporated with the report. The study area lies in Sursar River. There is no any Wild Life sanctuary & National Park, protected forest within the study area.</p>	<p>Land-use of the study area Figure 3.1 , Table 3.1</p> <p>10 km buffer map enclosed in Chapter I of EIA Report.</p>
11	<p>Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use ,R&R Issues, if any, should be given.</p>	<p>There is no overburden outside the mine lease area.</p>	
12	<p>A Certificate from the Competent</p>	<p>There is no forest land within</p>	---

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	Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	the lease area.	
13	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and Compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	No forest land is involved in the lease area, therefore, deposition of net present value (NPV) and compensated Afforestation is not indicated.	
14	Implementation status of recognition of forest rights under the schedule tribes and other traditional forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated"	There is no forest land involved in the leased out area. Hence, this act is not applicable for this project.	

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15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given	There is no any Ecological Sensitive Areas Like National Park, Wildlife Sanctuaries, etc are found within 10 km of the study area. However, the vegetation details of the study area are incorporated with the report.	Chapter III Section 3.1.6 Biological Environment
16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	The details Impacts & there mitigation measures are given in chapter IV of EIA/EMP Report.	Chapter IV
17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger / Elephant Reserves / (existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be	No National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger / Elephant Reserves / (existing as well as proposed) are found within 10 km of the study area. MAP showing eco sensitive zone is attached in Chapter III (Fig 3.4)	Chapter III Section 3.1.6 Biological Environment

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

	obtained from the Standing Committee of National Board of Wildlife and copy furnished.		
18	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.	Detailed biological study of core zone and buffer zone within 10 km radius of the periphery of the mine lease has been carried out for the project. The same has been incorporated in the report	Chapter III Section 3.1.6 Biological Environment
19	Proximity to Areas declared as ‘Critically Polluted’ or the Project areas attracting court restrictions for mining operations, should also be indicated and where so required,	Proposed project does not come under critically polluted area.	

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

	clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.		
20	Similarly, for coastal projects ,A CRZ map duly authenticated by one of the authorized agencies demarcating LTL.HTL, CRZ area ,location of the mine lease w.r.t CRZ, Coastal features such as mangroves ,if any should be furnished.(Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority)	There is no R & R involved in this project.	
21	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly,	There is no R & R involved in this project.	

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

	<p>integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.</p>		
22	<p>One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report" Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the predominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease</p>	<p>Base line study was carried out for Pre Monsoon season March 2023 -May 2023 Details are provided in EIA/EMP Report. The locations of the monitoring stations were decided on the basis of prevailing meteorological conditions (Wind direction & wind speed) of the study area. The wind rose has been given in chapter III of EIA/EMP Report. One location has been selected in downwind direction within 500 m from the lease boundary. The location of the monitoring sites has been shown in map.</p>	<p>Chapter III Section 3.1.2 Air Environment</p>

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

	in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.		
23	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	A detailed study on Air quality modeling will be incorporated at the time of FEIA.	
24	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	The water requirement for Sand Block Saharsa Sursar River Unit 03 is 4.50 KLD for drinking, dust suppression and green belt development. A detailed water balance is being provided in the report.	Chapter –II Section 2.7.4 Water Requirement
25	Necessary clearance from the	Water requirement will be	Chapter II

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

	Competent Authority for drawl of requisite quantity of water for the Project should be provided.	fulfilled by private water tanker. So, no clearance is required.	
26	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the project, if any required should be provided.	The project do not consume any process water except for drinking, dust suppression & plantation. Plantation is proposed, which will increase the water holding capacity & help in recharging of ground water. No artificial rainwater harvesting is proposed for the present project in lease area, however if any such project proposed by State Government PP will help out for the above.	
27	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided".	Mining activity will be done on Dry Bed of River so there is no impact on surface water. Mining will be up to 1.0 m below ground level or above the ground water table whichever comes first. This will not intersect the ground water table.	Chapter II
28	Based on actual monitored data , it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard	The mining will be done only upto 1.0 m depth. The detailed impact and control	

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

	may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter – alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	measure w.r.t the quality of water in the surrounding area is discussed under Chapter 4.	
29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	The project site lies on Sursar River. No diversion is proposed.	
30	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.	The mining will be done as per the approved mining plan and 1.0 meter bgl whichever is comes first.	
31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and Quantities coverage, plant species and time frame) and Submitted keeping in mind the same will have to be	Plantation/afforestation will be done as per program i.e along the road sides and near civic amenities, as per mine plan. Post plantation, the area will be regularly monitored in every	Chapter VIII Section 8.2

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

	<p>executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.</p>	<p>season for evaluation of success rate. List of Plant species selected for green belt is detailed in the EIA report. The plant species selected for green belt have a greater ecological value and are of good utility value to the local population. The plant species are selected by giving emphasis on local and native species and the species which are tolerant to pollution</p>	
<p>32</p>	<p>Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress</p>	<p>The projection has been done based on the mineral transportation. The details of traffic analysis are discussed in the report.</p>	<p>Chapter IV Section 4.6 Traffic Analysis Fig 4.2, Table 4.3(i), 4.3(ii)</p>

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

	Guidelines.		
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report	A temporary rest shelter will be provided for the workers near to the site with provisions of water, first aid facility, protective equipments, etc. Details are given in the EIA/EMP Report.	Chapter II Section 2.12.2
34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Conceptual plans and Sections are given in Chapter 2.	
35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impact mainly is expected due air pollution due to fugitive dust emission because of movement of vehicles. However appropriate mitigation measures for air pollution control have been given in the report, discussed in Chapter-4. Each labour will undergo pre-placement medical examination. Thereafter periodical health check up will be arranged as stated in the report.	Chapter VII Section 7.2 Chapter VIII Section 8.3

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	The proposed project being a small scale semi-mechanized mining project, there will be hardly any process related health implication on the population of the nearby villages except fugitive dust emissions due to transportation. Budgetary allocation is given in Chapter-VIII.	Chapter VII Section 7.2 Chapter VIII Section 8.3
37	Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time to time for implementation.	Socio-economic significance provided to the local community i.e. to the nearby villagers is given in the EIA/EMP Report.	Chapter VI Section 6.4 Chapter VII Section 7.2
38	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project	The detailed environmental management plan to mitigate the environmental impacts has been mentioned in of the EIA/EMP Report.	Chapter VIII

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

39	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	This is a draft EIA report. Public hearing is yet to be conducted.	--						
40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending against the project.							
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	<p>The capital cost & recurring cost for has been earmarked for EMP. Chapter IX</p> <table border="1" data-bbox="792 1073 1208 1266"> <thead> <tr> <th data-bbox="792 1073 922 1142">Block</th> <th data-bbox="927 1073 1052 1142">Capital Cost</th> <th data-bbox="1057 1073 1208 1142">Recurring Cost</th> </tr> </thead> <tbody> <tr> <td data-bbox="792 1148 922 1266">Saharsa Sursar River Unit-03</td> <td data-bbox="927 1148 1052 1266">2.555 Lakh</td> <td data-bbox="1057 1148 1208 1266">5.5 lakh</td> </tr> </tbody> </table>	Block	Capital Cost	Recurring Cost	Saharsa Sursar River Unit-03	2.555 Lakh	5.5 lakh	Chapter IX
Block	Capital Cost	Recurring Cost							
Saharsa Sursar River Unit-03	2.555 Lakh	5.5 lakh							
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report".	A Disaster management Plan has been given in EIA report.	Chapter VI						
43	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	2% of the total cost of the project has been earmarked towards the Enterprise Social Commitment which will be used for the development of village.							
44	Besides the above, the below mentioned general points are also to be followed:-								

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

a	All documents to be properly referenced with index and continuous page numberings.	All the documents to be properly referenced with index and continuous page numbering.	
b	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	Compiled With EIA report.	
c	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.	Compiled With EIA report.	
d	Where the documents provided are in a language other than English, an English translation should be provided.	Compiled With EIA report.	
e	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Compiled With EIA report.	
f	While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th	Compiled With EIA report.	

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

	August, 2009, which are available on the website of this Ministry, should be followed.		
g	Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.	Agreed	
h	As per the circular no. J-11011/618/2010-IA. II (I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.	This is new case for Mining. No certified compliance is required.	

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

i	The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	Compiled With EIA report.	
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Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

2.0 TYPE OF PROJECT

The project is proposed is for sand Saharsa Sursar River Unit 03 for the excavation of sand from the bed of river Sursar. The proposed project is opencast semi-mechanized/OTFM mining project.

2.1 NEED FOR THE PROJECT

The project site lies on Sursar River. The river get recharged by the rain water and carries sediment consisting of sand etc during monsoon season, generally.

Sand is used widely in the construction industry. It is usually mixed with cement and other ingredients to create mortar for building. It is also used in agriculture, as sandy soils are ideal for crops such as watermelons, peaches and peanuts. Sand is also used in Aquaria as it makes a low cost aquarium base material. This project will also provide employment to local people helping them earn livelihood.

2.2 LOCATION DETAILS

The Proposed Sand Mining Project is located on (Saharsa Sursar River Unit 03) , (Sahraul Sand Ghat Block 01, is situated at Mauja – Sahraul, Anchal – Sonvarsha, Dist – Saharsa), (Sahraul 1 Sand Ghat Block 02, is situated at Mauja – Sahraul, Anchal – Sonvarsha, Dist – Saharsa), (Nanauti Sand Ghat Block 03, is situated at Mauja – Nanauti, Anchal – Sonvarsha, Dist – Saharsa), Bihar.

The Proposed Production is 58800 Cum/Year or 94080 TPA and Area of the project site is 9.80 ha.

As per the Director of Geology, Bihar, the modification of mining plan has been approved .As per EIA notification 2016 and subsequent amendments, the project is coming under category ‘B’ (B1) and the lease area is more than 5.0 Ha, approved Mining Plan, Pre-feasibility Report and EMP are required for Environment Clearance in respect of the said quarry lease. Copy of letter is enclosed as Annexure No. II.

The proposed project is of River bed sand mining and falls under Category- “B1” as per EIA Notification 2006 and its subsequent amendments by Ministry of Environment Forests & Climate Change, GOI.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Geo Coordinate of Lease Area:

Table 2.1, Mine lease Pillar Co-ordinates (Saharsa Sursar River Unit 03)

Sand Ghat	Area	Co-ordinates			Ghat/ Address	River
Sahraul Sand Ghat Block 01	4..90	A	25°42'35.63"N	86°46'36.85"E	Mauja – Sahraul, Anchal – Sonvarsha, Dist – Saharsa (Bihar)	Sursar
		B	25°42'37.60"N	86°46'40.91"E		
		C	25°42'40.31"N	86°46'59.05"E		
		D	25°42'37.92"N	86°46'59.18"E		
		E	25°42'34.31"N	86°46'38.04"E		
Sahraul 1 Sand Ghat Block 02	1.0	A	25°42'38.02"N	86°46'16.08"E	Mauja – Sahraul, Anchal - Sonvarsha, Dist – Saharsa (Bihar)	Sursar
		B	25°42'34.02"N	86°46'26.25"E		
		C	25°42'33.56"N	86°46'26.22"E		
		D	25°42'34.71"N	86°46'19.75"E		
		E	25°42'37.08"N	86°46'15.92"E		
Nanauti Sand Ghat Block 03	3.90	A	25°42'41.57"N	86°47'44.87"E	Mauja – Nanauti, Anchal – Sonvarsha, Dist – Saharsa (Bihar)	Sursar
		B	25°42'43.94"N	86°48'12.75"E		
		C	25°42'42.64"N	86°48'13.28"E		
		D	25°42'40.16"N	86°47'44.56"E		

Saharsa Sursar River Unit 03 Sand Ghat is well connected to the nearest metalled road. NH-131: Approx. 9.50 KM towards ENE direction., NH-231: Approx. 6.50 KM towards SW direction., SH-59: Approx. 6.90 KM towards West direction.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

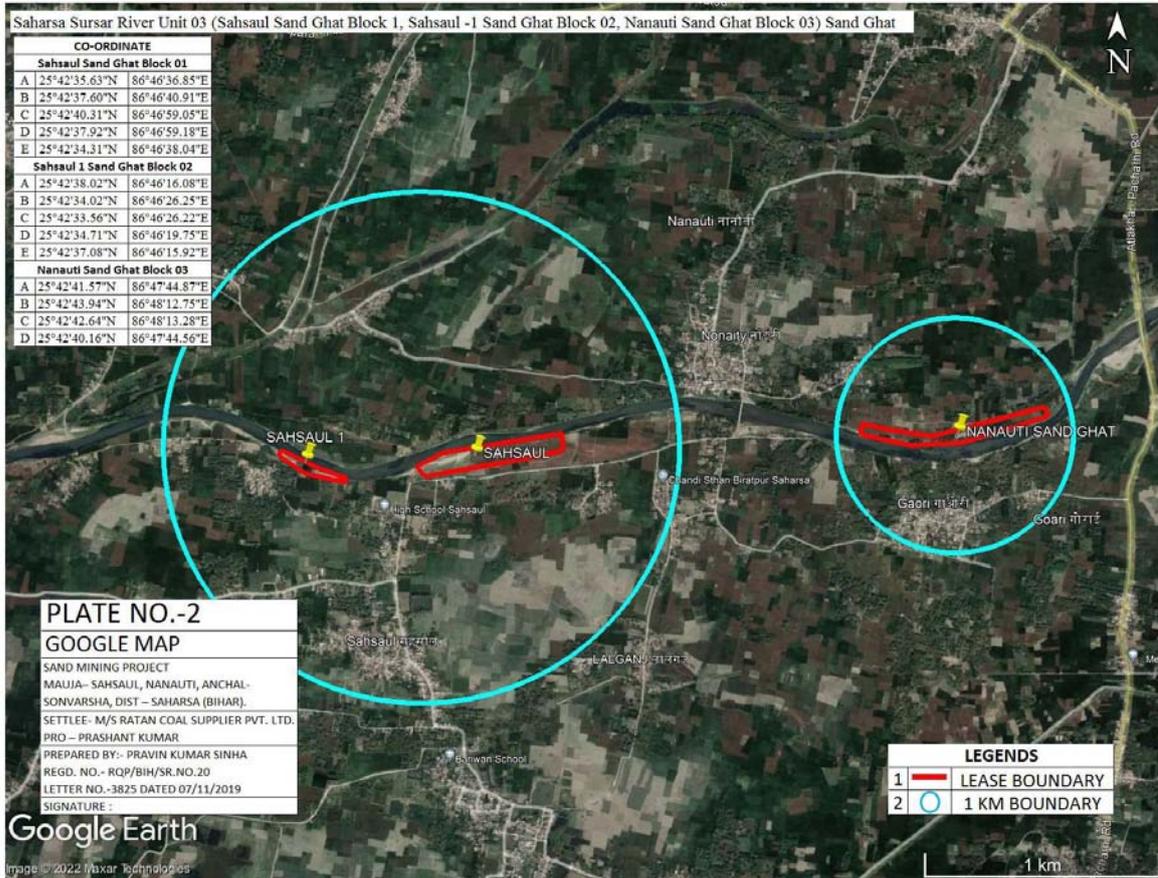


Figure 2.1:- Pillar Coordinate Map of Saharsa Sursar River Unit 03

2.2.1 Lease / Block Area

The proposed project is Open Cast Semi-Mechanized Mining of Sand with a proposed production is given below in tabular form.

Sand Ghat Block	Area	Khata No	Khasra No	Production	Auction Cost
Block 01	4.90	978	1317, 1697,423	94080 TPA	52,92,000/-
Block 02	1.0	978	423, 1317, 1697		
Block 03	3.90	672	3327		
Total	9.80 Ha			94080 TPA	52,92,000/-

As per MoEF, New Delhi Gazette dated 14th September 2006 and amended thereof, the proposed mining project is categorized as Category ‘B-1’. The estimated project cost for the proposed project is given in above table.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

LOCATION MAP

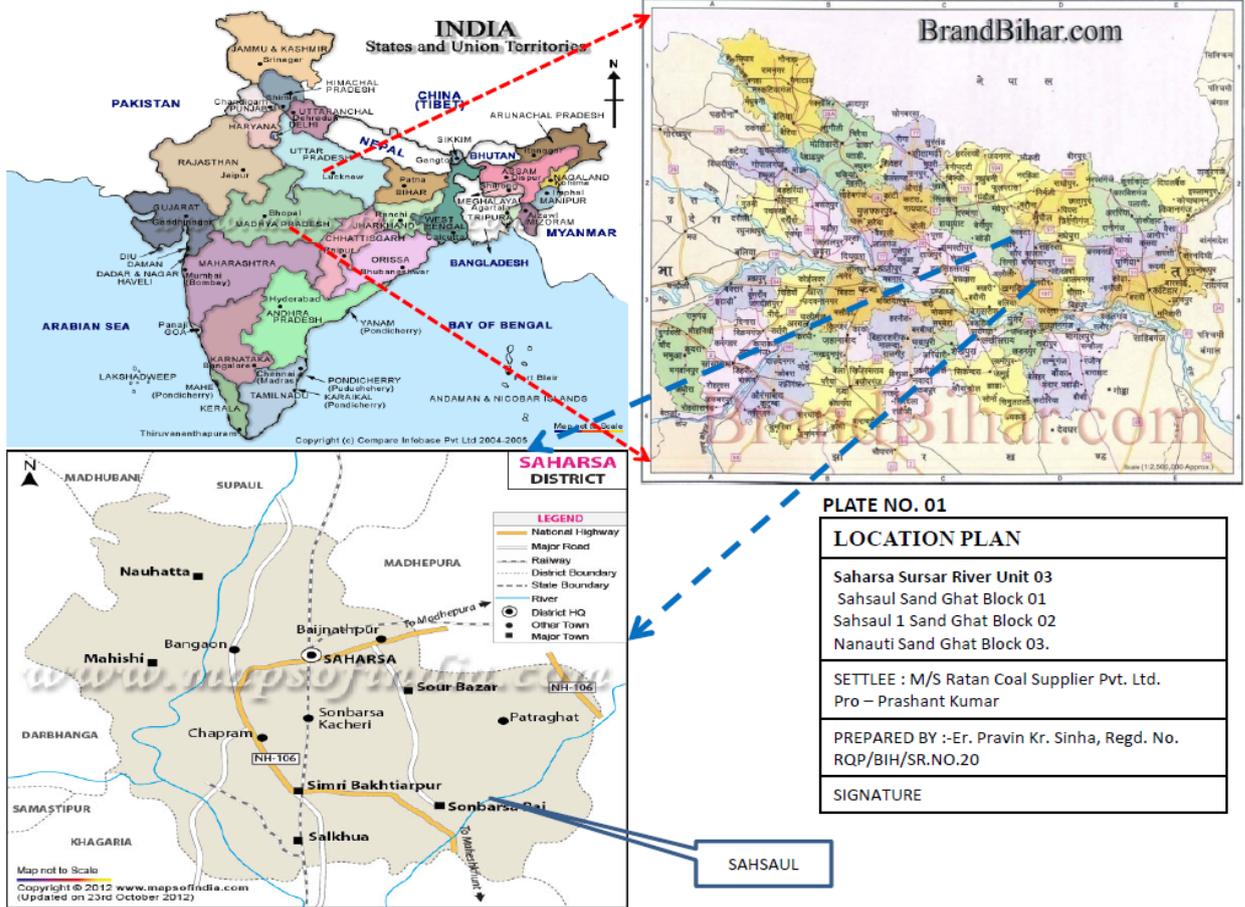


Figure 2.2:- Location map of the project site (Saharsa Sursar River Unit 03)

2.3 TOPOGRAPHY & GEOLOGY

2.3.1 Topography

The area represents a rough and rugged topography. A detailed geological map with contour interval is attached. The area of Sahsaul Sand Ghat Block 01 shows a general slope toward N-W while the highest RL of 36.3 m occurring on the South–West side of the area along boundary pillar, whereas the lowest RL of 34.8 m within the lease area is found along S-W slope near boundary line. The area of Sahsaul 1 Sand Ghat shows a general slope toward N-W while the highest RL of 35.5 m occurring on the South–West side of the area along boundary pillar, whereas the lowest RL of 34.6 m within the lease area is found along S-W slope near boundary line. The area of Nanauti Sand Ghat shows a general slope

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toward N-W while the highest RL of 36.6 m occurring on the South–West side of the area along boundary pillar, whereas the lowest RL of 35.2 m within the lease area is found along S-W slope near boundary line.

Source: Mining plan

2.3.2 GEOMORPHOLOGY

The district has a vast alluvial plain devoid of any hills. There is a gentle slope from north to south with a depression on the centre. The maximum ground elevation is 52.50 m amsl in northern part of the district and the minimum is 41.08 m amsl in the south- eastern parts, average being 47 m amsl. Levees along the stream banks, back swamps or flood basins/ chours of various sizes are the only significant features over the area. The District of Saharsa can be divided in natural divisions. It contains large tracts of sandy land covered with wild marsh. The second division comprised of the anchals lying south of the Sursar river and is the most fertile area in the district. It is also on higher level than the other part of the district and contains very few marshes. It is well suited to the rabbi crops.

Source: Mining plan

2.3.3 REGIONAL GEOLOGY

Regional Geology

The State of Bihar can be geologically divided into three district Lithounits of different eras i.e rocks comprising of pre - Cambrian era, alluvium of ganga basin & siwaliks of extra peninsular region. Siwaliks are present in few areas of northern districts of the state. Whereas alluvium occupy 2/3 of total geographical area of the state particularly in northern & central part. Precambrian / Achaean rocks are rocks are present in southern districts of the state. The broad geological succession is as follows

Table 2.2. Showing the Geological Succession and their geographic distribution

Age	Geology	Occurrences
Quaternary	Alluvial Deposits (Sand, Clay, Silt, Fragments)	North Bihar Plain & Central Bihar Plain
Tertiary	Sand Stones & Clay Stones	North Champaran Hills
Gondwana	Coal Measures, Forming a series of	Banka District

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

	Small outlier basins	
Vindhyaans	Sandstones, Shales, Limestones, etc.	Parts of Bahbhua and Rohtas dist
Satpura	Schist, Phyllite, Quartzite	Part of Aurangabad, Gaya, Nawada, Nalanda, Sheikhpura and Munger District
Proterozoic	Mica Schist, amphibolites, quartzite, granite, dolerite and pegmatite	Nawada, Jamui and Banka
Archaean	Gneisses, Granites, Schists, Phyllites, quartzite, amphibolites & intrusive all metamorphosed sedimentary and igneous rocks	Part of Aurangabad, Gaya, Nawada, Jamui, Banka and Bhagalpur

2.3.4 LOCAL GEOLOGY OF THE AREA

The water bearing formations in the district occurs within the thick pile of quaternary sediments. The thickness of these sediments is about 1000 to 2000 m in the south of the district as inferred from the geophysical survey of Geological Survey of India. There are cyclic deposits of sand, gravel and pebbles of various grades along with clay and silt. In the upper part of the alluvial sequence, sand is fine to medium grained whereas in the lower parts those are medium to coarse with occasional association of gravels. The clay part contains sandy and silty materials. Kankars (calcareous nodules) are found in abundance in clays

Fine sand : 1/64” (0.04 cm) to 1/32” (0.08 cm)

Medium to coarse sand : 1/16” (0.15 cm)

Gravel : 1/8” to 1/16”.

Source: Mining Plan

2.3.5 CLIMATE

The area has warm and humid climate with high temperature and medium to high rainfall.

The temperatures are lowest during December-January with an average minimum of 8⁰C to 10⁰C and maximum of 24⁰C to 25⁰C. The temperatures in the hottest months of April to June are minima 23⁰C to 25⁰C and maxima 35⁰C to 38⁰C.

Source https://cgwb.gov.in/District_Profile/Bihar/Saharsa.pdf

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

2.4 GEOLOGICAL RESERVE

The geological reserves have been each stretches & for individual blocks. Geological reserves have been completed through cross sectional area method. The area of each section line is multiplied by strike influence to get the volume.

Proved Mineral Reserves (111): All quantities of sand occurring up to depth of 1 m from surface has been considered as proved reserves.

Table-2.3:- Proved Mineral Reserves

Sahsaul Sand Ghat Block 01

Classification	Code	Quantity of Sand
A)Mineral Reserves		Cum
1)Proved Mineral Reserve	111	49000
Total		49000

Geological Reserve = 49000 cum. Or 78400 tonnes.

Sahsaul 1 Sand Ghat Block 02

Classification	Code	Quantity of Sand
A)Mineral Reserves		Cum
1)Proved Mineral Reserve	111	10000
Total		10000

Geological Reserve = 10000 cum. Or 16000 tonnes.

Nanauti Sand Ghat Block 03

Classification	Code	Quantity of Sand
A)Mineral Reserves		Cum
1)Proved Mineral Reserve	111	39000
Total		39000

Geological Reserve = 39000 cum. Or 62790 tonnes.

Total Geological Reserve of Block 01, Block 02 & Block 03 = (49000 +10000+39000) = 98000 cum or 156800 tonnes

Source: Mining Plan

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

2.4.1 Mineable Reserves:

Mineable reserves have been computed up to 1 m depth from surface. The volume multiplied by bulk density 1.60 g/cm³ for Sahsaul Sand Ghat, 1.60 g/cm³ for Sahsaul 1 Sand Ghat and 1.61 g/cm³ for Nanauti Sand Ghat. Average 1.60 g/cm³ is taken for the Sursar River.

The minerals excavated from the river bed will be replenished gradually during the monsoon season every year. And the area pertaining to paleo channels of the river will be leveled & restored back.

Table-2.4:- Summary of minable reserves of Saharsa Sursar River Unit-03

Sahsaul Sand Ghat Block 01

Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
36-35	599	68	1	40732	65172
Total				40732	65172

Total Mineable Reserve = **40732** CUM or **65172** Tonnes

Sahsaul 1 Sand Ghat Block 02

Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
35-34	290	23	1	6670	10672
Total				6670	10672

Total Mineable Reserve = **6670** CUM or **10672** Tonnes

Nanauti Sand Ghat Block 03

Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
36-35	789	39	1	30771	49542
Total				30771	49542

Total Mineable Reserve = **30771** CUM or **49542** Tonnes

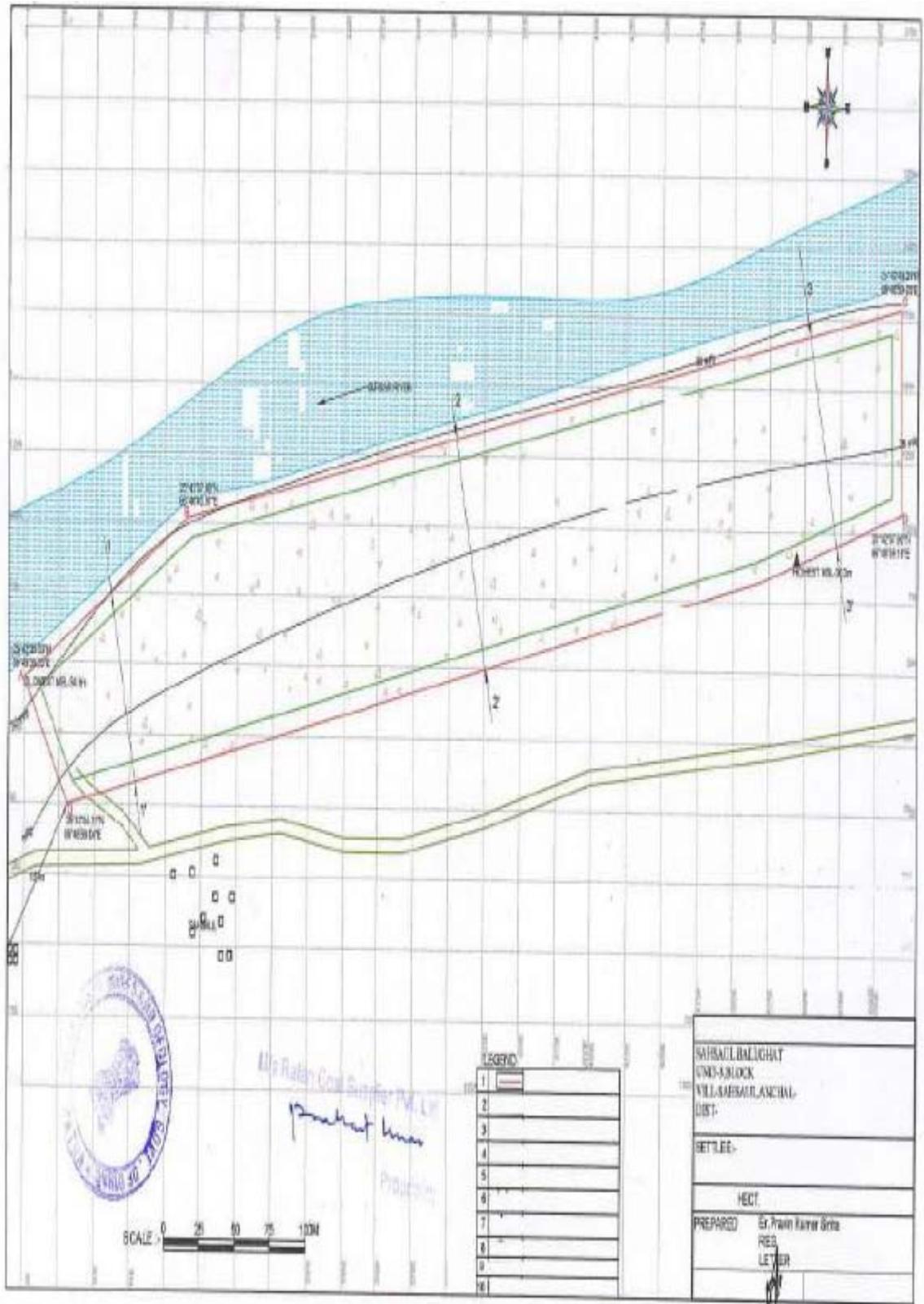
Total Mineable Reserve of Block 01, Block 02 & Block 03 = **(40732 + 6670+30771) cum**
=78173 cum or 125077 tonnes

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahaul & Nauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Table-2.5:- Classification Mineral Reserves

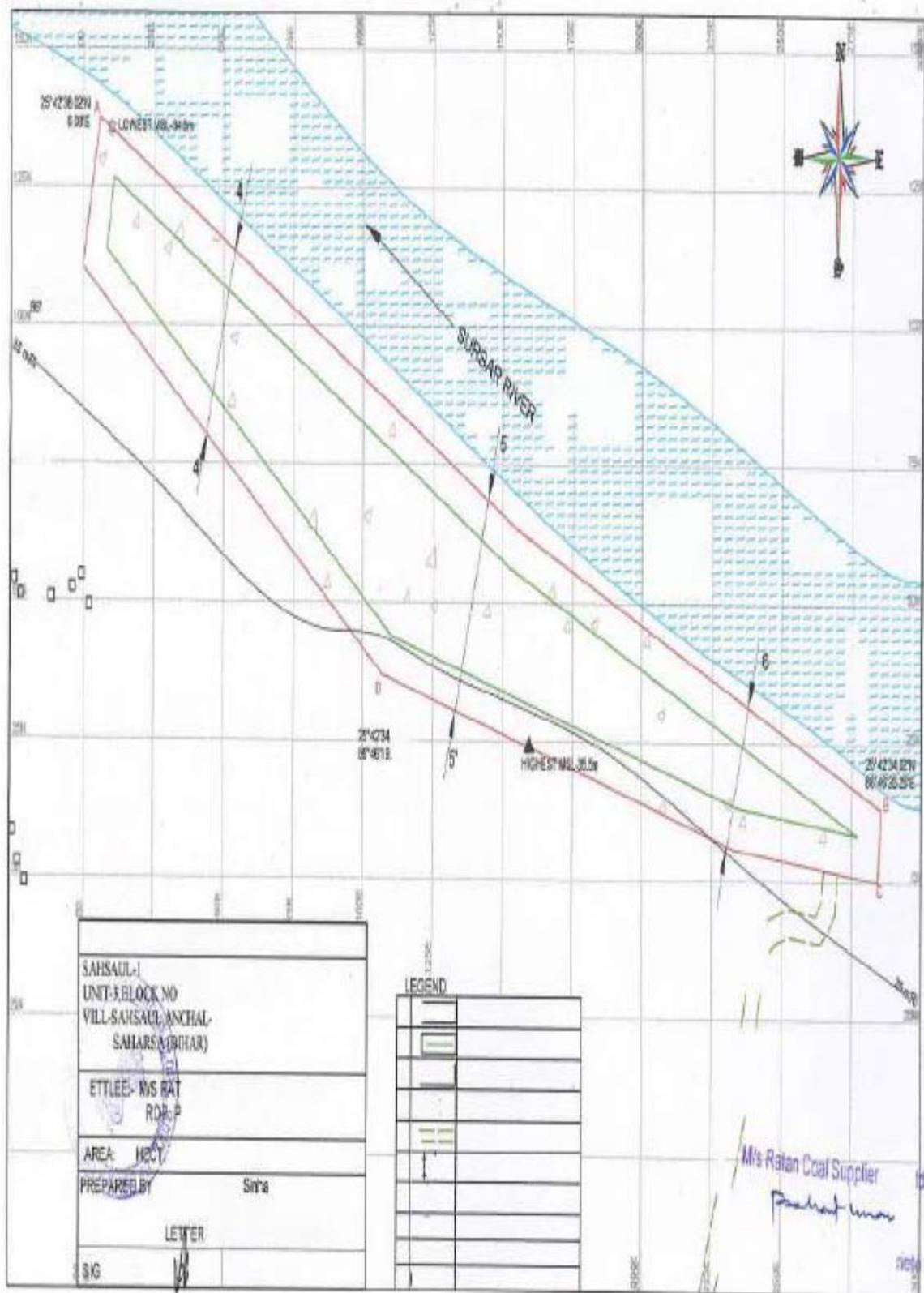
Sand Ghat	Area (Hect)	Geological Reserves (m3)	Mineable Reserves (m3)	Annual Permitted Reserve As per LoI (m3)
Saharsa Sursar River Unit 03	9.80	98000	78173	58800

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).



Sahraul 1 Sand Ghat Block 1

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).



Nanauti Sand Ghat Block 03

Figure 2.3:- Surface cum Geological Section of Saharsa Sursar River Unit 03

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

2.4.2 Type of Mining

- Mining will be done as per the guidelines of Bihar Mineral (Concession Prevention of illegal Mining Transportation & Storage) Rules, 2019, SSMG -2016, and EMGSM – 2020.
- This is an open-cast mining project. The operation will be semi-mechanized/OTFM with use of excavators/JCBs truck /tractors combination or Manually etc. The sand will be collected in its existing form.
- Sand Mining will be carried out only upto a depth of 1 m bgl or above ground water level (whichever is less), for river bed block.
- No drilling /blasting are required as the material is loose in nature.
- Mining will be done only during the day time and completely stopped during the monsoon season.

2.4.3 Year Wise Production Schedule:

The bench wise annual exploitation of sand from Saharsa Sursar River Unit 03 Sand Ghat are given below :-

Table 2.6: Year wise Production Details

YEAR	ROM sand (cum)
1 st Year	58800
2 nd Year	58800
3 rd Year	58800
4 th Year	58800
5 th Year	58800

The annual extractable RBM comes to **58800 CUM or 94080 Tonnes**. It will be replenished after rainy season every year.

Source: Mining Plan

2.5 Conceptual Mining Plan

Mine Applied Area will be worked for Saharsa Sursar River Unit 03 Sand Ghat. However, as the digging depth will be restricted to 1.0 m only. This will be further replenished during

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

rainy season. Balu Ghat will be worked systematically as the width is limited while length is much more. As the lease period is only 5 (Five) years, some of the area will be left un-worked at the end of lease period.

(i) Final Slope Angle to Be Adopted: Height of the bench is limited to 1 m while width of individual bench shall be kept 6.0 m. River bank side will be protected by working in dry part of the river and by leaving safety distance of the width of the river of 5 meter. Bank side natural slope will not be disturbed. This will prevent collapse of bank and erosion. However, the height of the bank with respect to river bed is varying from 3-4 meters.

(ii) During plan period workings will be carried out in the Balu ghat at a time of the Applied Area simultaneously. Scattered workings will ensure safety, remove congestion of vehicles and will have better control and management.

(iii) Ultimate Capacity of Dumps: There will be no OB removal / during the plan period. Therefore no proposal has been envisaged for its separate dumping. No outside material will be filled up in the extracted zone..

2.6.0 Anticipated life of mine

There is as such no specific life of the mine as the area under reference is inactive part of river bed of the river and its pale channels and whatever quantity of minor minerals are extracted from the Applied Area during five year; almost equal to extracted quantity of the same are replenished every year and the river bed area will be leveled & restored back.. However, as lease has been granted for 5 years, mining will be done for the allotted time.

2.6.1 Waste –disposal arrangement

No waste as such will be generated at the site as all materials are saleable. If, at all silt clay will be generated along with the minerals will be used to dispose off in the low lying areas as spread, where plantation will be done after spreading top soil on it.

2.7 GENERAL FEATURES

2.7.1 Land-use pattern

The mine lease area is flat river bed and river banks. There is no forest land or agriculture land in the mine lease area. The entire mining lease lies within River.

2.7.2 Surface drainage pattern

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

The mine site lie on the dry bed of Sursar River so there will be no impact on surface water.

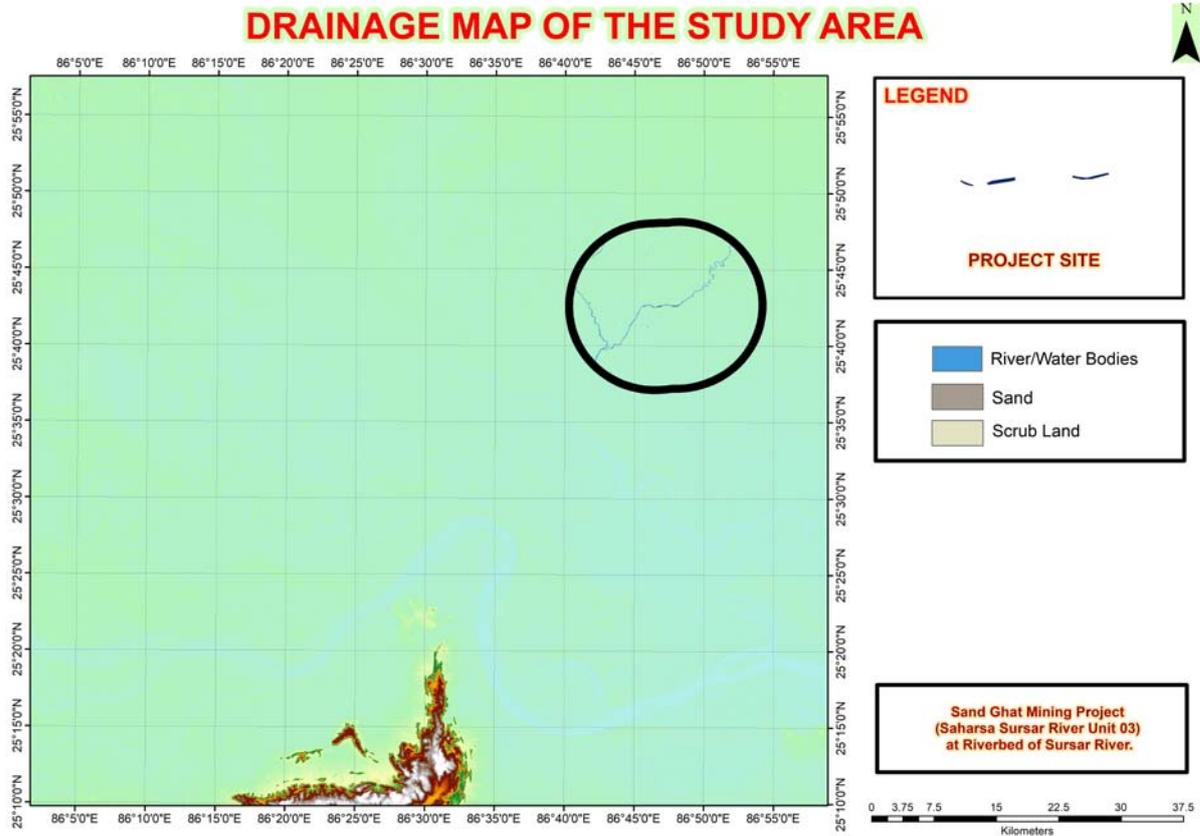


Fig-2.4, Drainage Map

2.7.3 Man power requirement

The manpower requirement for the proposed project will be around 25 who will be utilized for excavation & loading of minerals into trucks or tractor-trolleys. Break-up of Man-power requirement is given in below **Table 2.8**.

Table 2.7 Manpower Requirement

S. No.	Category	Numbers
1.	Administration	1
2.	Supervisor	3
3.	Skilled	09
4.	Un-skilled	12
TOTAL		25

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

2.7.4 Water supply

Water requirement for the proposed project will be provided for the workers for drinking & domestic purpose. Water will also be provided for dust suppression. Fresh water will be only used for drinking purpose. The break up for water requirement is given below:

TABLE 2.8 - Water requirement

Activity	Calculation	Round off Figure in KLD
Drinking	@ 10 lpcd per labor $10 \times 25 / 1000 = 0.25$ KLD	0.25
Dust Suppression	Total approach road to be water sprinkled = (Block 01 = 60m + Block 02 = 270m + Block 03 = 300m) Total 630 m for Saharsa Sursar River Unit 03 $630 \text{ m} \times 6 \text{ m} \times 0.5 \times 2 \text{ times} = 3780 / 1000 = 3.78$ KLD	3.78
Plantation	98 plant (during plan period) @ 5 L/per plant = $98 \times 5 \text{ lts} = 490 / 1000 = 0.49$ KLD	0.49
Total		4.52~4.50 KLD

The water will be supplied from available sources from nearby village.

2.7.5 Site services

The following facilities/amenities will be extended by the mine management under site services:

- A temporary rest shelter will be provided for the workers near to the site for rest.
- Provisions will also be made for following in the rest shelter:
 - ❖ First aid box will be made available at the site. In emergency worker.
 - ❖ Sanitation facility i.e. septic tank or community toilet facility will be provided for the workers.
 - ❖ Mask and gloves distribution to the workers.

2.7.6 Extent of mechanization

The operation will be open cast semi- mechanized/OTFM with use of excavators/JCBs truck /tractors combination or Manually etc. The sand will be collected in its existing form.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

2.7.7 Statutory requirements

It is accepted that effective resource management cannot be done in isolation. The proponent therefore vigorously pursues approaches towards coordination and integration where possible, so as to lead to coordinated regulatory systems.

Various acts dealing with matters relating to the conservation and protection of the environment and which a holder of a mining authorization must also take cognizance of include inter alia, the following:

- Bihar Minor Mineral Concession Rule, 2014 amended till date.
- The Mines Act, 1952.
- The Mines and Mineral (Development and Regulation) Act, 1957.
- Mines Rules, 1955.
- Mineral Concession Rules, 1960.
- Mineral Conservation and Development Rules, 1988.
- The Water (Prevention and Control of Pollution) Act, 1974.
- The Air (Prevention and Control of Pollution) Act, 1981.
- The Environment (Protection) Act, 1986.
- The Forest (Conservation) Act, 1980.
- The Wildlife (Protection) Act, 1972.

3.0 General

The main objective of describing the environment which may be potentially affected, are i) to assess present environmental quality and the environmental impacts and ii) to identify environmentally significant factors that could preclude mine development. Mining activities affect the existing status of environment at site. In order to maintain the existing environmental status at mining site it is essential study existing environmental status and assess the impact of upcoming project on various environmental components. This chapter gives idea of description of environment status of the study area and this will be helpful for assessment of impact on the environment due to proposed mining activities. Baseline environmental status in and around proposed mining lease area describe the existing conditions of air, noise, water, soil, biological and socio-economic environment. The proposed project as a center, a radial distance of 10 km is considered as study area for baseline data collection and environmental monitoring. The data was collected for various environmental attributes so as to compute the impacts that are likely to arise due to proposed development activity.

3.0.1 Study area & study period

The proposed project as a center, a radial distance of 10 km is considered as study area for baseline data collection and environmental monitoring. The baseline environment quality was carried out over a radial distance of 10 km around the mining lease area during the months of March 2023 to May 2023.

3.0.2 Methodology

Base line attributes like ambient air, water, meteorology, noise, Soil, Ecology and Biodiversity & Socio Economy condition were collected as per approved term of reference. Secondary data was also collected from various government department as well as local people. Methodology adopted in this study is as follows.

- ✓ By setting up meteorological station near project site
- ✓ Collection of site specific meteorological data at the mine site.
- ✓ Installation of respiratory dust samplers (for PM₁₀, PM_{2.5}) at different location in the study area for the collection of primary air pollutant and analyze the existing air conditions.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

- ✓ Carrying out a detailed biological study for the Core and Buffer Zone
- ✓ Soil sample were collected from various location in the study area to analyze physical and chemical characteristics for assessment of impact on soil.
- ✓ Surface and Ground water samples were also collected from the various locations in the study area for analysing the existing water quality in the study area.
- ✓ Noise measurement has been done in core zone as well as buffer zone to analyze the existing situation in the study area.
- ✓ Literature review that includes identification of relevant data and articles from various publications, various government agencies and other sources for socio-economy, demography has been done with primary data collection in 10 km of the study area.
- ✓ Existing pollution load has been also identified in the buffer zone due to similar activities.
- ✓ Accordingly, field studies were carried out during the study period (March 2023 to May 2023) to establish the existing baseline conditions.

3.1 Land Environment of the Study area

Land use

Land use involves the management and modification of natural environment or wilderness in to built environment such as settlements and semi-natural habitats such as arable fields, pastures, and managed woods. It also has been defined as "the total of arrangements, activities and inputs that people undertake in a certain land cover type.

Land cover

Land cover is the physical material at the surface of the earth. Land covers include grass, asphalt, trees, bare ground, water, etc. Earth cover is the expression used by ecologist Frederick Edward Clements that has its closest modern equivalent being vegetation. The expression continues to be used by the Bureau of Land Management.

To assess the land use pattern surrounding the 10 km radius of the site, a detailed study was carried out. The land use pattern study reveals that the 10 km environs is predominantly agricultural land. The land use details are given in **Table- 3.1** and shown in **Figure-3.1**.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Table 3.1: Land Use Cover of the Project Study Area

Landuse Type	Area (ha.)
Scrub Land	1040.39
Forest	471.22
River/Water Bodies	384.79
Settlement	4764.72
Vegetation	78.91
Agriculture	32402.16
Area	39142.19

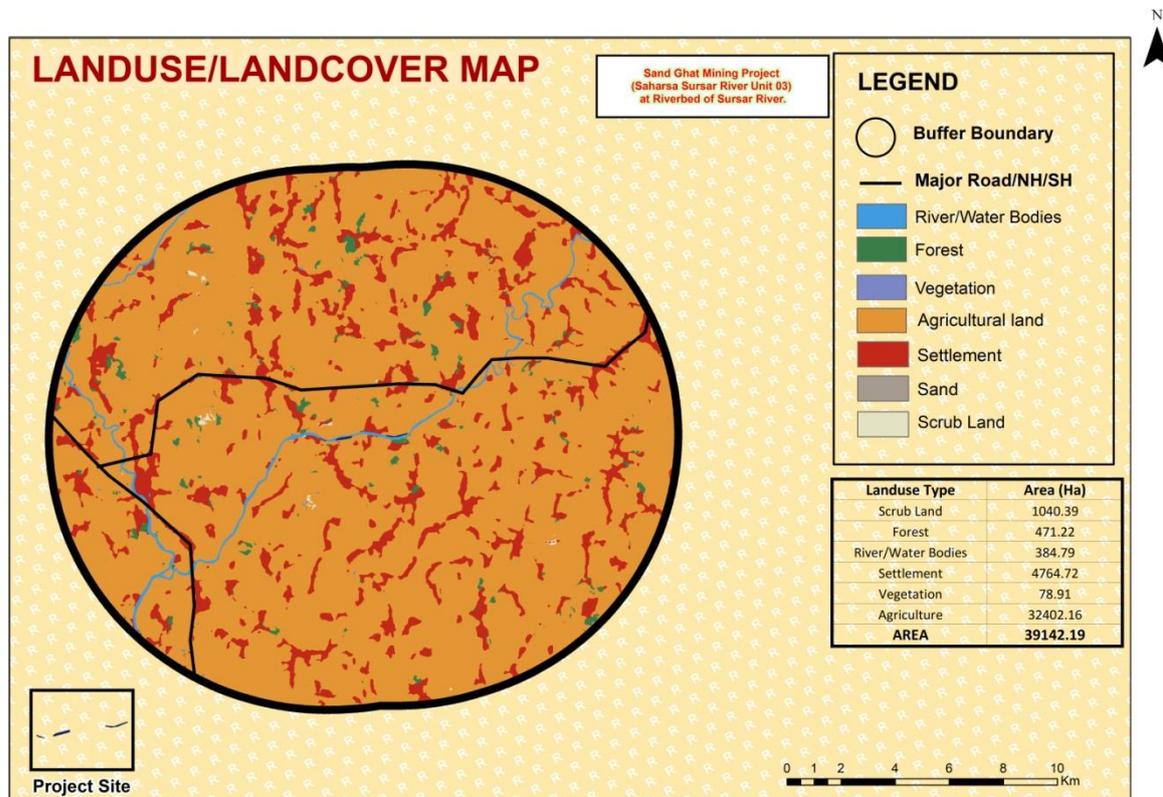


FIGURE 3.1: LAND USE COVER OF THE PROJECT STUDY AREA

3.2 Water Environment

Water quality assessment is one of the essential components of EIA study. Such assessment helps in evaluating the existing health of water body and suggesting appropriate mitigation measures to minimize the potential impact from development projects. Water quality of ground water has been studied in order to assess proposed water-uses in construction, drinking, cooling and horticulture purpose.

The water quality at the site and other locations within the 10 km impact zone was monitored during March 2023 to May 2023. The water sampling locations marked within the study are presented in **Table 3.2** and **Figure 3.2** and the result of the monitoring and analysis are presented in the **Table 3.3** showing Water Quality Monitoring Locations marked within the Study Area.

Table 3.2: Water Sampling Locations

Ground Water monitoring locations			
Location ID	Location name	Distance (Km)	Direction
GW 1	Nanauti	0.50 km from Block 03	WNW
GW 2	Sahsaul	0.65 km from Block 01	South
GW 3	Balia Ekduari	2.90 km from Block 03	East
GW 4	Khajuraha	4.90 km from Block 02	NW
GW 5	Khokasi	7.60 km from Block 03	ESE

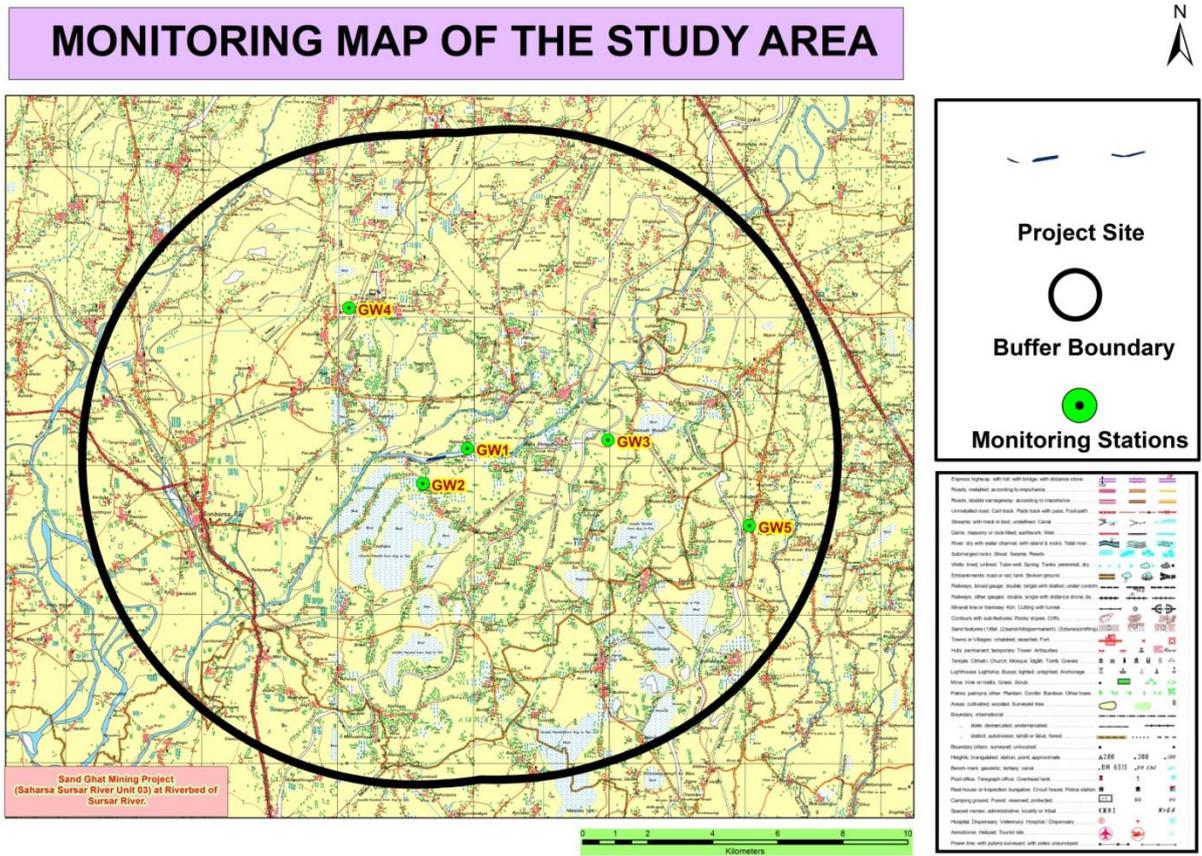


Figure 3.2 Water Sampling Location Map

Table 3.3 Ground Water Quality Monitoring Result

S. No.	Parameter	GW1	GW2	GW3	GW4	GW5	Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
Physical Parameters								
1.	pH (at 25 °C)	7.46	7.61	7.70	7.65	7.66	6.5-8.5	-
2.	Colour (Hazen Unit)	<5	<5	<5	<5	<5	5	15
3.	Turbidity (NTU)	<1	<1	<1	<1	<1	1	5
4.	Odour	Agreeable	Agree	Agreea	Agreeabl	Agreeabl	Agreeable	Agreeable

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

5.	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	-
Chemical Parameters								
6.	Total Hardness as CaCO ₃ (mg/L)	206	216	234	308	351	200	600
7.	Calcium as Ca (mg/L)	41.80	25.10	31.50	30.60	41.20	75	200
8.	Alkalinity as CaCO ₃ (mg/L)	140.02	153.38	160.12	151.34	160.70	200	600
9.	Chloride as Cl (mg/L)	33.94	37.53	36.50	34.0	31.65	250	103000
10.	Cyanide as CN (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	0.05	No Relaxation
11.	Magnesium as Mg (mg/L)	12.56	9.67	8.94	10.12	11.36	30	100
12.	Total Dissolved Solids (mg/L)	363.0	370	436.0	350.35	421.0	500	2000
13.	Sulphate as SO ₄ (mg/L)	32.49	39.57	30.27	25.89	32.24	200	400
14.	Fluoride as F (mg/L)	0.59	0.83	0.56	0.075	0.11	1.0	1.5
15.	Nitrate as NO ₃ (mg/L)	7.54	8.67	6.94	8.62	6.65	45	No Relaxation
16.	Iron as Fe (mg/L)	0.115	0.164	0.172	0.136	0.124	0.3	No Relaxation
17.	Aluminium as Al (mg/L)	<0.03	<0.03	<0.03	<0.03	<0.03	0.03	0.2

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

18.	Boron (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	1.0
19.	Chromium as Cr (mg/L)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.05	No Relaxation
20.	Conductivity (μS/cm)	568	601	680	548	656	1.500	-
21.	Phenolic Compounds (mg/L)	< 0.001	< 0.001	< 0.001	<0.001	< 0.001	0.001	0.002
22.	Mineral Oil (mg/L)	< 0.01	< 0.01	< 0.01	<0.01	< 0.01	0.5	No Relaxation
23.	Anionic Detergents as MBA (mg/L)	<0.02	< 0.02	< 0.02	<0.02	<0.02	0.2	1.0
24.	Zinc as Zn (mg/L)	0.135	0.142	0.122	0.159	0.155	-	15
25.	Copper as Cu (mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	0.05	1.5
26.	Manganese as Mn (mg/L)	< 0.10	< 0.10	< 0.10	<0.10	< 0.10	0.1	0.3
27.	Cadmium as Cd (mg/L)	< 0.001	< 0.001	< 0.001	<0.001	< 0.001	0.003	No Relaxation
28.	Lead as Pb (mg/L)	< 0.01	< 0.01	< 0.01	<0.001	< 0.01	0.01	No Relaxation
29.	Selenium as Se (mg/L)	< 0.01	< 0.01	< 0.01	<0.01	< 0.01	0.01	No Relaxation
30.	Arsenic as As (mg/L)	< 0.01	< 0.01	< 0.01	<0.01	< 0.01	0.01	No Relaxation
31.	Mercury as Hg (mg/L)	<0.001	< 0.001	<0.001	<0.001	<0.001	0.001	No Relaxation
32.	Total Coliform	<2/100ml	<2/10	<2/100	<2/100	<2/100m	Absent/250ml	

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

	(MPN/100 mL)		0ml	ml	ml	l	
Microbiological Parameters							
33.	<i>E. coli</i> (CFU/100mL)	Absent	Absen t	Absent	Absent	Absent	Absent/250ml

Observation:

Analysis of results of ground water reveals the following: -

- pH varies from 7.46 to 7.66
- Total hardness varies from 206 mg/l to 351 mg/l .
- Total dissolved solids vary from 350.35 mg/l to 436 mg/l.

The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by Indian Standards IS: 10500.

3.2 (b) SURFACE WATER

There is no surface water samples taken for the study area as the river is seasonal and not perennial so there is water in the river during the rainy season and in rest of the months it is dry channel.

3.2.1 Sampling frequency

Parameters for analysis of water quality were selected based on the utility of the particular source of water as per CPCB guidance. Surface water quality was monitored for parameters as per Methods of Monitoring & Analysis published by CPCB and it was rated according to the CPCB Water Quality Criteria against A, B, C, D & E class of water. Water samples were collected as Grab water sample from sampling location for complete physico-chemical and bacteriological tests respectively. The samples were analyzed as per standard procedure / method given in IS: 10500.

The surface water quality is compared with CPCB water quality criteria mentioned in Table :

Table 3.4, Water quality criteria as per Central Pollution Control Board

Designated-Best-	Class of	Criteria
------------------	----------	----------

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Use	water	
Drinking Water Source without conventional treatment but after disinfection	A	Total Coliforms Organism MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6mg/l or more Biochemical Oxygen Demand 5 days 20°C 2mg/l or less
Outdoor bathing (Organized)	B	Total Coliforms Organism MPN/100ml shall be 500 or less; pH between 6.5 and 8.5; Dissolved Oxygen 5mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	Total Coliforms Organism MPN/100ml shall be 5000 or less; pH between 6 to 9; Dissolved Oxygen 4mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Propagation of Wild life and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	pH between 6.0 to 8.5 Electrical Conductivity at 25°C micro mhos/cm Max.2250 Sodium absorption Ratio Max. 26 Boron Max. 2mg/l
	Below-E	Not Meeting A, B, C, D & E Criteria

As per the standard practice, one sample from each station was taken in January. Sampling was done by standard sampling technique as per the Standard Methods. Necessary precautions were taken for preservation of samples.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

3.3 Air Environment

Meteorology is the key to understand the air quality. The essential relationship between meteorology and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

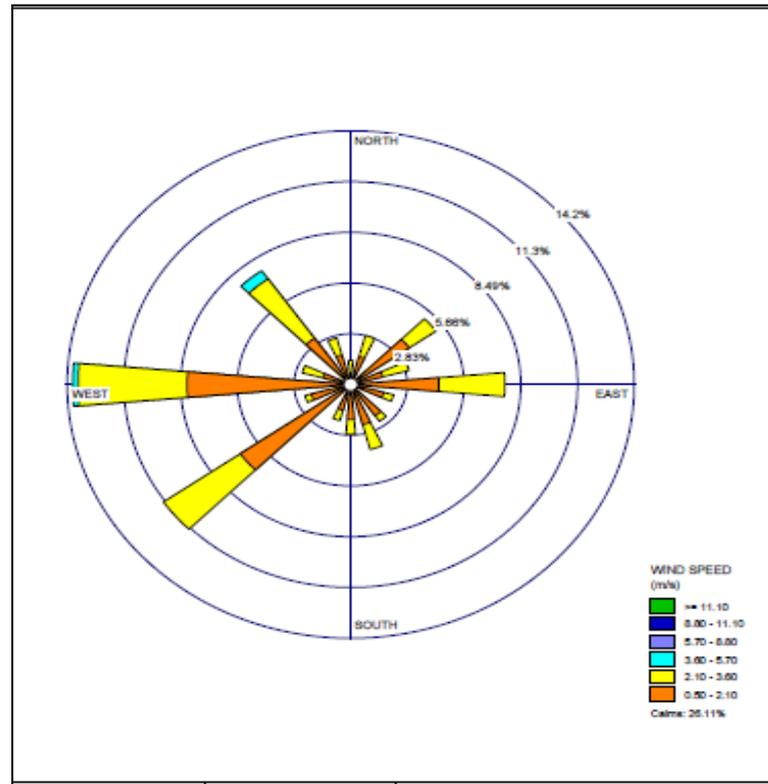
A meteorological station was set up at the proposed mine premises. Meteorological data was generated during the pre-monsoon season and shown in **Table-3.5**.

The following parameters were recorded at hourly intervals continuously during monitoring period, except rainfall which was recorded on daily basis.

- Wind speed
- Wind Direction
- Air Temperature

Table-3.5, Summarized project site meteorological data for Pre-Monsoon Season

Month	Temperature °C		Wind Speed (Km/Hr)	
	Min	Max	Average	Max
March 2023	20	38	11.3	21.0
April 2023	25	43	13.2	24.9
May 2023	26	42	16.1	27.5



3.3.2 Comparison of primary and secondary data

The India Meteorological Department (IMD) records the data twice a day viz. 0830 hr and 1730 hr while the site-specific data has been recorded at an hourly interval. On comparison of site specific data generated for study period vis-à-vis the IMD data, slight variations were observed. The following observations are brought out:

When the data generated at project site is compared with the data recorded at IMD, it is observed that the data generated at the site is broadly in comparison with regional meteorology, except for minor variations as described above such as predominant wind direction is NW at IMD while at project site predominant wind direction is West.

3.3.3 Ambient Air Quality

The ambient air quality was monitored in the impact area as per MoEF& CC guidelines. The study area represents entirely rural environment. The prime objective of the baseline air quality study was to assess the ambient air quality of the mining lease area.

3.3.4 Selection criteria for monitoring location

The baseline status of the ambient air quality has been assessed through a scientifically designed ambient air quality network. The design of monitoring network in the air quality surveillance programme has been based on the following consideration.

- Meteorological parameters including wind direction
- Topography of the study area
- Representative of regional background air quality for obtaining baseline status
- Representative of likely impact areas.

Ambient Air Quality Monitoring (AAQM) stations were set up at 09 locations with due consideration to the above mentioned points. AAQM locations were selected in downwind, upwind as well as crosswind direction of the proposed mining lease area covering core and buffer zones. The details of the monitoring stations are given in **Figure 3.4** and shown in **Table-3.6**.

Ambient air quality monitoring was carried out twice a week with a frequency of 24 hours for three months during the study period. The common air pollutant namely Particulate Matter-

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

10 (PM₁₀) & PM_{2.5}, Sulphur-dioxide (SO₂) and Oxides of Nitrogen (NO₂) has been measured through a planned field monitoring.

The baseline values of the air pollutants of concern are presented in Tables below statistical parameters like minimum, maximum, average and 98th percentiles have been computed from the observed field data for all sampling stations and are given **Table-3.7, Table-3.8, Table-3.9 & Table 3.10**. These are compared with the standards prescribed by Central Pollution Control Board (CPCB) for industrial, residential and rural zone.

Table 3.6: Ambient Air Quality Monitoring Stations

Air monitoring locations			
Location ID	Location name	Distance (Km)	Direction
AQ 1	Nanauti	0.50 km from Block 03	WNW
AQ 2	Sahsaul	0.65 km from Block 01	South
AQ 3	Balia Ekduari	2.90 km from Block 03	East
AQ 4	Maura	5.10 km from Block 03	South
AQ 5	Khajuraha	4.90 km from Block 02	NW
AQ 6	Dehad	4.85 km from Block 02	SW
AQ 7	Barsam	4.80 km from Block 02	NE
AQ 8	Khokasi	7.60 km from Block 03	ESE
AQ 9	Mahinath Nagar	8.10 km from Block 01	SSW

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

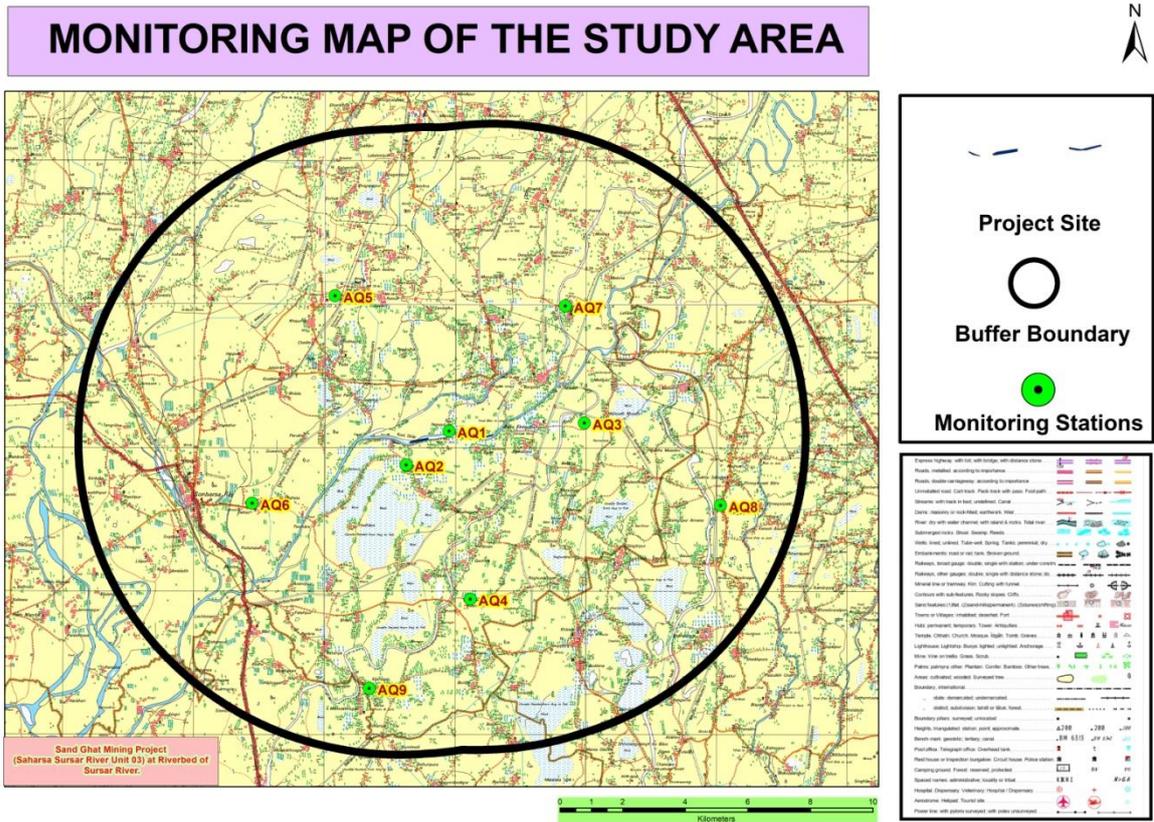


Figure 3.4 Ambient Air Quality Monitoring Stations

Table-3.7: Ambient Air Quality in the Study Area PM2.5

Location Code	Name of the station	PM2.5 ($\mu\text{g}/\text{m}^3$)			
		Min	Max	Average	98 th Percentile
AAQ1	Nanauti	26.33	41.69	31.88	40.94
AAQ2	Sahsaul	24.35	36.66	30.11	36.62
AAQ3	Balia Ekduari	22.56	34.82	29.76	34.78
AAQ4	Maura	24.87	41.05	32.03	41.03
AAQ5	Khajuraha	26.15	37.33	29.95	37.23
AAQ6	Dehad	22.59	36.26	28.33	36.14
AAQ7	Barsam	27.17	40.71	33.25	40.63
AAQ8	Khokasi	24.62	40.5	34.95	40.93
AAQ9	Mahinath Nagar	23.62	41.8	34.43	41.25

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Table-3.8: Ambient Air Quality in the Study Area PM10

Location Code	PM10 ($\mu\text{g}/\text{m}^3$)				
	Name of the station	Min	Max	Average	98 th Percentile
AAQ1	Nanauti	51.85	79.94	68.47	79.80
AAQ2	Sahsaoul	55.14	74.35	65.70	74.21
AAQ3	Balia Ekduari	46.72	63.65	55.65	62.81
AAQ4	Maura	49.66	78.64	64.65	77.79
AAQ5	Khajuraha	54.19	74.73	63.47	74.71
AAQ6	Dehad	48.77	66.52	58.43	66.40
AAQ7	Barsam	60.47	69.94	65.07	69.54
AAQ8	Khokasi	56.84	74.52	64.47	74.52
AAQ9	Mahinath Nagar	55.21	78.64	65.68	77.72

Table-3.9: Ambient Air Quality in the Study Area SO2

Location Code	SO2 ($\mu\text{g}/\text{m}^3$)				
	Name of the station	Min	Max	Average	98 th Percentile
AAQ1	Nanauti	8.52	11.43	9.45	11.37
AAQ2	Sahsaoul	7.34	11.36	9.24	11.33
AAQ3	Balia Ekduari	7.26	10.92	8.64	10.84
AAQ4	Maura	8.66	11.69	9.72	11.65
AAQ5	Khajuraha	8.44	11.53	9.99	11.52
AAQ6	Dehad	7.29	10.86	8.83	10.82
AAQ7	Barsam	5.55	9.62	7.54	9.51
AAQ8	Khokasi	6.32	10.92	8.79	10.80
AAQ9	Mahinath Nagar	6.32	11.61	9.11	11.53

Table-3.10: Ambient Air Quality in the Study Area NO2

Location Code	NO2 ($\mu\text{g}/\text{m}^3$)				
	Name of the station	Min	Max	Average	98 th Percentile
AAQ1	Nanauti	9.27	14.58	11.95	14.36
AAQ2	Sahsaoul	9.32	14.93	12.77	14.92
AAQ3	Balia Ekduari	9.4	13.76	11.54	13.74
AAQ4	Maura	9.75	13.7	10.52	13.18
AAQ5	Khajuraha	9.11	14.64	11.56	14.55
AAQ6	Dehad	9.2	14.19	10.18	13.97
AAQ7	Barsam	8.47	13.67	11.84	13.63
AAQ8	Khokasi	11.55	16.11	13.79	16.07
AAQ9	Mahinath Nagar	9.79	16.11	13.04	16.07

3.3.4.1 Baseline Scenario

Particulate Matter (PM_{2.5})

Fine particles include all types of combustion, including motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes. In general some of the important sources of particulate matter are mines. The following sources of particulate matter in the study area are identified:

- Emission due to vehicular movement
- Dust generation from ground or other mining operations

PM_{2.5} recorded within the study area was in the range of 22.56 µg/m³ to 41.8 µg/m³. Table 3.3 were compared with the National Ambient Air Quality Standards (NAAQS) and found that all sampling stations recorded in the study area are within the applicable limits i.e., 60µg/m³ for PM_{2.5} for industrial, residential, rural and other areas.

Suspended Particulate Matter (PM₁₀)

Suspended particulate matter in general terms is the particulate matter in suspension in ambient air. It includes dust, smoke etc. In general some of the important sources of suspended particulate matter are mines. The following sources of suspended particulate matter in the study area are identified:

- Emission due to vehicular movement
- Dust generation from ground or other mining operations

The minimum and maximum level of PM₁₀ recorded within the study area was in the range of 46.72 µg/m³ to 79.94 µg/m³. The 24 hourly average values of PM₁₀ were compared with the National Ambient Air Quality Standards (NAAQS) and found that all sampling stations recorded in the study area are within the applicable limits i.e., 100 µg/m³ for PM₁₀ in industrial, residential, rural and other areas.

Sulphur Dioxide (SO₂)

Sulphur dioxide gas is an inorganic gaseous pollutant. Sulphur dioxide emissions are expected to be emitted wherever combustion of any fuel containing Sulphur takes place. The Sulphur in the fuel will combine with oxygen to form Sulphur dioxide. The following sources of Sulphur dioxide in the study area are identified:

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- Emissions from domestic/consumption of fuel (coal, diesel, etc)

Sulphur dioxide in atmosphere is significant because of its toxicity; Sulphur dioxide is capable of causing illness and lung injury. Further it can combine with water in the air to form toxic acid aerosols that can corrode metal surfaces, fabrics and the leaves of plants. Sulphur dioxide is an irritant to the eyes and respiratory system. Excessive exposure to Sulphur dioxide causes breathing related diseases as it affects the lungs.

The minimum and maximum concentration of SO₂ recorded within the study area was 5.55 µg/m³ to 11.69 µg/m³. The 24 hourly average values of SO₂ were compared with the National Ambient Air Quality Standards (NAAQS) and it was found that all sampling stations recorded values are below the applicable limits 80 µg/m³ for Residential, Rural and other areas.

Oxides of Nitrogen (NO₂)

The important sources of oxides of Nitrogen are from utilities and auto exhaust due to vehicular movement in mine lease area. The following sources of oxides of nitrogen in the study area are identified.

- Emissions from vehicular movements in the study area.

Oxides of Nitrogen in the presence of sunlight will undergo reactions with a number of organic compounds to produce all the effects associated with photochemical smog. NO₂ has inherent ability to produce deleterious effects by themselves like toxicity. It causes asphyxiation when its concentration is great enough to reduce the normal oxygen supply from the air. The minimum and maximum level of NO₂ recorded within the study area was in the range of was 8.47 µg/m³ to 16.11 µg/m³.

The 24 hourly average values of NO₂ were compared with the National Ambient Air Quality Standards (NAAQS) and it was found that all sampling stations recorded values are below the applicable limits 80 µg/m³ for Residential, Rural and other areas.

Ambient Air Quality in the Study Area, Free Silica

SiO ₂ (µg/m ³)	AQ1	AQ2	AQ3	AQ4	AQ5	AQ6	AQ7	AQ8	AQ9
Minimum	1.49	1.76	1.69	1.44	1.52	1.32	1.85	1.41	1.60
Maximum	1.56	1.82	1.72	1.53	1.56	1.42	1.88	1.56	1.65

3.4 SOIL ENVIRONMENT

Soil may be defined as a thin layer of earth’s crust, a medium for the growth of plants. The soil characteristics include both physical and chemical properties. The soil survey and soil sample were carried out / collected to assess the soil characteristics of the study area. Soil samples were collected from 05 locations and analyzed as per CPCB norms. The soil sampling locations are marked in **Figure 3.5** and shown in **Table 3.11**. The physico-chemical characteristic of these soil samples is given in **Table 3.12**.

Table 3.11: Description of soil sampling locations

Soil monitoring locations			
Location ID	Location name	Distance (Km)	Direction
SQ 1	Nanauti	0.50 km from Block 03	WNW
SQ 2	Sahsaul	0.65 km from Block 01	South
SQ 3	Balia Ekduari	2.90 km from Block 03	East
SQ 4	Khajuraha	4.90 km from Block 02	NW
SQ 5	Khokasi	7.60 km from Block 03	ESE

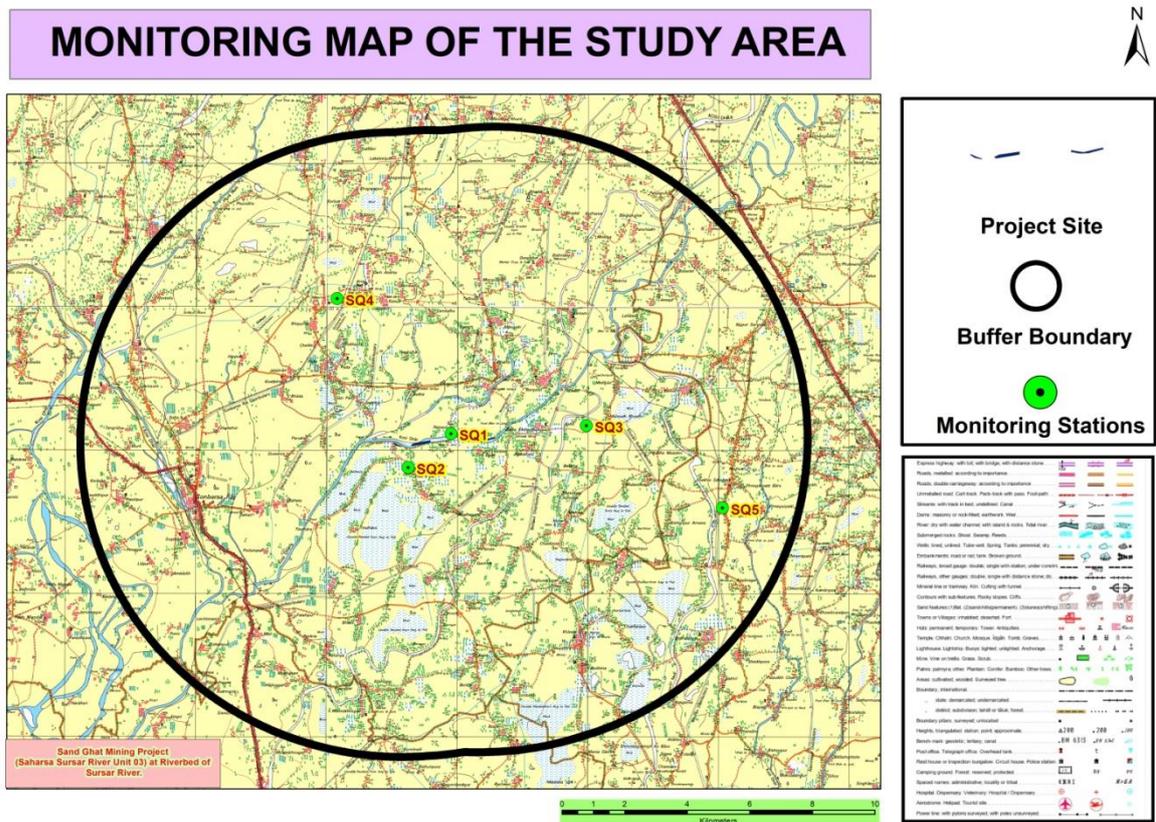


Figure 3.5, Soil Sampling Locations

Table 3.12: Physico-chemical properties of soil

S. No.	Parameter	Unit	SQ-1	SQ-2	SQ-3	SQ-4	SQ-5
1	Texture	-	Sand	Sandy Loam	Loamy Sand	Sandy Loam	Sandy Loam
	Silt	%	12	39	27	34	32
	clay	%	25	18	18	29	16
	Sand	%	63	43	55	37	52
2	pH	-	7.86	7.53	8.07	8.04	8.13
3	Electrical Conductivity	µmhos/cm	634	564	754	616	568
4	Cation exchange	meq/100 gm	17.68	14.35	15.96	18.92	16.85
5	Potassium	mg/kg	67.5	67.1	70.6	76.9	78.5
6	Sodium	mg/kg	92.1	108.5	123.4	112.3	116.5
7	Calcium	mg/kg	252.6	241.9	206.7	246.3	238.5
8	Magnesium	mg/kg	102.8	144.2	124.3	114.8	115.8
9	Sodium Absorption Ratio	-	2.56	2.40	2.59	2.63	2.65
10	Water Holding Capacity	%	17.24	21.6	18.2	25.2	19.35
11	Porosity	%	46.3	48.2	45.5	46.0	44.8

Observations:

Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.53 to 8.13, which shows that the soil is alkaline in nature. Potassium is found to be from 67.1 meq/100 gm to 78.5 meq/100 gm.

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3.5 NOISE ENVIRONMENT

The noise levels within the study area were recorded using Sound Level Meter and noise monitoring results were compared with the Ambient Noise Quality Standard notified under Environment Protection Act, 1986. The levels recorded are as stated in **Table 3.13**. The noise level monitoring locations are marked in **Figure 3.6** and shown in **Table 3.14**.

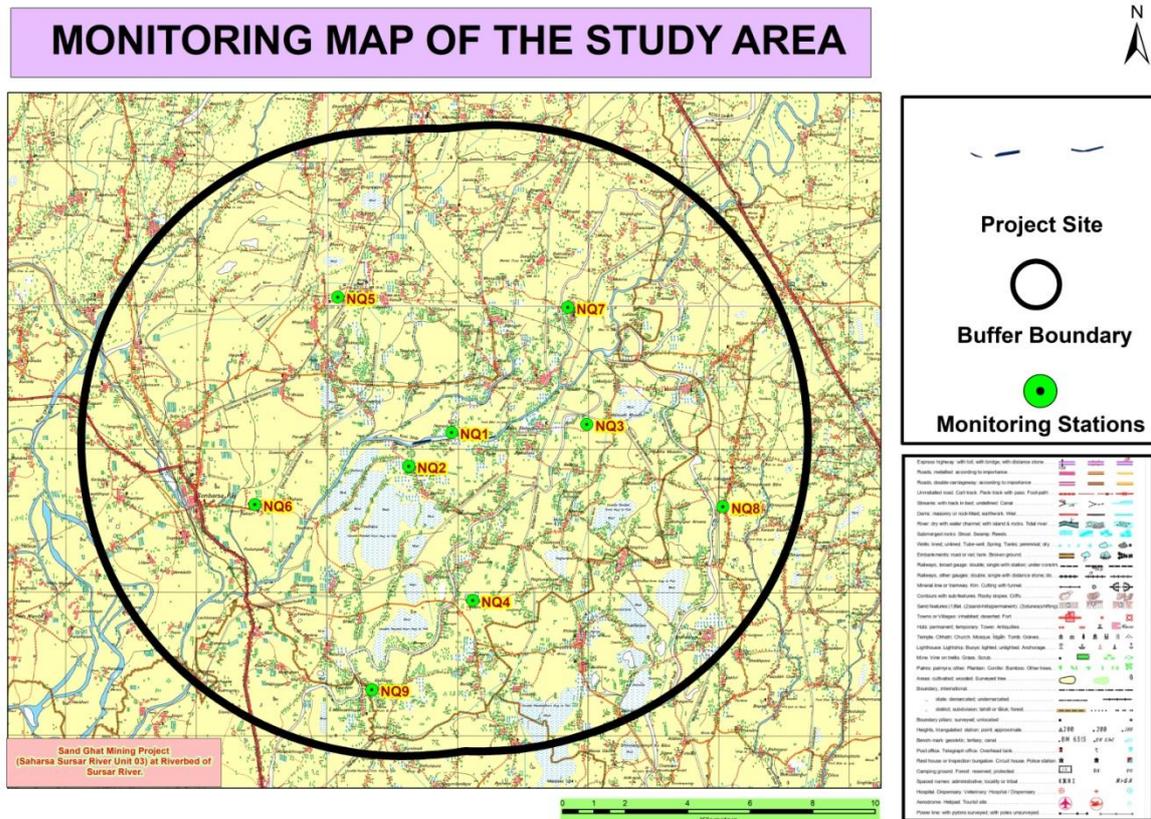


Table 3.13: Noise Quality Monitoring Stations

Noise monitoring locations			
Location ID	Location name	Distance (Km)	Direction
NQ 1	Nanauti	0.50 km from Block 03	WNW
NQ 2	Sahsaoul	0.65 km from Block 01	South
NQ 3	Balia Ekduari	2.90 km from Block 03	East
NQ 4	Maura	5.10 km from Block 03	South
NQ 5	Khajuraha	4.90 km from Block 02	NW
NQ 6	Dehad	4.85 km from Block 02	SW
NQ 7	Barsam	4.80 km from Block 02	NE
NQ 8	Khokasi	7.60 km from Block 03	ESE
NQ 9	Mahinath Nagar	8.10 km from Block 01	SSW

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Table 3.14: Noise Monitoring Results

S. No.	Locations		Equivalent Noise Level, dB (A)			
			Limit (as per CPCB Guidelines), Leq, dB(A)		Observed value Leq, dB(A)	
			DAY*	NIGHT*	DAY*	NIGHT*
1	NQ1	Industrial Zone	75	70	51.2	43.3
2	NQ2	Residential Zone	55	45	43.4	39.6
3	NQ3	Residential Zone	55	45	43.7	31.61
4	NQ4	Residential Zone	55	45	44.5	40.82
5	NQ5	Residential Zone	55	45	42.5	37.55
6	NQ6	Residential Zone	55	45	46.5	37.82
7	NQ7	Residential Zone	55	45	42.5	32.55
8	NQ8	Residential Zone	55	45	42.7	34.61
9	NQ9	Residential Zone	55	45	45.5	39.82

Results

Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as 42.5 dB(A) to 51.2 dB(A) respectively. The minimum & maximum noise levels at night time were found to be 31.61 dB (A) & 43.3 dB(A) respectively.

There are several sources in the 10 km radius of study area, which contributes to the local noise level of the area. On the commencement of the project, the sound from traffic activities will add to the ambient noise level of the area. This will be kept under check by taking proper suggestive measures.

3.6 BIOLOGICAL ENVIRONMENT

3.6.1 Introduction

Biodiversity reflects the potential of a regional ecosystem and also biological communities influence and react sensitively to changes in the balance of environmental stresses.

Conservation of the biodiversity is essential for the sustainable development as it not only provides the food, fodder and medicine, but also contributes to improvement of essential

environmental factors. Before starting any Environmental Impact Assessment study, it is necessary to identify the baseline of relevant environmental parameters which are likely to be affected as a result of the operation of the proposed project. A similar approach has been adopted for conducting the study on Biological Environment for this Project.

The study was conducted in the project area to assess all the details the biological environment especially flora and fauna for their diversity. The present study is highlighting the various issues pertaining to floristic diversity and the faunal wealth in the core area *i.e.* Saharsa Sursar Unit 03 sand mine and buffer zone *i.e.* area within 10 km radius.

3.6.2 Description of the Study Area

Saharsa Sursar River Unit 03 sand mine is located on the dry river bed of Sursar River over an area of 9.80 ha in Saharsa district of Bihar. Saharsa district lies under the Seismic Zone-IV as per IS-1893 (part-1)-2002. Forest of Banka district comprises of tropical moist deciduous vegetation due to high temperature and humidity. Land development refers to the activities which increase the fertility of land leading to higher productivity. There is no any Eco-sensitive zone such as Wildlife Sanctuary and National Parks present in the buffer zone while one Jungle Jhari forest are present in western part approx. 7 km in the buffer zone.

The proposed project site lies in the Agro climatic zone of the middle gangetic plain region. It is a fertile alluvial plain drained by the Ganga and its tributaries. Rice, maize, millets in kharif, wheat, gram, barley, peas, mustard and potato in Rabi are important crops and the village people are mainly agrarian.

Forests

The Forest cover in the state, based on interpretation of satellite data of Nov 2008 Jan 2009 is 6845 km² which is 7.27 % of the states geographical area. In terms of forest canopy density classes the state has 231 sq km very dense forest, 3,280 sq km moderately dense forest, 3,334 sq km open forest. In terms of forest canopy density classes, the Banka district under very dense forest area is nil, 111 sq km area under moderately dense forest and 110 sq km area under open forest. Therefore, approx. 7.31 % of the total geographical area of the district is under forest cover. (Source: *India State of Forest Report Bihar, 2011*; http://fsi.nic.in/cover_2011/bihar.pdf)

3.6.3 Methodology

The ecological survey has been conducted during winter season for the collection of primary data of flora and fauna, and other environmental observations from Core zone (at the project site) and Buffer zone (around 10 km radius of the project site).

A detailed survey was conducted to evaluate floral and faunal composition of the study area. Primary data on floral and faunal composition was recorded during site visits and secondary data was collected from the Forest Department and published relevant literature. The mode of data and parameters considered during field investigations is given in Table below.

Table 3.15 Mode of data collection & parameters considered during the Survey

Aspect	Data	Mode of data collection	Parameters monitored
Terrestrial Ecology	Primary data collection	By field survey	Floral and Faunal diversity
	Secondary data collection	*Forests department of Bihar *Department of Forest and Environment Bihar *Published literatures	Floral and Faunal diversity and study of vegetation, forest type, importance etc.

Vegetation Study

Vegetation study was conducted in both buffer and core zones. The inventory of plants was prepared through the field visits, personal interviews and group discussion with local people. The species composition revealed that plants are deciduous in nature and in the shrub form.

Any species which could not be identified in the field was brought back (flowers/leaves specimen) and cross-checked with the help of expert institutions/resource person.

a) Flora and Fauna of Core Zone

Flora

The core zone comprises flat sandy bed of Chandan River where mining operation is proposed. Most of the areas nearby the project site are waste land. No major trees were recorded from the core zone except some seasonal grasses. No ecologically sensitive plant species has been reported from this area. Some grass species were recorded from core zone such as Doob and Motha etc.

Fauna

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaal & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Core zone of the proposed mine area is dry sand bed and devoid of any major plant species, So, mammals and avifauna were not observed during the study period. There is no any aquatic habitat in the core zone, so aquatic flora and fauna also does not exist.

b) Flora and Fauna of Buffer Zone

Flora

Terrestrial Flora

The buffer zone devoid of any forest except in the western part of 10 km buffer at approx. 7 km there is one Jungle jhari forest area. Common trees such as Mahua (*Madhuca indica*) Mango (*Mangifera Indica*), Arjun (*Terminalia arjuna*), Neem (*Azadirachta indica*), Peepal (*Ficus religiosa* (L.)), Palas (*Butea monosperma*) Tal (*Borassus flabellifer*), Babool (*Acacia nilotica*), Khejri (*Prosopis cineraria*) have been found on the edges of agricultural fields along pathways and along the river bank. Detail list of flora has been enumerated in the tables below.

Table 3.16 List of Trees in Study area

S. No.	Botanical Name	Common Name	Family
1.	<i>Borassus flabellifer</i>	Tal	Arecaceae
2.	<i>Terminalia arjuna</i>	Arjun	Combretaceae
3.	<i>Artocarpus heterophyllus</i>	Katahal	Moraceae
4.	<i>Acacia nilotica</i>	Babool	Fabaceae
5.	<i>Bombax ceiba</i>	Semal	Malvaceae
6.	<i>Madhuca indica</i>	Mahua	Sapotaceae
7.	<i>Dalbergia sissoo</i>	Sisam	Fabaceae
8.	<i>Ficus benghalensis</i>	Bargad	Moraceae
9.	<i>Neolamarckia cadamba</i>	Kadamb	Rubiaceae
10.	<i>Ficus religiosa</i>	Pipal	Moraceae
11.	<i>Terminalia elliptica</i>	Asan	Combretaceae
12.	<i>Azadirachta indica</i>	Neem	Meliaceae
13.	<i>Melia azedarach</i> (L.)	Bakain	Meliaceae

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S. No.	Botanical Name	Common Name	Family
14.	<i>Syzigium cumini (L.) Skeels</i>	Jamun	Myrtaceae
15.	<i>Ziziphus mauritiana Lam.</i>	Ber	Rahmnaceae
16.	<i>Emblca officinalis Gaertn.</i>	Amla	Euphorbiaceae
17.	<i>Diospyros melanoxylon</i>	Kend	Ebenaceae
18.	<i>Tamarindus indica (L.)</i>	Emli	Caesalpiniaceae
19.	<i>Aegle marmelos Linn</i>	Bel	Rutaceae
20.	<i>Mangifera indica</i>	Mango	Anacardiaceae
21.	<i>Diospyros melanoxylon</i>	Kend	Ebenaceae

Source: <http://forest.bih.nic.in>

Table 3.17 List of Shrubs and Herbs in Study area

S.No.	Botanical name	Local name	Family
1.	<i>Jasminum sambac</i>	Jasmin	Apocynaceae
2.	<i>Hibiscus rosasinensis</i>	China rose	Malvaceae
3.	<i>Achyranthes aspera</i>	Apamarg/Chirchita	Amaranthaceae
4.	<i>Justicia Adhatoda</i>	Adusa	Acanthaceae
5.	<i>Anona squamosa</i>	Sitaphal	Anonaceae
6.	<i>Butea monosperma</i>	Palas	Fabaceae
7.	<i>Argemone mexicana</i>	Siarkanta	Papaveraceae
8.	<i>Calotropis gigantea</i>	Aak	Apocynaceae
9.	<i>Thevetia peruviana</i>	Kaner	Apocynaceae
10.	<i>Euphorbia nivulia</i>	-	Euphorbiaceae
11.	<i>Colebrookia oppositifolia, Smith.</i>	Kalabansa	Lamiaceae
12.	<i>Holarrhena pubescens</i>	-	Apocynaceae
13.	<i>Lantana camara</i>	Raimuniya	Verbenaceae
14.	<i>Bambusa gracilis</i>	Bamboo	Gramineae

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

S.No.	Botanical name	Local name	Family
15.	<i>Bambusa gracilis</i>	Bamboo	Gramineae

Fauna

Terrestrial Fauna

Table 3.18 Faunal Species observed in the Buffer Zone

S. No	English Name	Scientific Name	Schedule Status (WPA-1972)	IUCN Status
Mammals				
1	Fulvous Fruit Bat	<i>Rousettus leschenaulti</i>	V	LC
2	Indian Field Mouse	<i>Mus booduga</i>	V	LC
3	Three-striped Palm Squirrel	<i>Funambulus palmarum</i>	II	LC
4	Bandicoot Rat	<i>Bandicota indica</i>	V	LC
5	Indian porcupine	<i>Hystrix indica</i>	IV	LC
6	Indian hare	<i>Lepus nigricollis</i>	IV	LC
7	Indian Grey Mongoose	<i>Herpestes edwardsii</i>	IV	LC
8	Indian Flying Fox Bat	<i>Pteropus giganteus</i>	V	LC
Avian Fauna				
1	Jungle Crow	<i>Corvus macrorhynchos</i>	IV	LC
2	Red Jungle fowl	<i>Gallus gallus</i>	IV	LC
3	Jungle Bush Quail	<i>Perdicula asiatica</i>	IV	LC
4	Jungle Myna	<i>Acridotheres fuscus</i>	IV	LC
5	Common Myna	<i>Acridotheres tristis</i>	IV	LC
6	Common Quail	<i>Coturnix coturnix</i>	IV	LC
7	Rock Pigeon	<i>Columba livia</i>	IV	LC
8	House Sparrow	<i>Passer domesticus</i>	IV	LC
9	Common Babbler	<i>Turdoides caudata</i>	IV	LC
10	Jungle Babbler	<i>Turdoides striata</i>	IV	LC
11	Scarlet Mini vet	<i>Pericrocotus flammeus</i>	IV	LC
Reptiles and Lizards				
1	Rat Snake	<i>Ptyas mucosus</i>	II	NA
2	Common Krait	<i>Bungarus caeruleus</i>	IV	NA
3	Rock Lizard	<i>Agama buberculatus</i>	-	DD
4	Chameleon	<i>Chamelion calcarata</i>	II	DD
5	Indian House Gecko	<i>Hemidactylus flaviviridus</i>	-	DD
Source: Present Survey Data and Data supported by Department of Forest, Bihar.				
IUCN Red list: LC: Least Concern, VU: Vulnerable, NE: Not Evaluated, EN: Endangered, NT: Near Threatened.				

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Management Scheme/Plan (point wise) of flora and fauna of the buffer zone & core zone of the mine area.

Core zone: Lease area is located on the dry river bed of Chandan river and any animal species belongs to Schedule-I category as per Wildlife Protection Act (1972) are not observed.

Buffer zone: As per Wildlife Protection Act (1972), no Schedule-I species were observed from buffer zone. However, all care will be taken for protection of others flora & fauna also, if any in the lease hold area.

3.7 Socio-Economic Environment

Demography & Socio-Economic Features

Introduction

The proposed sand mine project Saharsa Sursar River Unit 03, (*Sahsaoul Sand Ghat Block 01*, is situated at Mauja - Sahsaoul, Anchal - Sonvarsha, District - Saharsa), (*Sahsaoul 1 Sand Ghat Block 02*, is situated at Mauja – Sahsaoul, Anchal - Sonvarsha, District - Saharsa), (*Nanauti Sand Ghat Block 03*, is situated at Mauja - Nanauti, Anchal -Sonvarsha, District - Saharsa), Bihar over an area of 9.80 hectares. The state government has given consent for Sand mining to M/sRatan Coal Supplier Pvt. Ltd., Prashant Kumar, S/o - Shiv Ratan Prasad, At QTR. No. 29/2-2, Aaldanga Housing Colony, Post - ChirkundaNirsa cum Chirkunda, District Dhanbad, Jharkhand.

This project falls under Category-B1, as per EIA Notification 2006 (amended till date) of the Ministry of Environment and Forests & Climate Change, New Delhi.

Need for the Project and its Importance to the Country & Region

The project lies on the bed of Badua River. The sediment in the form of river bed material (RBM) deposited in inactive channel the last many years had changed the shape of the Badua bed from a valley to a raised land. Hence, it is necessary to remove the materials so that the stream gets channelized. Due to rapid infrastructure development in India, the demand of construction material has increased. To supply this demand, mining of Sand is done. This project operation will provide employment directly and indirectly to the people residing in vicinity, thus improving the Socio-economic status of the area.

Demography

Demography is one of the important indicators of environmental health of an area. It includes population, sex ratio, number of households, literacy, population density, etc. In order to assess the Demographic & Socio-economic features of the area, Census data 2011, for two concerned districts named Saharsa and Madhepura of Bihar state was compiled and placed in the form of tabulation and graphical representation.

Demography of the Saharsa District

As per the census records 2011, Saharsa district has a population of 19,00,661 persons followed by 9,97,174 males and 9,03,487 females respectively. Out of the total population of the district, about 156,540 persons (8.2%) population lived in urban areas while 1,744,121 persons (91.8%) live in rural areas. The decadal Variation of the district has been seen at 26.0% during the decade 2001-11. The Rural area of the district has attained a higher decadal variation of 26.1% as compared to that of urban area at 25.1%. The district has a population density of 1125 inhabitants per sq. km. (2910/Sq. mi)

As per 2011 census sex ratio of the district is 906 females per 1,000 males. The same for rural and urban areas of the district stands at 908 and 879 respectively. As per the census records 2011, the sex ratio of population in the age group 0-6, was recorded as 933 females per 1,000 males. While the sex ratio of (0-6) population in the rural areas of the district is 934, the sex ratio of (0-6) population for the urban areas is only 916 females per 1000 males.

As per the census records 2011, it is observed that the proportion of scheduled castes and scheduled tribe's population to the total population of the district is found to be only 16.7&0.32% respectively. For rural areas, the respective proportion of scheduled castes and scheduled tribes to the total population of the district comes out to be 17.5&0.3% respectively. Similarly, in urban areas, the percentage of scheduled castes and scheduled tribe's population to the total population of the district comes out to 8.0& 0.3% respectively.

It is also observed from the census records 2011, that the district has registered a literacy rate of 53.2% followed by 63.56% for males and 41.68% for Females. As regards to rural and urban areas of the district the literacy rates have been registered 51.1&75.6% respectively. The gap in the male-female literacy rates has been 21.88% point as it is 67.0% male and 47.0% female respectively. For the district as a whole, the literacy rate of males is much higher than that of females.

Census data 2011 shows that the '*Work Participation Rate*' (WPR) in the district is 19.12% for main workers and 15.08% for marginal workers. Proportion of non workers in the district is 65.8%.

Religions

The population of the Saharsa district during 2011 was 1,900,661. Hindus constitute 85.72% (1,629,254 persons) of the population in the district followed by Muslims 14.03% (266,620 persons).

Mother Tongue

As per the census records, 2011, for Saharsa district, Maithili, the main mother tongue of the district was returned by 70.2 percent (10,58,530 persons) of the population. The corresponding percentage for the Hindi, the second most prominent language spoken in Saharsa district, was 17.0 percent (2,56,069 persons). Urdu 12.4% Speakers of other Scheduled languages were very thin in number than the two described above.

Methodology

In order to assess the Demographic & Socio-economic features along with the 10km distance based on field surveys and public consultations undertaken during the baseline field study period and Census records 2011, for Saharsa and Madhepura districts of Bihar state was compiled and placed in the form of tabulation and graphical representation. Entire study area is observed predominantly rural and no town was found in the study area.

Purpose of the Study

Socio-economic study was conducted to establish the baseline demographic features and impacts due to this 'SandGhatProject', as operation phase of any project invariably leads to Socio-economic changes. The construction phase of any kind of project could lead to unplanned and haphazard development of slums of various size and description with little or rudimentary.

Description of Social Environment

As per the Census Records 2011, the study area has a total of 92 villages lying under Saharsa and Madhepura Districts in Bihar state. Overall study area villages are falling mainly under Seven (07) no of tehsils namely Saur Bazar (03 villages), Patarghat (08 villages), Sonbarsa (58 villages), SimriBakhtiarapur (02 villages), BanmaItahri (04 villages), Gwalpara (10

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villages), Kishanganj (07 villages) of Saharsa and Madhepur districts in Bihar state. No town was found in the 10km radial study zone.

Population Distribution (10 km)

As per the Census Records 2011, the total population of 10 km study zone was recorded as 426657 persons of 92 villages/towns of 2 Districts named Saharsa and Madhepur in Bihar state. Male-female wise total population was recorded as 223098 males (52.3%) and 203559 (47.7%) females respectively.

Total number of 'Households' was observed as 84681 in the 10 km radius study zone. Scheduled Caste ('SC') population was observed as 83509 persons consisting of 43096 males (51.6%) and 40413 females (48.4%) in the 10km radial study zone. Scheduled Tribes ('ST') population was also observed as 3731 persons (1.0%) consisting of 1933 males (51.8%) and 1798 females (48.2%) in the 10 km study zone. The child population (0-6 Age) of the study area is recorded as 89769 (21.0%) and comprising of 46445 (51.7%) males & 43324 (48.3%) females respectively.

Village wise details of population distribution are given as follows in **Table 3.19 & 3.20**.

Table 3.19: Village-wise Population Distribution (10km)

Name of Village/Town	No of Households	Total Population			Child Population (0-6 Years)		
		Persons	Male	Female	Persons	Male	Female
1. District Saharsa, Bihar							
Bhabtia	1072	5893	3115	2778	1251	654	597
Suhath	1437	7965	4165	3800	1688	885	803
Phursaha	648	3317	1690	1627	722	363	359
Patarghat	1770	8297	4340	3957	1753	892	861
Lachhmipur	538	2474	1281	1193	477	256	221
Jamhra	1959	9421	4959	4462	1966	1049	917
Bhaddi	1013	5099	2745	2354	927	492	435
Kishunpur	1992	10362	5432	4930	2185	1121	1064
Pama	2296	11131	5785	5346	2290	1195	1095
Paharpur	660	3205	1705	1500	637	338	299

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Bara Singhia	206	954	493	461	211	108	103
Lagma	628	2700	1433	1267	450	233	217
Lagma Patti	227	1024	539	485	113	57	56
Shahpur	1609	7579	3909	3670	1506	777	729
Sirrahi	405	2171	1135	1036	466	234	232
Goalpura	443	2175	1143	1032	402	208	194
Harpur	413	2193	1152	1041	439	230	209
Sahmaura	470	2578	1386	1192	534	303	231
Soha	1683	7731	4046	3685	1563	796	767
Manori	812	3824	2013	1811	823	426	397
Sonbarsa	2317	12297	6422	5875	2402	1234	1168
Dahad	1002	4996	2494	2502	1101	564	537
Padumpur	202	1069	545	524	213	98	115
Maina	755	4167	2170	1997	1010	532	478
Fatehpur	465	2608	1372	1236	597	322	275
Pararia	1456	7705	4039	3666	1920	1021	899
Behta	865	4852	2425	2427	1073	557	516
Sahsaoul	2374	11415	5860	5555	2600	1334	1266
Agma	388	2058	1045	1013	443	224	219
Nanauti	1403	6983	3616	3367	1554	795	759
Jamhra	452	2001	1054	947	366	192	174
GaziPaita	410	1768	950	818	363	193	170
Baisa	71	317	158	159	82	39	43
Bhada	682	3323	1715	1608	756	399	357
Jalsiman	248	1064	573	491	186	107	79
Paita	890	3908	2057	1851	681	330	351
Rakhauta	530	2599	1363	1236	516	260	256
Khasurha	1690	8291	4358	3933	1644	852	792
Bhaura	552	3111	1647	1464	598	315	283
Amirta	820	4722	2498	2224	837	431	406
Baraith	1104	6067	3233	2834	1167	622	545
Atlakha	1031	5056	2663	2393	1109	576	533

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Manguar	854	4606	2458	2148	843	443	400
Durgapur	670	3315	1722	1593	709	367	342
Mokma	1101	5959	3084	2875	1328	656	672
Pachlakh	674	3365	1783	1582	655	333	322
Kolhait	150	830	440	390	169	95	74
Barsam	1023	5089	2684	2405	985	516	469
Bargaon	1647	7857	4151	3706	1380	715	665
Goari	312	1485	776	709	274	160	114
BaliaEkduari	470	2585	1302	1283	592	307	285
BaithaMasahri	771	4452	2334	2118	1136	572	564
MalandhPattiuttarwa ri	434	2363	1208	1155	506	250	256
Belhat	593	3194	1667	1527	755	372	383
JhitkiaBhela	352	1765	888	877	442	221	221
Sarauni Madhepura	678	3386	1779	1607	756	429	327
MahuapattiUttarwari	803	4219	2242	1977	971	511	460
Malaudpatti	82	504	253	251	117	68	49
MahuapattiDakhinwa ri	840	4649	2408	2241	1091	547	544
Raghunathpur	1367	7000	3632	3368	1443	748	695
Paman	556	2839	1422	1417	645	314	331
Gonram	987	4783	2549	2234	1197	624	573
Pacharhi	394	2058	1051	1007	513	252	261
Bhasti	865	4504	2335	2169	956	478	478
Kasnagar	1420	6953	3684	3269	1507	782	725
Barahi	912	4768	2549	2219	1090	566	524
Kopa	832	4421	2250	2171	1094	539	555
Maura	364	2017	1050	967	483	246	237
Basnahi	353	1818	925	893	362	185	177
Paharpur	1613	8873	4745	4128	1753	936	817
Tilanthi	507	3045	1620	1425	651	337	314
Murli	830	4585	2382	2203	967	491	476

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Rasalpur	1086	5775	3058	2717	1245	660	585
Lalpur	874	4458	2354	2104	1070	568	502
Sugma	1530	7708	4036	3672	1512	756	756
2. District Madhepura, Bihar							
Depura	837	4004	2077	1927	847	431	416
Pirnagar	880	4887	2568	2319	1097	561	536
KhokhsiSaranpur	1362	7168	3747	3421	1444	741	703
KhokhsiSaranpurMili k	83	437	227	210	100	43	57
shyam	853	4593	2381	2212	809	409	400
Jotmanohar	277	1655	837	818	418	201	217
Mohammadpur	123	566	296	270	115	61	54
Amauja	297	1758	926	832	446	238	208
Biswari	637	3202	1627	1575	749	378	371
Goalpara	1336	6503	3384	3119	1250	636	614
Nayanagar Arazi	130	604	302	302	124	55	69
Singarpur	1064	4968	2576	2392	1069	560	509
Khanarda	2505	11703	6146	5557	2375	1244	1131
Budhma	2081	9782	5151	4631	2124	1114	1010
Shahidpur	2431	10766	5647	5119	2206	1146	1060
Tirasi	123	622	330	292	170	91	79
Nayanagar	3730	17741	9332	8409	3608	1878	1730
TOTAL (10km)	84681	426657	22309 8	20355 9	89769	46445	43324
<i>Source-Census of India, 2011</i>							

Table 3.20: Village-wise SC & ST Population Distribution (10km)

Name of Village/Town	Total Populatio n	Scheduled Castes			Scheduled Tribes		
		Person s	Male s	Female s	Person s	Male s	Female s
1. District Saharsa, Bihar							

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Bhabtia	5893	886	455	431	1	1	0
Suhath	7965	984	487	497	0	0	0
Phursaha	3317	945	495	450	0	0	0
Patarghat	8297	1720	893	827	1	0	1
Lachhmipur	2474	308	152	156	0	0	0
Jamhra	9421	2352	1210	1142	1	1	0
Bhaddi	5099	1288	700	588	3	1	2
Kishunpur	10362	2706	1390	1316	0	0	0
Pama	11131	1214	624	590	0	0	0
Paharpur	3205	629	314	315	1	1	0
Bara Singhia	954	403	202	201	1	1	0
Lagma	2700	543	277	266	3	1	2
Lagma Patti	1024	171	94	77	0	0	0
Shahpur	7579	1674	857	817	1	0	1
Sirrahi	2171	332	165	167	0	0	0
Goalpura	2175	393	203	190	0	0	0
Harpur	2193	528	282	246	50	26	24
Sahmaura	2578	374	202	172	0	0	0
Soha	7731	1743	877	866	0	0	0
Manori	3824	900	469	431	0	0	0
Sonbarsa	12297	990	516	474	0	0	0
Dahad	4996	1708	833	875	0	0	0
Padumpur	1069	188	92	96	0	0	0
Maina	4167	942	472	470	1	1	0
Fatehpur	2608	79	47	32	0	0	0
Pararia	7705	1945	1009	936	1	1	0
Behta	4852	1791	910	881	0	0	0
Sahsaul	11415	4362	2214	2148	16	11	5
Agma	2058	735	373	362	0	0	0
Nanauti	6983	886	451	435	0	0	0
Jamhra	2001	78	44	34	0	0	0
GaziPaita	1768	100	56	44	0	0	0

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Baisa	317	317	158	159	0	0	0
Bhada	3323	2005	1030	975	4	1	3
Jalsiman	1064	33	20	13	0	0	0
Paita	3908	756	403	353	0	0	0
Rakhauta	2599	218	117	101	0	0	0
Khasurha	8291	1757	924	833	0	0	0
Bhaura	3111	922	478	444	1	0	1
Amirta	4722	805	427	378	0	0	0
Baraith	6067	537	269	268	0	0	0
Atlakha	5056	956	474	482	0	0	0
Manguar	4606	1001	510	491	0	0	0
Durgapur	3315	397	219	178	0	0	0
Mokma	5959	1326	691	635	4	2	2
Pachlakh	3365	790	420	370	22	11	11
Kolhait	830	66	35	31	0	0	0
Barsam	5089	800	404	396	5	5	0
Bargaon	7857	1468	777	691	168	93	75
Goari	1485	285	146	139	0	0	0
BaliaEkduari	2585	667	314	353	705	375	330
BaithaMasahri	4452	1377	716	661	850	447	403
MalandhPattiuttarwari	2363	542	273	269	0	0	0
Belhat	3194	559	280	279	0	0	0
JhitkiaBhela	1765	585	311	274	2	2	0
Sarauni Madhepura	3386	203	105	98	0	0	0
MahuapattiUttarwari	4219	774	402	372	0	0	0
Malaudpatti	504	47	25	22	0	0	0
MahuapattiDakhinwar i	4649	633	324	309	0	0	0
Raghnathpur	7000	1061	543	518	815	419	396
Paman	2839	90	51	39	0	0	0
Gonram	4783	1191	626	565	1	1	0
Pacharhi	2058	257	136	121	0	0	0

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Bhasti	4504	736	375	361	0	0	0
Kasnagar	6953	914	479	435	2	1	1
Barahi	4768	821	449	372	3	2	1
Kopa	4421	1558	797	761	0	0	0
Maura	2017	533	285	248	0	0	0
Basnahi	1818	254	127	127	411	197	214
Paharpur	8873	1086	570	516	0	0	0
Tilanthi	3045	227	119	108	1	1	0
Murli	4585	1096	566	530	1	0	1
Rasalpur	5775	458	234	224	0	0	0
Lalpur	4458	1833	948	885	2	2	0
Sugma	7708	1914	980	934	0	0	0
2. District Madhepura, Bihar							
Depura	4004	763	395	368	108	53	55
Pirnagar	4887	770	394	376	2	1	1
KhokhsiSaranpur	7168	1352	701	651	5	3	2
KhoksiSaranpurMilik	437	0	0	0	0	0	0
shyam	4593	1107	575	532	0	0	0
Jotmanohar	1655	199	105	94	0	0	0
Mohammadpur	566	0	0	0	0	0	0
Amauja	1758	267	142	125	77	40	37
Biswari	3202	552	287	265	0	0	0
Goalpara	6503	253	130	123	442	222	220
Nayanagar Arazi	604	0	0	0	0	0	0
Singarpur	4968	576	302	274	0	0	0
Khanarda	11703	2757	1395	1362	5	3	2
Budhma	9782	2775	1475	1300	7	2	5
Shahidpur	10766	1919	1001	918	1	1	0
Tirasi	622	0	0	0	0	0	0
Nayanagar	17741	2467	1292	1175	7	4	3
TOTAL (10km)	426657	83509	4309 6	40413	3731	1933	1798

Source-Census of India, 2011

Sex Ratio

The ‘Sex Ratio’ of the study area is a numeric relationship between females and males of an area and bears paramount importance in the present day scenario where the un-ethnic pre-determination of sex and killing of female foetus during pregnancy is practiced by unscrupulous medical practitioners against the rule of the law of the country. It is evident that by contrast the practice of female foeticide is not prevalent in the study area.

The ‘Sex Ratio’ was observed as 906 females per 1000 males in the District. The same was recorded as 912 females for every 1000 males in the study area. The child (0-6 yr age) sex ratio of the stud area was observed as 933 female children per 1000 male children.

The village wise male-female population distribution for the study area is depicted and shown by graphical representation in **Figure 3.7**.

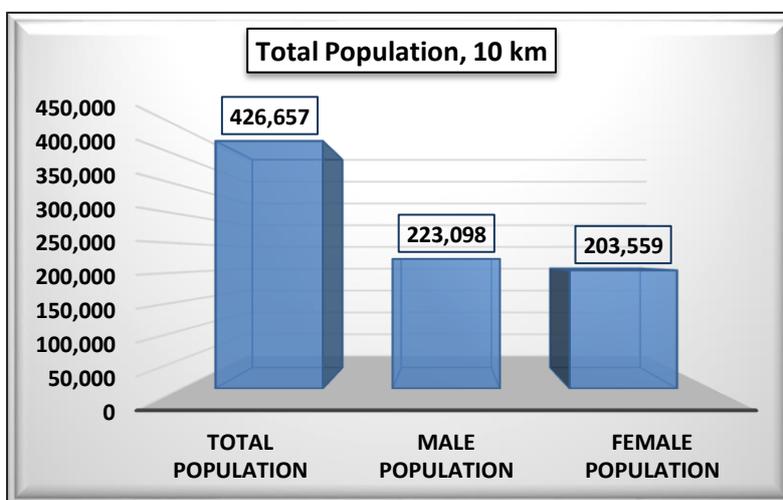


Figure 3.7: Male-Female Wise Population Distribution

Scheduled Caste & Scheduled Tribe Population

On the basis of the village wise SC & ST population distribution of the study area during 2011, the ‘Scheduled Castes’ population was observed as 83509 persons consisting of 43096 males and 40413 females respectively in the study area which accounts as 19.6% to the total population (426657 persons) of the study area. Scheduled Tribes (‘ST’) population was observed as 3731 persons, accounts as 1.0% to the total population of the study zone consisting of 1933 males and 1798 females in the 10km radius study zone. It implies that the rest 79.4% of the total population belongs to the general category.

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Male-female wise distribution of ‘SC’ & ‘ST’ population in the study area is graphically shown in **Figure 3.8 & 3.9** as follows.

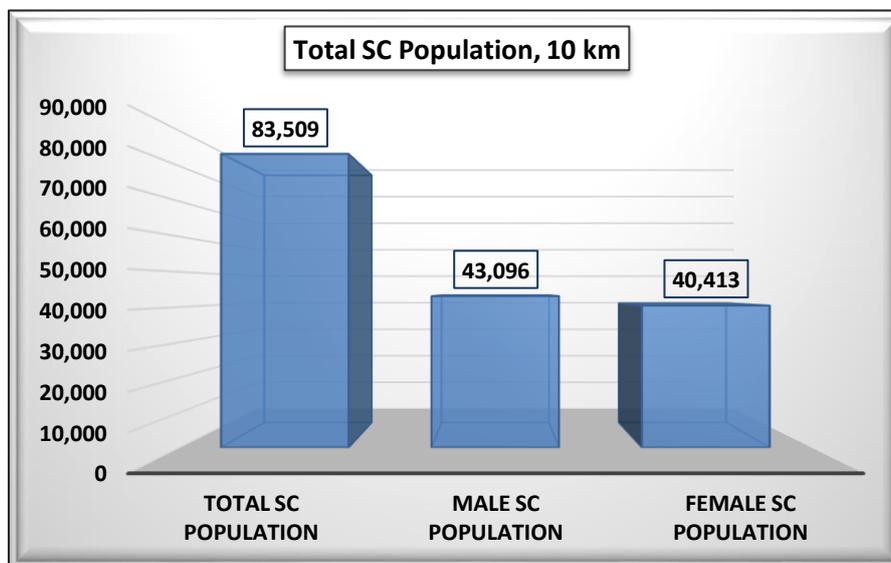


Figure 3.8: Scheduled Caste Population in the Study Area

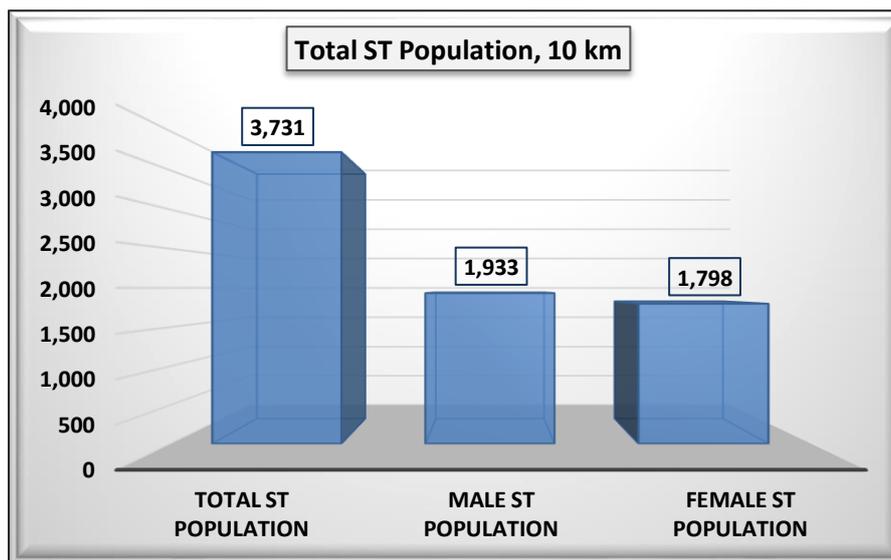


Figure 3.9: Scheduled Tribes Population in the Study Area

Literacy Rate

Literacy level is quantifiable indicator to assess the development status of an area or region. Male-Female wise literates and illiterate’s population is represented in **Table 3.21**. Total literate’s population was recorded as 173647 persons (40.7%) in the study area. **Table 3.21** reveals that Male-Female wise literates are observed as 107740 & 65907 persons respectively,

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implies that the ‘Literacy Rate’ is recorded as 40.7% with male-female wise percentages being 25.2% &15.5% respectively.

The Male-Female wise graphical representation of literates & illiterate’s population in study area villages/town is shown in **Figure 3.10**.

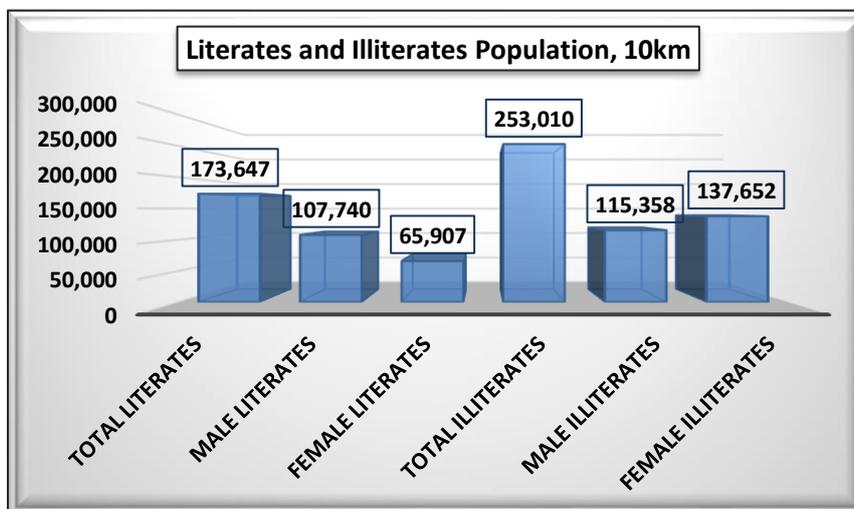


Figure 3.10: Male-Female Wise Distribution of Literates & Illiterates

Table 3.21: Male-Female Wise Literates and Illiterates (10km)

Name of Village/Town	Total Population	Literates			Illiterates		
		Persons	Males	Females	Persons	Males	Females
1. District Saharsa, Bihar							
Bhabtia	5893	3057	1868	1189	2836	1247	1589
Suhath	7965	3657	2250	1407	4308	1915	2393
Phursaha	3317	1198	766	432	2119	924	1195
Patarghat	8297	2507	1652	855	5790	2688	3102
Lachhmipur	2474	593	393	200	1881	888	993
Jamhra	9421	3917	2363	1554	5504	2596	2908
Bhaddi	5099	2846	1759	1087	2253	986	1267
Kishunpur	10362	4164	2475	1689	6198	2957	3241
Pama	11131	4771	2936	1835	6360	2849	3511
Paharpur	3205	1626	901	725	1579	804	775
Bara Singhia	954	540	275	265	414	218	196
Lagma	2700	1600	967	633	1100	466	634

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Lagma Patti	1024	786	428	358	238	111	127
Shahpur	7579	3591	2141	1450	3988	1768	2220
Sirrahi	2171	751	477	274	1420	658	762
Goalpura	2175	770	455	315	1405	688	717
Harpur	2193	850	548	302	1343	604	739
Sahmaura	2578	1127	717	410	1451	669	782
Soha	7731	3572	2215	1357	4159	1831	2328
Manori	3824	1688	1106	582	2136	907	1229
Sonbarsa	12297	6173	3658	2515	6124	2764	3360
Dahad	4996	1905	1125	780	3091	1369	1722
Padumpur	1069	555	333	222	514	212	302
Maina	4167	1497	975	522	2670	1195	1475
Fatehpur	2608	1037	632	405	1571	740	831
Pararia	7705	2642	1725	917	5063	2314	2749
Behta	4852	2034	1208	826	2818	1217	1601
Sahsaoul	11415	3999	2430	1569	7416	3430	3986
Agma	2058	743	481	262	1315	564	751
Nanauti	6983	2476	1497	979	4507	2119	2388
Jamhra	2001	714	457	257	1287	597	690
GaziPaita	1768	970	628	342	798	322	476
Baisa	317	123	83	40	194	75	119
Bhada	3323	1233	748	485	2090	967	1123
Jalsiman	1064	668	401	267	396	172	224
Paita	3908	2261	1310	951	1647	747	900
Rakhauta	2599	1219	779	440	1380	584	796
Khasurha	8291	3407	2195	1212	4884	2163	2721
Bhaura	3111	964	643	321	2147	1004	1143
Amirta	4722	1889	1175	714	2833	1323	1510
Baraith	6067	2597	1645	952	3470	1588	1882
Atlakha	5056	1986	1251	735	3070	1412	1658
Manguar	4606	2186	1336	850	2420	1122	1298
Durgapur	3315	986	634	352	2329	1088	1241

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Mokma	5959	2745	1722	1023	3214	1362	1852
Pachlakh	3365	1133	733	400	2232	1050	1182
Kolhait	830	252	162	90	578	278	300
Barsam	5089	2451	1484	967	2638	1200	1438
Bargaon	7857	3689	2210	1479	4168	1941	2227
Goari	1485	854	488	366	631	288	343
BaliaEkduari	2585	921	544	377	1664	758	906
BaithaMasahri	4452	1420	865	555	3032	1469	1563
MalandhPattiuttarwar i	2363	868	548	320	1495	660	835
Belhat	3194	985	626	359	2209	1041	1168
JhitkiaBhela	1765	457	300	157	1308	588	720
Sarauni Madhepura	3386	1275	819	456	2111	960	1151
MahuapattiUttarwari	4219	1792	1158	634	2427	1084	1343
Malaudpatti	504	144	91	53	360	162	198
MahuapattiDakhinwa ri	4649	1338	859	479	3311	1549	1762
Raghunathpur	7000	2588	1613	975	4412	2019	2393
Paman	2839	922	617	305	1917	805	1112
Gonram	4783	1753	1175	578	3030	1374	1656
Pacharhi	2058	836	539	297	1222	512	710
Bhasti	4504	1549	988	561	2955	1347	1608
Kasnagar	6953	3335	2050	1285	3618	1634	1984
Barahi	4768	2199	1345	854	2569	1204	1365
Kopa	4421	1916	1200	716	2505	1050	1455
Maura	2017	895	566	329	1122	484	638
Basnahi	1818	764	449	315	1054	476	578
Paharpur	8873	3087	2142	945	5786	2603	3183
Tilanthi	3045	945	694	251	2100	926	1174
Murli	4585	1514	1024	490	3071	1358	1713
Rasalpur	5775	2351	1532	819	3424	1526	1898
Lalpur	4458	1262	803	459	3196	1551	1645

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Sugma	7708	3568	2185	1383	4140	1851	2289
2. District Madhepura, Bihar							
Depura	4004	1703	1022	681	2301	1055	1246
Pirnagar	4887	1706	1063	643	3181	1505	1676
KhokhsiSaranpur	7168	3393	2028	1365	3775	1719	2056
KhoksiSaranpurMilik	437	309	174	135	128	53	75
shyam	4593	1840	1153	687	2753	1228	1525
Jotmanohar	1655	501	305	196	1154	532	622
Mohammadpur	566	104	69	35	462	227	235
Amauja	1758	568	368	200	1190	558	632
Biswari	3202	1164	737	427	2038	890	1148
Goalpara	6503	3320	2023	1297	3183	1361	1822
Nayanagar Arazi	604	115	80	35	489	222	267
Singarpur	4968	1864	1170	694	3104	1406	1698
Khanarda	11703	5223	3160	2063	6480	2986	3494
Budhma	9782	3183	2036	1147	6599	3115	3484
Shahidpur	10766	3722	2301	1421	7044	3346	3698
Tirasi	622	264	168	96	358	162	196
Nayanagar	17741	6985	4311	2674	10756	5021	5735
TOTAL (10km)	426657	173647	10774 0	65907	253010	11535 8	137652
<i>Source-Census of India, 2011</i>							

Economic Profile of Saharsa District:

It is the major producer of best quality of Corn and Makhana in India. From Saharsa corn and Makhana are exported abroad country such as America, France, Japan, England. Every year 2 lakhs tonnes of corn are exported to different country and similarly Makhana also.

The follgrown in the region; Makhana (*Euryale ferox*), rice, mangoes, litchi, bamboo, mustard, corn, wheat, ber and sugarcane. Sagwan (*Tectonagrandis*) tree is now grown on a large scale.

Workers Scenario:

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Occupational studied to assess the skills of people in the study area. Occupational pattern helps in identifying major economic activities of the area. In the study area the Main and Marginal Workers population was observed as 82045(19.0%) and 64702(15.0%) to the total population (426657), while the remaining 279910(66.0%) persons were recorded as non-workers. Thus it implies that the semi-skilled and non-skilled work-force required in study area for the project is available in aplenty.

The village-wise main and marginal worker's population with further classification as casual, agricultural, households and other workers is shown as follows in **Table 3.22**.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Table 3.22: Village-wise Occupational Pattern (10km)

Name of the Village	MAIN WORK_P	MAIN_C L_P	MAIN_A L_P	MAIN_H H_P	MAIN_O T_P	MARG WORK_P	MARG_ CL_P	MARG_ AL_P	MARG_H H_P	MARG_O T_P
1. District Saharsa, Bihar										
Bhabtia	1204	573	479	43	109	541	38	390	73	40
Suhath	1557	501	980	14	62	1454	470	928	10	46
Phursaha	673	345	290	8	30	526	13	495	4	14
Patarghat	1300	256	631	3	410	978	54	892	3	29
Lachhmipur	624	214	368	10	32	79	2	72	0	5
Jamhra	1974	722	1142	7	103	1070	122	584	11	353
Bhaddi	1377	549	662	23	143	175	35	89	22	29
Kishunpur	2068	1176	708	17	167	2567	1186	1325	3	53
Pama	3156	1024	1981	36	115	988	87	876	14	11
Paharpur	1049	473	516	2	58	142	110	25	3	4
Bara Singhia	271	147	121	0	3	0	0	0	0	0
Lagma	582	235	164	7	176	292	34	161	7	90
Lagma Patti	197	75	82	2	38	99	0	86	1	12
Shahpur	1736	841	722	26	147	514	58	412	1	43
Sirrahi	342	175	141	1	25	255	23	213	1	18
Goalpura	417	52	333	3	29	407	12	375	11	9

Chapter-III**BASELINE DATA DESCRIPTION****Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaoul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).**

Harpur	273	222	40	1	10	567	40	412	7	108
Sahmaura	212	100	62	3	47	503	44	252	0	207
Soha	1426	241	882	2	301	1256	126	794	99	237
Manori	468	254	18	14	182	556	20	306	13	217
Sonbarsa	2019	151	376	34	1458	1554	59	846	95	554
Dahad	860	303	419	2	136	655	32	508	5	110
Padumpur	89	73	3	0	13	143	0	140	2	1
Maina	849	363	265	7	214	637	12	609	0	16
Fatehpur	369	206	154	2	7	368	5	362	1	0
Pararia	1534	519	887	9	119	894	81	634	61	118
Behta	783	301	257	32	193	1231	542	490	91	108
Sahsaoul	1123	430	520	11	162	3120	231	2665	21	203
Agma	471	167	242	3	59	75	9	20	0	46
Nanauti	1753	358	1187	91	117	1141	357	526	198	60
Jamhra	579	207	257	2	113	529	429	83	9	8
GaziPaita	360	57	277	0	26	194	4	183	0	7
Baisa	144	0	140	4	0	2	0	2	0	0
Bhada	995	67	912	0	16	213	12	200	1	0
Jalsiman	215	144	33	16	22	171	72	87	8	4
Paita	1118	255	452	60	351	577	8	375	152	42

Chapter-III**BASELINE DATA DESCRIPTION**

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaoul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Rakhauta	155	6	99	2	48	675	16	542	15	102
Khasurha	758	388	274	12	84	1779	312	1409	33	25
Bhaura	638	168	420	1	49	230	9	205	0	16
Amirta	807	355	349	14	89	837	321	488	17	11
Baraith	902	471	199	45	187	999	169	737	7	86
Atlakha	917	602	158	31	126	574	57	253	154	110
Manguar	824	504	184	7	129	929	58	835	1	35
Durgapur	510	175	310	3	22	822	27	727	68	0
Mokma	693	314	263	3	113	1571	346	1044	16	165
Pachlakh	290	99	172	4	15	1068	105	954	6	3
Kolhait	218	121	92	0	5	2	1	1	0	0
Barsam	1212	463	673	35	41	272	19	172	24	57
Bargaon	1215	611	346	13	245	1192	6	1127	4	55
Goari	452	149	239	13	51	30	6	7	0	17
BaliaEkduari	131	88	4	0	39	913	39	805	7	62
BaithaMasahri	1281	407	853	1	20	389	30	353	0	6
MalandhPattiuttar wari	600	276	283	3	38	285	1	283	0	1
Belhat	373	200	145	2	26	523	35	465	2	21
JhitkiaBhela	248	50	154	0	44	233	70	100	5	58

Chapter-III**BASELINE DATA DESCRIPTION**

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaoul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Sarauni										
Madhepura	852	259	445	3	145	141	30	33	6	72
MahuapattiUttarwari	649	220	228	23	178	425	86	228	15	96
Malaudpatti	207	67	137	0	3	2	0	1	0	1
MahuapattiDakhinwari	152	54	57	5	36	962	56	861	3	42
Raghunathpur	191	40	106	1	44	1816	72	1687	6	51
Paman	387	85	256	6	40	491	21	461	1	8
Gonram	1580	102	1401	18	59	522	38	431	5	48
Pacharhi	164	66	82	5	11	460	2	445	1	12
Bhasti	1301	264	998	4	35	449	44	394	0	11
Kasnagar	1587	275	754	11	547	779	65	646	6	62
Barahi	746	256	309	10	171	729	14	634	39	42
Kopa	735	5	562	0	168	802	2	774	4	22
Maura	274	28	173	15	58	535	31	467	6	31
Basnahi	459	209	237	0	13	255	91	160	0	4
Paharpur	1990	1336	579	1	74	450	81	307	7	55
Tilanthi	338	105	203	0	30	603	93	501	4	5
Murli	1015	465	413	10	127	630	110	464	14	42

Chapter-III**BASELINE DATA DESCRIPTION**

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaoul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Rasalpur	1205	502	254	315	134	939	38	814	36	51
Lalpur	663	19	619	2	23	754	37	712	0	5
Sugma	449	249	67	7	126	2323	269	1953	20	81
2. District Madhepura, Bihar										
Depura	802	501	242	6	53	653	175	469	0	9
Pirnagar	614	237	312	1	64	1483	277	1124	3	79
KhokhsiSaranpur	1291	464	682	21	124	1295	98	1078	44	75
KhokhsiSaranpur Milik	112	78	33	0	1	18	1	17	0	0
shyam	1083	362	683	6	32	184	8	162	11	3
Jotmanohar	579	79	485	0	15	43	1	42	0	0
Mohammadpur	308	3	305	0	0	0	0	0	0	0
Amauja	502	87	408	1	6	245	78	146	20	1
Biswari	1039	264	314	6	455	397	14	337	7	39
Goalpara	1315	314	428	32	541	1246	211	539	17	479
Nayanagar Arazi	4	0	1	0	3	308	147	161	0	0
Singarpur	1278	529	666	0	83	547	87	412	0	48
Khanarda	2457	657	1421	127	252	1791	346	1274	32	139
Budhma	1789	331	1347	3	108	1373	92	1222	5	54
Shahidpur	3044	729	2050	19	246	654	73	423	9	149

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Tirasi	128	18	109	0	1	134	0	134	0	0
Nayanagar	4365	1131	2836	82	316	2468	83	2174	35	176
TOTAL (10km)	82045	27613	42122	1424	10886	64702	8825	48611	1642	5624

Source-Census of India, 2011

ABBREVIATIONS:

MAIN WORKERS POPULATION: **MAIN WORK_P:** Main worker's total population, **MAIN_CL_P:** Main cultivated labour population, **MAIN_AL_P:** Main agricultural labour population, **MAIN_HH_P:** Main worker's population involved in household industries, **MAIN_OT_P:** Main other worker's population

MARGINAL WORKERS POPULATION:

MARG WORK_P: Marginal worker's total population, **MARG_CL_P:** Marginal cultivated labors total population, **MARG_AL_P:** Marginal agricultural labors population, **MARG_HH_P:** Marginal workers involved in household industries, **MARG_OT_P :** Marginal other workers Population

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Distribution of work participation rate of the study area population is shown in **Table 3.23** as follows;

Table 3.23: Distribution of Work Participation Rate (10km)

Occupation Class	Year, 2011
Main Workers	82045 (19.0%)
Male	64411(78.5%)
Female	17634(21.5%)
Marginal Workers	64702(15.0%)
Male	37039(57.2%)
Female	27663(42.8%)
Non-Workers	279910(66.0%)
Male	121648 (43.5%)
Female	158262(56.5%)
Total Population (10km)	426657
<i>Source: Census of India Records, 2011</i>	

Graphical representation of Workers Scenario is given below as **Figure 3.11**.

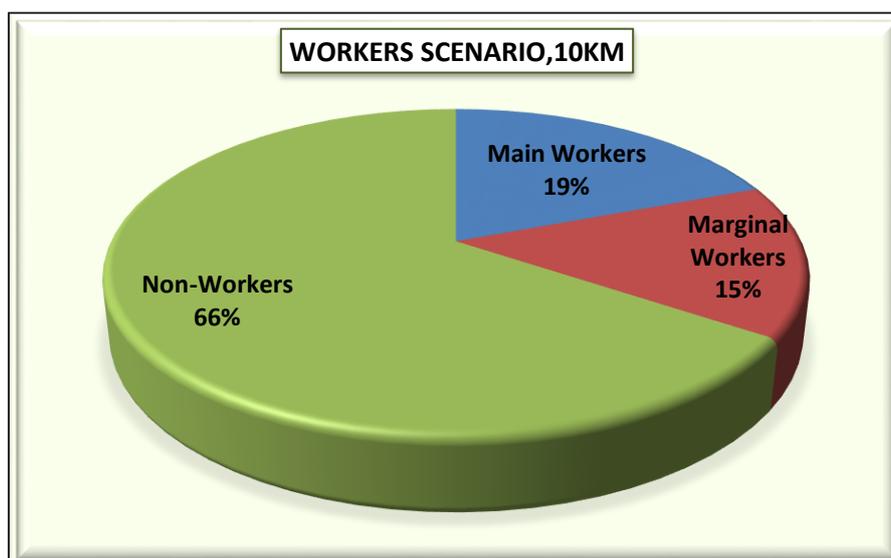


Figure 3.11: Workers Scenario of Study Area

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Composition of Main Workers:

The 'Main Workers' were observed as 82045 persons (19.0%) to the total population (426657) of the study area and its composition is made-up of Casual laborers as 27613 (34.0%), Agricultural laborers as 42122 (51.0%), Household workers 1424 (2.0%) and other workers as 10886 (13.0%) respectively.

Composition of Main workers is shown below as **Figure 3.12**.

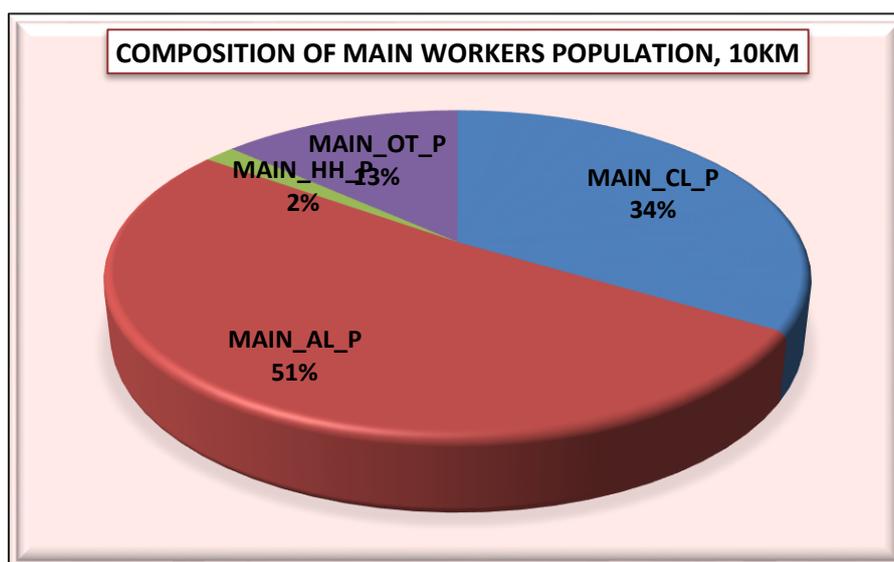


Figure 3.12: Composition of Main Workers Population

Composition of Marginal Workers:

The total marginal workers are observed as 64702 which constitute 15.0% to the total population (426657) comprising of Marginal Casual Laborers as 8825 (14.0%), Marginal Agricultural Laborers as 48611 (75.0%), Marginal Household laborers as 1642 (2.0%) and marginal other workers were also observed as 5624 (9.0%) of the total marginal workers respectively. Details about marginal workers in the study area are tabulated in **Table 3.23** Composition of Marginal workers is shown in **Figure 3.13** as follows.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaoul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

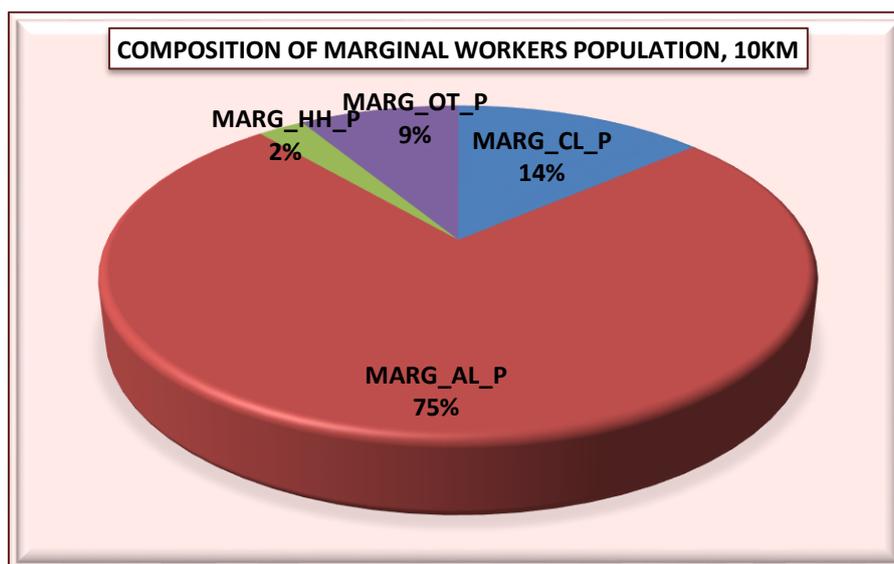


Figure 3.13: Composition of Marginal Workers

Composition of Non-Workers:

The total Non-worker's population was observed as 279910 which accounts 66.0% to the total population (426657) of the study area. Male-female wise Non-worker's population was recorded as 121648 Males (43.5%) and 158262 Females (56.5%) respectively.

Details about Total Non-workers in the study area are compiled in **Table 3.24**. Graphical representation of Non-worker's population is shown as follows in **Figure 3.14**.

Table 3.24: Composition of Non-Workers

Non-Workers Population		
Persons	Males	Females
279910	121648 (43.5%)	158262(56.5%)

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

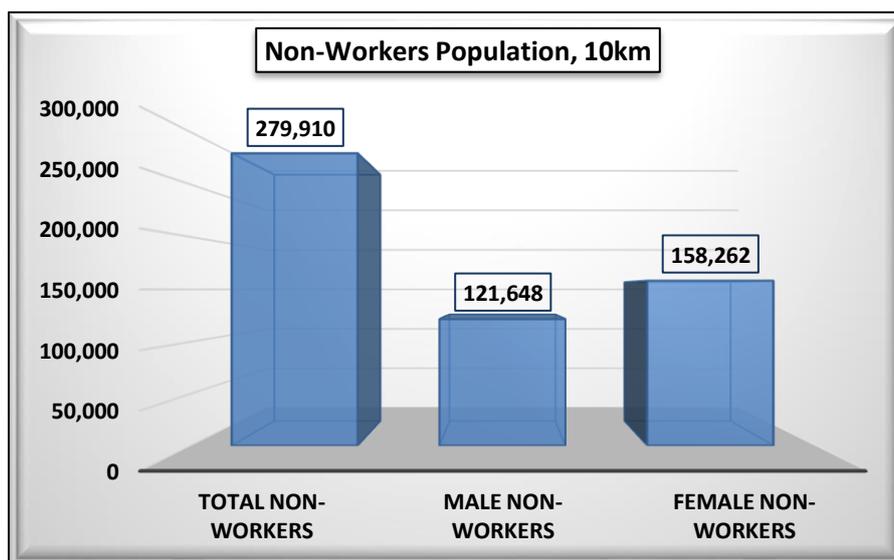


Figure 3.14: Composition of Non-Workers

Basic Infrastructure Facilities Availability(as per the census records of 2011)

A review of basic infrastructure facilities (Amenities) available in the study area has been done on the basis of the field survey and Census records, 2011 for the study area inhabited villages of both, Saharsa and Madhepur districts in Bihar state. The study area has an average level of basic infrastructure facilities like educational, medical, potable water and power supply and transport & communication network.

As per the Census Records 2011, the study area has a total of 92 villages lying under Saharsa and Madhepura Districts in Bihar state. Overall study area villages are falling mainly under Seven (07) no. of tehsils namely Saur Bazar (03 villages), Patarghat (08 villages), Sonbarsa (58 villages), Simri Bakhtiarpur (02 villages), Banma Itahri (04 villages), Gwalpara (10 villages), Kishanganj (07 villages) of Saharsa and Madhepura districts in Bihar state. No town was found in the 10km radial study zone.

Educational Facilities

There is a total no. of 175 Primary schools existing in the 10km radius study area. About 116 no. of Middle schools are found in the study area. About 15 no. of Higher Secondary School (SS) and only 04 no. of Senior Secondary School (SSS) facility is available in the study area. The educational facilities have been further strengthening now and a number of private public schools and colleges are also functioning in the surroundings of the study area. Besides, there are Engineering and Medical colleges available in Towns and District headquarters only.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Higher education facilities are available in Towns of the district. There is a considerable improvement in educational facility. The villages of the study area have no such facilities can reach within 5to 10km range.

Availability of University Education in Saharsa District

There are several affiliated and constituted colleges of the B. N. Mandal University, Madhepura which imparts under graduate and post graduate education in the district. IGNOU (*Indira Gandhi National Open University*) has opened study center Saharsa College in Saharsa where one can study many distance courses of under graduate, post graduate and other vocational courses etc.

Medical Facilities

The medical facilities are provided by different agencies like Govt. & Private individuals and voluntary organizations in the study area. As per the census 2011, only two primary health center exist in the study area; most of the study area villages depend upon the towns & district HQ of the study area having such facility. No Community Health Centre (CHC) was found in the study area. Only 38 no of Primary Health Sub-Centers exist in the villages of the study area. Only 09 no of Mother & Child Welfare Centers are found in the study area. No allopathic hospital exists in the study area. Only 02 no of Medical Dispensaries were found in the study area. Overall study area villages are served by moderate level of medical facilities. Specialized medical facilities are available only in towns and District Headquarter (HQ) only.

Potable Water Facilities

Potable water facility is available in most of the villages of the study area. The entire study area has average level of potable water facilities. Hand Pump (HP) water facility is commonly observed in the study area as potable water facility. Out of the total 92 villages/town, only 63 villages (68.5%) are served with River/Canal water in the study area. As per the census records 2011, only 29 villages (31.5%) were found being served with Tank/Pond/Lake as potable water facility in the study area.

Communication, Road & Transport Facilities

Apart from Post & Telegraph Office (PTO) services, transport is the main communication linkage in the study area. Compiled census 2011, data shows that the study area has good postal facilities in the 10km radius zone. Only 46 villages (50.0%) were found serving with

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Post Office facilities in the study area, remaining villages are depending upon towns of the study area.

The study area has average rail and road network, passes from the area. Nearest railway station is Madhepura Railway Station located at a distance of approx. 23.0km, in North direction. Nearest National Highway, NH-131 & NH-231, both are passing at 9.5 & 6.5km away in ENE and SW direction respectively and State Highway (SH-59) also passing at 6.90km away in West direction. Nearest Town is Saur Bazar situated at 15.90km in NW direction. District Headquarters of Saharsa, is situated at approx. 25.40 km away in NW direction. Nearest airport is Jai Prakash Narayan International Airport Patna is located at 170.0 km away in West direction.

Connectivity - The mine site Block 1 is well connected via an approach road of Approx. 0.48km towards Southwest direction. The mine site Block 2 is well connected via an approach road of Approx. 0.52km towards North direction. The mine site Block 3 is well connected via an approach road of Approx. 0.90km towards North direction.

Communications (Saharsa District)

Roads - The district of Saharsa is well served by a network of roads. The roads are classified as the National Highways, State Highways, Major district roads and Other district roads. They are maintained by the CPWD/NHAI, Public works Department, the Rural Engineering Organisation, the Zila parishad, Municipalities. Under the central Road Fund, the following roads have been improved upon: - Singheswar Asthan-Supaul Road, Tribeniganj-Purnia Border Road and Simrahi-Bhaptiahi Road.

A number of bridges have been constructed in the different parts of district. It is also connected with the interior of the district by metal road. NH-107 and SH-59 pass through Saharsa.

Railways - A branch line of the East Central Railway (ECR) running from Mansi to Supaul enters this district at Sonbarsa Kacheri Station and covers a distance of 37 kilometres. Another branch line of the same Railway covers distance of 42 Kilometres in the district. A third section of the East Central Railway (ECR) coming from Banmankhi (Purnia) goes to Behariganj (Saharsa). The fourth section of the East Central Railway (ECR) from Sakri (Darbhanga) to Nirmali passes through Saharsa district covering a distance only 3 kms within Saharsa district. In the recent past the expansion of railway lines in the district has also taken place.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Airway - There is a small air-strip in the district located at Saharsa, maintained by the Public Works Department.

Boats - The district lacks navigable rivers. However, small country boats serve the purpose of navigation, though on limited scale.

Banking Facility

The study area has almost all the schedule commercial banks with ATM facility at urban areas and the district HQ.

Trade and Commerce

In Saharsa district, trade consists mainly of export of Jute and Mesta and import of Iron and iron products, coal, cotton textiles food grains and consumer goods. The above mentioned goods are mostly transported by the Railways. Bullock carts carry the product to the railway station or mandis. Trucks are also being utilised for the purpose. Saharsa is the centre for wholesale business in the district. Jute, bamboo, cloth, rice, ghee and grains, other than rice are the principal commodities for wholesale business.

Mines and Minerals

There are no mines in the district and only brick soil and sand are available as minerals.

Power Supply

It is revealed from the compiled information on amenities availability as per the census record of 2011; most of the villages and towns are electrified for Domestic, Agriculture, and Commercial & for all purposes. About 76 villages (82.6%) of the study area are electrified for domestic purpose, 62 villages (67.4%) for agricultural purpose, for commercial & for all purposes in the study area. Out of 92 villages/towns in the study area, 16 villages (17.4%) were found not electrified for any purpose in the study area.

The district receives its entire power supply from Bihar State Electricity Board. Saharsa (Nagar Parishad) is the only town of Saharsa district has electricity. In the rural areas, the Government is trying to extend electric line to the maximum number of villages by implementing various schemes for rural electrification. 297 villages of the district are electrified.

Village/town wise Basic Infrastructure and Amenities availabilities data for the entire study area is compiled and presented in **Table 3.25** as follows;

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Table 3.25: Village wise Basic Amenities Availability (10km)

Name of the Village/Town	Educational				Medical					Drinking Water					Communication & Transport				Approach to the Village				Power Supply				Nearest Town Distance, km					
	P	M	S	S	C	P	P	M	H	D	F	T	W	H	T	R	T	P	P	B	R	P	K	N	FP	E		E	E	E		
					S	H	H	C			W			P	W	k	O	T	S	S	R	R	W		D	Ag.	C	A				
1. District Saharsa, Bihar																																
Bhabtia	2	2	0	0	0	0	1	0	0	0	0	2	2	1	1	1	2	2	2	2	1	2	1	1	2	1	2	2	2	2	Saharsa,24km	
Suhath	1	2	0	0	0	0	1	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	2	1	2	2	2	2	Saharsa,25km	
Phursaha	1	1	0	0	0	0	1	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	1	1	2	1	2	2	2	2	Saharsa,28km	
Patarghat	3	1	1	1	0	1	1	1	0	0	1	2	2	1	1	1	1	2	1	2	2	2	1	1	1	1	1	1	2	2	Saharsa,22km	
Lachhmipur	1	1	1	0	0	0	1	0	0	0	0	2	2	1	1	1	1	2	2	2	1	2	1	1	1	1	1	1	1	2	2	Saharsa,25km
Jamhra	4	3	1	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	1	1	1	1	1	2	2	Madhepura,15km
Bhaddi	2	2	1	0	0	0	1	0	0	0	0	2	2	1	1	1	1	2	1	2	2	2	1	1	1	1	2	2	2	2	Madhepura,21km	
Kishunpur	4	4	1	0	0	0	1	0	0	0	0	2	2	1	1	1	2	2	1	2	1	2	1	1	1	1	1	1	1	2	2	Madhepura,15km
Pama	4	3	0	0	0	0	1	0	0	0	0	2	2	1	1	1	1	2	1	2	1	2	1	1	1	1	1	1	1	2	2	Madhepura,19km
Paharpur	1	1	0	0	0	0	1	0	0	0	0	2	2	1	1	1	2	2	2	2	1	2	1	1	1	1	1	1	1	2	2	Madhepura,21km

Chapter-III

BASELINE DATA DESCRIPTION

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaoul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Nanauti	4	2	0	0	0	0	1	0	0	0	0	0	2	2	1	2	1	2	2	1	2	1	2	1	1	2	1	1	1	1	1	1	Saharsa,40km
Jamhra	1	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	1	2	1	1	2	1	1	1	1	1	1	Saharsa,30km
GaziPaita	1	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1	Saharsa,43km
Baisa	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	1	Saharsa,42km
Bhada	1	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	2	2	1	2	1	1	1	1	1	1	2	2	2	Saharsa,45km
Jalsiman	2	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	1	2	1	2	2	2	1	1	2	1	1	1	1	1	1	Saharsa,42km
Paita	1	1	1	0	0	0	1	0	0	0	0	0	2	2	1	2	1	1	2	1	2	1	2	1	1	2	1	1	1	1	1	1	Saharsa,42km
Rakhauta	1	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	1	2	1	1	2	1	1	1	1	1	1	Saharsa,42km
Khasurha	4	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	1	2	1	2	1	1	1	1	1	1	1	1	1	Saharsa,42km
Bhaura	1	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	2	2	1	2	1	1	2	1	1	1	1	1	1	Saharsa,42km
Amirta	2	2	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	1	2	1	2	1	1	2	1	1	1	1	1	1	Saharsa,42km
Baraith	2	1	0	0	0	0	1	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	1	1	1	1	1	1	1	1	1	Saharsa,42km
Atlakha	3	1	0	0	0	0	1	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	1	1	1	1	1	1	1	1	1	Saharsa,45km
Manguar	2	1	0	0	0	0	1	0	0	0	0	0	2	2	1	2	2	2	2	1	1	1	1	2	1	1	1	1	1	1	1	1	Saharsa,42km
Durgapur	1	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	1	2	2	2	2	1	1	2	1	1	1	1	1	Saharsa,42km
Mokma	1	1	0	0	0	0	1	0	0	0	0	0	2	2	1	2	1	1	2	1	2	1	2	1	1	2	1	1	1	1	1	1	Madhepura,23km
Pachlakh	2	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Madhepura,24km
Kolhait	1	0	0	0	0	0	1	0	0	0	0	0	2	2	1	2	1	2	2	2	2	1	2	1	1	2	1	1	1	1	1	1	Madhepura,27km
Barsam	3	1	0	0	0	0	1	0	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	2	1	1	1	1	1	1	Madhepura,22km



Chapter-III

BASELINE DATA DESCRIPTION

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Maura	2	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Saharsa,40km
Basnahi	1	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	1	1	1	1	1	1	1	1	Saharsa,40km
Paharpur	1	2	0	0	0	1	1	1	0	0	1	2	2	1	2	2	2	2	1	2	2	2	1	1	2	1	1	2	2	2	Saharsa,20km
Tilanthi	1	1	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Saharsa,22km
Murli	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Saharsa,40km
Rasalpur	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	1	1	2	1	1	2	2	2	Saharsa,40km
Lalpur	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	1	1	1	1	2	2	2	2	Saharsa,40km
Sugma	5	3	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	2	1	1	1	1	2	2	2	Saharsa,40km
2. District Madhepura, Bihar																															
Depura	1	2	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	1	1	1	2	2	2	Madhepura,18km
Pirnagar	3	1	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	1	1	1	1	1	2	2	2	Madhepura,27km
KhokhsiSaranpur	4	2	0	0	0	0	1	1	0	0	0	2	2	1	2	2	2	2	1	2	2	2	1	1	2	1	1	2	2	2	Madhepura,31km
KhoksiSaranpurMilik	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	2	1	2	1	2	2	2	2	Madhepura,32km
Shyam	2	1	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	1	1	2	1	1	2	2	2	Madhepura,29km
Jotmanohar	2	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	1	1	1	1	2	2	2	Madhepura,27km
Mohammadpur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	1	1	1	1	1	2	2	2	Madhepura,27km
Amauja	2	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2	Madhepura,27km
Biswari	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Madhepura,25km
Goalpara	2	0	1	1	0	1	1	1	0	1	1	2	2	1	1	1	1	2	1	1	1	2	1	1	1	1	1	2	2	2	Madhepura,23km

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Power Supply: ED-Power Supply for Domestic use, E Ag. -Power Supply for Agricultural use, EC- Power supply for Commercial use, EA-Electricity for All Purposes

Nearest Town & Distance, km : a for < 5 Km, b for 5-10 Km and c for 10+ km of nearest place where facility is available is given.

Brief Description of Places of Religious, Historical or Archaeological Importance and Tourist interest in Villages and Towns of the District: *(District level information only)*

Brief description of place of religious, historical or archaeological and tourist interest are as follows;

Dewan Ban Mandir - One Shivling is established in the temple situated in Sahpur-Manjhoul of Nauhatta block. It is said that the Ling was established by Maharaja Shalivahan sometime in 100 B. C. The Hindus celebrate a festival called jitiya after the name of Jimutbahan who was the son of Maharaja Shalivahan. Description of this place is found in Shri Puran. The ancient shrine at Dewan Ban was washed away by the turbulent Koshi river. The local people have however built another temple in the adjacent area.

Nauhatta - It is an old village, important since the time of Mughals and is presently the headquarters of the block of the same name. The village has a 'Shiva temple' about 80 feet in height. The temple which was damaged in the earthquake of 1934 was reconstructed by Raja Srinand Singh of Srinagar Estate.

There is a grave of Madho Singh on an earthen mound about 50 feet high. Madho Singh had become a martyr in the battle of Ladri Ghat. Offerings are made on the grave both by Hindus and Muslims.

Mandan Bharti Asthan - The place is situated in village Mahishi. It is said that a religious discourse (Shastrarth) was held between Shankaracharya and the local scholar Mandan Mishra. Bharti, wife of Madan Mishra, who was also a great scholar, was named as Judge for the discourse. It is also said that Shankaracharya, after his initial victory over Mandan Mishra was challenged by Bharati, was outwitted by her and he (accepted defeat).

Tara Asthan -It is situated at a distance of about 16 Kms. West of Saharsa in village Mahishi where an ancient temple of Bhagwati Tara is built. The idol of Bhagwati Tara is said to be very old and draws devotees from far and wide. On either side of the main deity, there are two smaller female deities which are worshipped by the people as Ekjatanad Nil Saraswati.

Udahi - The village is situated in Kahara block. It contains an ancient image of goddess Durga discovered during excavation. According to a legend one Sone LalaJha dreamt that he had received divine instruction to excavate a particular place. The image was found at that

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

very spot and latter established in the temple. Devotees throng here from far and wide. A fair is held on the day of Maha Ashtami Puja every year.

Sun Temple at Kandaha

Like Dev (in Aurangabad district), the sun temple at Kandaha village is an important religious and historical place which has been duly recognized by the Archaeological Survey of India. The idol of sun God riding seven horsed chariot, has been carved on a single granite slab. At the door of the sanctum sanctorum, there are inscriptions which deciphered by historians, confirm that this sun temple was built during the period of king NarsimhaDeo of Karnata dynasty who ruled over Mithila in the 12th century. It is said that a brutal mughal emperor named Kalapahad had damaged the temple which was however renovated by the famous saint poet, LaxminathGonsai.

ChandikaAsthana at Biratpur - Biratpur village under Sonebarsa block of this district is famous for an ancient temple of goddess Chandi. This village is also associated with King Birat of the Mahabharat age. During exile the Pandavas had lived here for 12 years.

The tantric Scholars and devotees attach much significance to this Chandi temple, which is said to form an equilateral triangle (TRIK) with Katyayani temple near Dhamharaghat and Tara temple at Mahishi. During the Navratra people from distant places visit the village to offer prayers to the goddess of power.

LaxminathGonsaiAsthana at Bangoan - The famous saint a poet of devotional songs of 18th century, Baba Laxmi Nath Gosai lived at Bangoan village which is hardly 9 km away from the district headquarters. The huge banyan tree under which the remains of Gosaiji have been preserved is the centre of great reverence for the people of the district.

KaruKhirhari Temple - Situated on the bank of Kosi River, there is a temple of Saint KaruKhirhari who is said to have attained divinity by virtue of his Shiv-bhakti a dedication to Cows. People from all walks of life come to offer milk to Karu Baba. Although this temple near Mahpura village-2km away from Mahishi block office, is situated in the riverside of the eastern Koshi Embankment, it has survived the onslaught of the turbulent river. Recently the Bihar Government has announced to develop Karu temple as a major tourist spot.

Rakta Kali and 64 Yogini Temple in Matsyaganda Campus at Saharsa - The barren water logged area better known as Laibh in Saharsa town has now been developed as a beautiful

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picnic spot commonly known as Matsyagandha project. The construction of Rakta Kali temple and an oval shaped temple with 64 deities (known as 64 Yogini) filled on the inner walls of temple, attracts devotees from far-off places. The Bihar Government has decided to establish a tourist complex at this place.

Social and Cultural Events

The district is mainly agrarian in nature. The district is prone to flood. Almost every year major areas of the district are inundated by the flood water of the river Kosi. The turbulent Kosi has been controlled considerably and the completion of the kosi project has helped to change in the cropping pattern. Sugarcane cultivation has increased considerably.

Rehabilitation & Resettlement (R & R)

Policy to be adopted (Central/State) in respect of the project affected persons including home or land oustees and landless labour. There is no structure or habitation in the core zone mining lease area, hence, any planning with respect to Rehabilitation & Resettlement is not applicable.

4.0 GENERAL

Identification of all potential environmental impacts due to project is an essential step of Environmental Impact Assessment. In case of mining projects, impacts on biodiversity, air pollution, water pollution, waste management and social issues are significant. Both direct and indirect environmental impacts will be created on various environmental attributes due to proposed mining activity in the surrounding environment, during the operational phase.

The occurrence of sand (minor mineral) deposits, being site specific, their exploitation often does not allow for any choice except adoption of eco-friendly operation. Positive impacts on socio-economic environment are expected due to creation of employment opportunities. Mining activities are normally carried out over a long period which also encourages development in the area such as roads, schools, hospitals etc.

Keeping in mind, the environmental baseline scenario as detailed in Chapter III and the proposed mining activity described in Chapter II, it is attempted to assess the likely impact and its extent on various environmental parameters and likely mitigation measures to be adopted.

The following parameters are of significance in the Environmental Impact Assessment and are being discussed in detail:

1. Land Environment
2. Water Environment
3. Air Environment
4. Noise Environment
5. Biological Environment
6. Socio-Economic Environment
7. Solid Waste
8. Traffic Environment

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4.1 LAND ENVIRONMENT

The proposed extraction of stream bed materials, mining below the existing streambed, and alteration of channel-bed form and shape may lead to several impacts such as erosion of channel bed and banks, increase in channel slope, and change in channel morphology if, the operations are not carried out scientific & systematically.

The mining and allied activities involved due to mining result in creation of temporary haul roads and formation of mined pits, etc. affecting the land use pattern. In this project, silt and clay are also produced as a constituent along with minerals, which are considered to be waste.

Anticipated Impacts:

- Mining activity will impact river bed topography by formation of excavation voids.
- River bed mining may bring in some change in topography at the nearby area of the mine lease.
- Stacks of solid waste generated from mining activity may hinder the flow of water in monsoon season.

Mitigation measures:

Adopting suitable, site-specific mitigation measures can reduce the degree of impact of mining on land. Some of the land-related mitigation measures are as follows:

- Excavated pits will get replenished annually in monsoon itself & will be restored to original.
- The mine working will remain confined to allotted river bed only, so it will not disturb any surface area outside the mine lease area which may affect topography or drainage.
- Solid waste will not be stacked on the bank side as it will hinder the flow of water in monsoon season.

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4.2 WATER ENVIRONMENT

Anticipated Impacts:

Mining of sand from within or near *river* has an indirect impact on the physico-chemical habitat characteristics during monsoon season. These characteristics include in stream roughness elements, depth, velocity, turbidity, sediment transport and stream discharge.

The detrimental effects, if any, to biota resulting from bed material mining are caused by following:

- Alteration of flow patterns resulting from modification of the *river*
- An excess of suspended sediment during monsoon season.

Mitigation measures

Project activity will be carried out only in the dry part of the Sursar River. Hence, none of the project activities affect the water environment directly. In the project, it is not proposed to divert or truncate any stream in monsoon season only. No proposal is envisaged for pumping of water either from the *River* (in monsoon) or tapping the ground water.

In the lean months, the proposed mining will not expose the base flow of the *River* and hence, there will not be any adverse impact on surface hydrology.

The deposit will be worked from the top surface up to a maximum depth of 3m below ground level or above the ground water table whichever comes first. Hence mining will not affect the ground water regime as well.

Further mining will be completely stopped during the monsoon seasons to allow the excavated area to regain its natural profile.

4.3 AIR ENVIRONMENT

Impact On Air Quality

The proposed project includes various activities like development of benches, approach roads, haul roads, excavation and transportation of mineral and waste materials. These operations generally result in generation of dust and thereby pose health hazards. However, it is proposed that adequate control measures will be provided at every stage of operation such as, water sprinkling at loading, unloading points and on haul roads before transportation to reduce the fugitive dust emissions.

The mining is proposed to be carried out by opencast manual method. The air borne particulate matter (PM10) generated by ore and waste handling operations, transportation and screening of ore is the main respirable air pollutant. The emissions of Sulphur dioxide (SO₂), Nitrogen Oxides (NO₂) contributed by vehicles plying on haul roads will be marginal. Prediction of impacts on air environment has been carried out taking into consideration proposed production and net increase in emissions.

4.3.1 Emissions Details

Loading - unloading and transportation of sand material, wind erosion of the exposed area and movement of light vehicles will be the main polluting source in the proposed mining activities releasing Particulate Matter (PM10) affecting Ambient Air of the area. Emission during, Loading and unloading was calculated by the area sources. Details of emission during loading/unloading and transportation on the haul road, wind erosion of the exposed area and road maintenance were discussed and combined impact was predicted in the worst case scenario under worst meteorological condition given as follows:

Loading and Unloading - US EPA, 2008, revision of emission factor for AP-42 was used to calculate emission of particulate matter released into the atmosphere during loading and unloading separately. Emission during loading was found more than during unloading. Emission of PM10 during loading was calculated and found to be 1.92×10^{-3} g/s/m² based on moisture

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content 10-20% mine. It is assumed that moisture content was 10% and further moisture content will be increased to 10-20% to reduce emission of PM10 during unloading and average wind speed was 0.92 m/s as observed with site data as shown in wind rose and discussion of local meteorology of the area.

Haul Road - US EPA, 2006, revision of emission factor for AP-42 was used to calculate emission of particulate matter released into the atmosphere during transportation of ore and overburden by trucks operated per hour on haul road. Emission of PM10 due to transportation of sand on haul road was 1.65×10^{-4} g/s/m² based on assumption that silt content spread on road surface was 5%, and efficiency of PM10 emission control 90%. Truck will be fully covered with tarpaulin material and emission of PM10 during on the haul road will be insignificant.

Based on the above consideration that there was low emission of PM10 during transportation of ore and overburden, however during loading & unloading, transportation of ore over the haul road, emission of PM10 of the exposed area due to wind erosion and movement of light vehicles on the road were not considered and combined with mining activities. US EPA based Dispersion ISCST-3 model was used for prediction of impact with 24-h meteorological data of the study period for the assessment of GLC.

4.3.2 Meteorological Data

The meteorological data recorded at hourly interval during the month of March 2023 to May 2023 on wind speed 0.92 m/s, wind direction, dry & wet bulb temperature, humidity, cloud cover and rainfall was processed to extract hourly mean meteorological data as per the guidelines of CPCB/MoEF for prediction of impacts from the area source. Stability was computed by Turner's method and mixing height was obtained from publication of IMD "Atlas of Hourly Mixing Height in India, 2008.

Data recorded from authorized source/Govt. agency were used as meteorological input for Dispersion Model which was stored in the computer for further analysis and interpretation to study the local meteorology of the study area. It was observed that westerly & north westerly was pre-dominant wind during summer as shown in wind rose (Figure 4.1) with low wind speed

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and 13.6 % calm condition was observed during study period at the site which was very much close and cumbersome with long term meteorological data of IMD. Average wind speed was 0.92m/s. Impact of the pollutants was anticipated in southeast sector under infl orth easterly & westerly winds. Ambient air quality locations were selected based on the long term wind rose pattern of the area. Air quality sampling locations were finalized to study the baseline status around the proposed site and to study impact at various locations. 24-h maximum impact of PM10 was envisaged in southeast sector at very short distance from the site due to moderate to low wind speed.

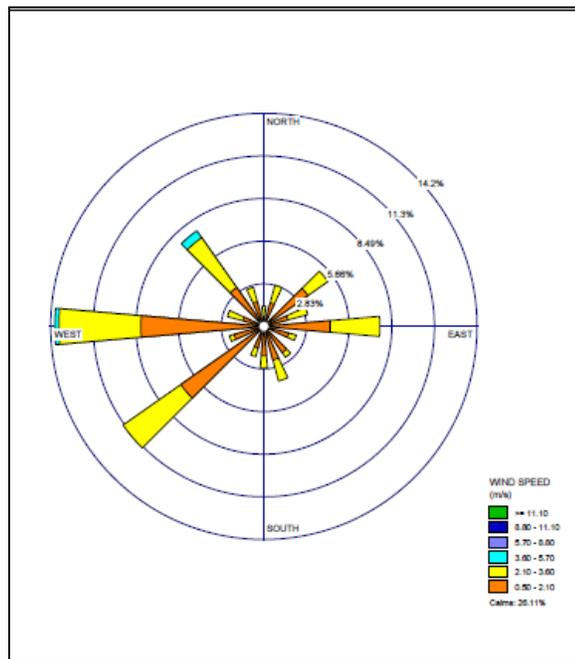


Figure 4.1: Wind Rose Diagram

Stable atmospheric condition E & F dominates in early morning and night hours and B, C & D in day hours were observed. Pollutants were dispersed from the proposed source under influence of local meteorology and dispersed on the ground in downwind direction close (~100 m) to the source under influence of moderate to low wind speed. High temperature and low humidity were observed at site with high temperature in day hours and low during night. There was no significant rain fall received and sky was clear of clouds in most of the days.

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4.3.3 Frame work of Computation & Model details

By using the above-mentioned inputs, ground level concentrations due to the mining activities have been estimated to know the incremental rise in ambient air quality and impact in the study area. The effect of air pollutants upon receptors are influenced by concentration of pollutants and their dispersion in the atmosphere. Air quality modeling is an important tool for prediction, planning and evaluation of air pollution control activities besides identifying the requirements for emission control to meet the regulatory standards and to apply mitigation measures to reduce impact caused by mining activities.

PM10 was the major pollutant occurred during mining activities. Impact of area source emission was considered and prediction of impact was made on various monitoring locations in the study area due to i) loading and unloading and iii) transportation of vehicles on the haul road in the mining area. Impact was predicted in the worst case scenario due to combined impact of loading and unloading and emission due to transportation of vehicles on mine on haul road of mining area and other mining activities will occur simultaneously.

Impact was predicted over the distance of 10,000 m and 2,000 m around the source in grids of 200m & 20 m respectively in Cartesian coordinates(X,Y) to assess the impact at each receptor separately at the various locations and maximum incremental GLC value at the project site. Maximum impact of PM10 was observed close to the source due to low to moderate wind speeds. Incremental value of PM10 was superimposed on the base line data monitored at the proposed site to predict total GLC of PM10 due to combined impacts.

Mitigation measures

The collection and lifting of minerals will be done by loaders. Therefore, the dust generated is likely to be insignificant as there will be no drilling & blasting. The only air pollution sources are the road transport network of the trucks. The mitigation measures like the following will be resorted:

- ✓ Water sprinkling will be done on the haul roads twice in a day.
- ✓ Deploying PUC certified vehicles to reduce their emissions
- ✓ Proper tuning of vehicles to keep the gas emissions under check

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- ✓ Monitoring to ensure compliance with emission limits would be carried out during operation
- ✓ There is no major source of emissions except emission from combustion of fuels from the Transportation Vehicles and Material Handling.
- ✓ Besides this, to control the emissions further regular preventive maintenance of Equipment / Transportation Vehicles will be carried out on contractual basis.
- ✓ It will be ensured that all transportation vehicles carry a valid PUC certificate.
- ✓ Plantation will be carried out along the approach road, river banks & at all strategic places in the vicinity area.
- ✓ Periodic air quality monitoring will be done to assess the quality and for timely corrective actions.
- ✓ Water sprinkling will be done on the haul roads twice in a day. This will reduce dust emission further.
- ✓ Speed limits will be enforced to reduce airborne fugitive dust from vehicular traffic.
- ✓ Spillage from the trucks will be prevented by covering tarpaulin over the trucks.

4.4 NOISE ENVIRONMENT

The proposed mining activity is semi-mechanized in nature. No drilling & blasting is envisaged for the mining activity. Hence, the only impact is anticipated is due to movement of vehicles deployed for transportation of minerals.

Anticipated Impacts:

- Mental disturbance, stress& impaired hearing.
- Decrease in speech reception& communication.
- Distraction and diminished concentration affecting job performance efficiency.

The noise level in the working environment are compared with the standards prescribed by Occupational Safety and Health Administration (OSHA-USA) which has been adopted and enforced by the Govt. of India through model rules framed under Factories Act, 1980 and CPCB

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2000 norms. The summary of the permissible exposures in cases of continuous noise as per above rules is given below:

Table 4.1, Damage risk criteria for hearing loss OSHA regulations

Maximum allowable duration per day in hour	Sound pressure dB(A)	Remarks
(1)	(2)	(3)
8.0	90	1. For any period of exposure falling in between any figure and lower figure as indicated in column (1), the permissible sound is to be determined by extrapolation or proportionate scale. 2. No exposure in excess of 115 dB (A) is permissible.
6.0	92	
4.0	95	
3.0	97	
2.0	100	
1 ½	102	
1	105	
¾	107	
½	110	
¼	115	

Noise at lower levels (sound pressure) is quite acceptable and does not have any bad effect on human beings, but when it is abnormally high- it incurs some maleficent effects.

a. Mitigation measures

The following measures have been envisaged to reduce the impact from the transportation of minerals:

- The vehicles will be maintained in good running condition so that noise will be reduced to minimum possible level.
- In addition, truck drivers will be instructed to make minimum use of horns in the village area and sensitive zones.
- No such machinery is used for mining which will create noise to have ill effects.
- Awareness will be imparted to the workers about the permissible noise levels & maximum exposure to those levels.

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4.5 BIOLOGICAL ENVIRONMENT

Mining which leads to the removal of channel substrate, re-suspension of streambed sediment and stockpiling on the streambed, will have ecological impacts. These impacts may have an effect on the direct loss of stream reserve habitat, disturbances of species attached to streambed deposits, reduced light penetration, reduced primary production, and reduced feeding opportunities. Sand mining generates additional traffic, which negatively impairs the environment.

Anticipated Impacts:

Flora

The proposed project of river bed sand mining shall be carried out on the riverbed of Sursar River. There are no trees in the project area. The project shall also not lead to any change in land use and will be replenished every year after successive rains. The proposed mining activity, which although is an economically gainful activity, also constitutes river training work. It allows for necessary dredging activity which may otherwise lead to flooding of the valley.

There shall be negligible air emissions or effluents from the project site during loading of the truck. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly.

Fauna

Animals are sensitive to noise and avoid human territory. The project stretch of the river is not an identified drinking water point for the animals. However, any animal desirous of accessing the river can continue to do so upstream or downstream of the stretch during the mining activities, as there will not be any damming or diverting of water. Hence, no significant impact is anticipated from the proposed project.

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Mitigation measures

As the proposed mining will be carried out in a scientific manner, not much significant impact is anticipated, however, the following mitigation measures will be taken to further minimize it:

Flora

Although, the project will not lead to any tree cutting, plantation activities shall be undertaken to improve the vegetation cover of the area. To avoid dust emissions, the mined materials will be covered with tarpaulin during transportation.

Fauna

The workers shall be directed to not venture out of the leased area for collecting fuel wood, or hunting. They shall also be trained not to harm any wildlife. No work shall be carried out after sunset.

4.6 TRAFFIC ANALYSIS**Transportation Route:**

The sand extracted will store the nearby storage point. From there sand will be transported to the market. Sand will be stored in to storage point and from there it will be transported in the night time when traffic load is low on nearest SH or NH.

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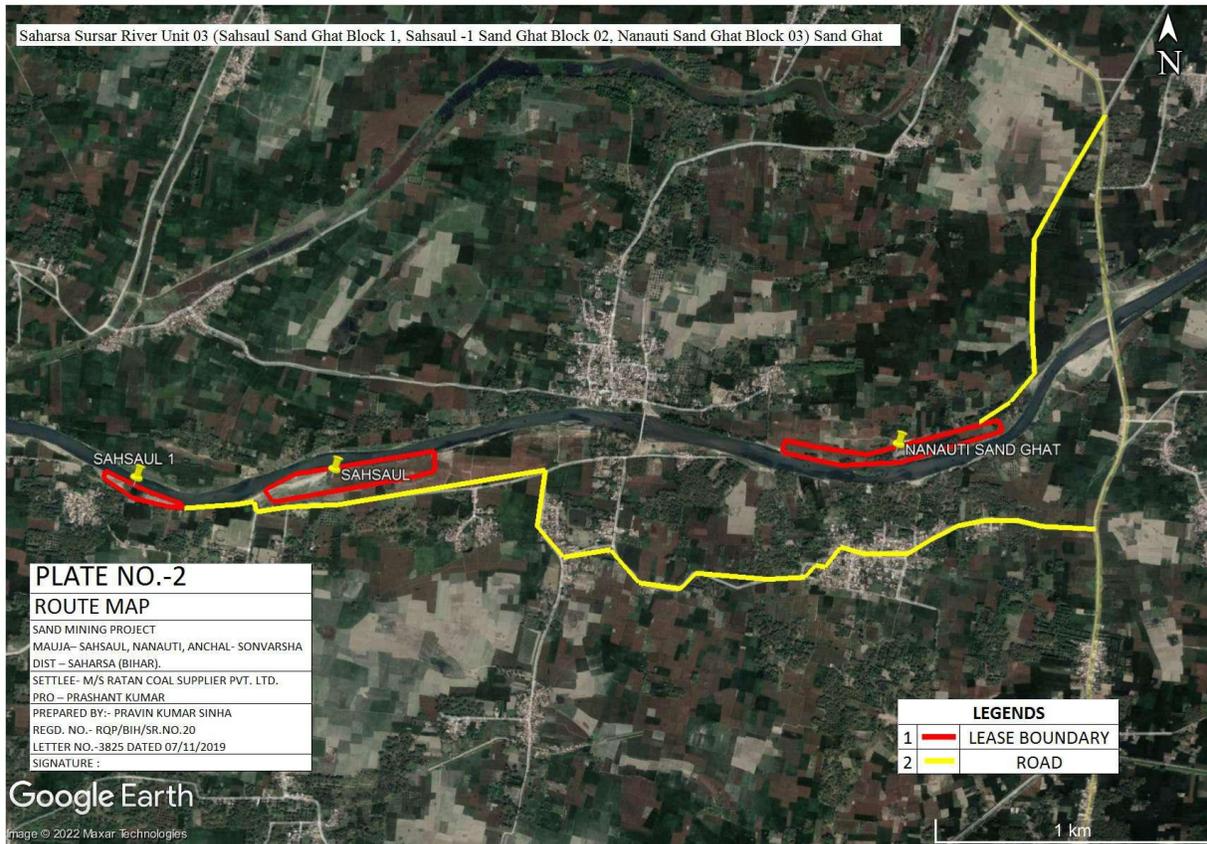


FIGURE 4.2 MAP SHOWING EVACUATION ROUTE

Traffic analysis is carried out by understanding the existing carrying capacity of the roads near to the project site and the connecting main roads in the area. Then depending on the capacity of the mine, the number of trucks that will be added to the present scenario will be compared to the carrying capacity.

Table 4.2 (i): Existing Traffic Scenario & LOS

Road	V	C	Existing V/C Ratio	LOS
National Highway (NH-231)	2500	15000	0.16	A

Source: Capacity as per IRC: 64-1990

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V= Volume of Vehicles in PCU's/day & C= Capacity of Road in PCU's/day

The existing Level of Service (LOS) is "A" & "B" i.e. excellent & very good.

V/C	LOS	Performance
0.0 - 0.2	A	Excellent
0.2 - 0.4	B	Very Good
0.4 - 0.6	C	Good / Average / Fair
0.6 - 0.8	D	Poor
0.8 - 1.0	E	Very Poor

Reference: ENVIS Technical Report, IISc, Bangalore.

During Mine operation for Sand **Unit 01**

Proposed Capacity of Mine/annum : 94080 TPA

No. of working days : 250 days

Proposed Capacity of mine/day : 376.32 ~ 376

Truck Capacity : 16 tonnes

No. of trucks deployed/day : 23.5 ~ 24

Increase in PCU/day (24*3) : 72

Table 4.2 (ii): Modified Traffic Scenario & LOS

Road	V	C	Modified V/C Ratio	LOS
National Highway (NH-231)	2500 + 72 = 2572	15000	0.171	A

Results

From the above analysis it can be seen that the LOS has changed from 0.16 to 0.171 at Highway intersection that remains 'A' i.e. 'Excellent'. Hence, there will not so much adverse affect on the proposed evacuation roads due to additional traffic. Traffic management has been proposed as given in below

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Traffic Management:

1. Roads will be repaired regularly and maintained in good conditions.
2. Haul roads will be sprinkled with water to keep the dust suppressed.
3. A supervisor will be appointed to regulate the traffic movement near the site.
4. Speed breakers will be constructed near accident prone areas to calm the traffic and its speed.

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5.0 ANALYSIS OF ALTERNATIVE TECHNOLOGY AND SITE

5.1 Site Alternatives under Consideration

Presence of sand for commercial exploitation has been identified based on the result of geological investigations and exploration. The mining projects are site specific as such alternate sites were not considered.

5.2 Analysis of Alternative Technology

5.2.1 Choice of Method of Mining

Factors in the choice of an actual mining method for a given deposit are deposit characteristics, requirement of health and safety and environmental concerns, production, scheduling scope of mechanization, workforce requirements wage rates, replenishment, operating and capital cost estimates. The selection of the mining method (development and extraction) is a key decision to be made in the opening up of a mine.

Surface or open cast mining is used for large, near-surface mineral deposits. Mineral is exploited, loaded into trucks, and hauled to a market.

The opencast mining method will be adopted because of the following reasons:

- The opencast mining operations ensure higher mineral conservation.
- Replenishment

The method used for mining is efficient for sand mining, so no alternative mining method is proposed.

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6.0 INTRODUCTION

Regular monitoring of the various environmental parameters is necessary to evaluate the effectiveness of the management programme so that the necessary corrective measures can be taken in case there are some drawbacks in the proposed programme. Since environmental quality parameters at work zone and surrounding areas are important for maintaining sound operating practices of the project in conformity with environmental regulations, the post project monitoring work forms part of Environmental Monitoring Program.

Environmental Monitoring Program will be implemented once the project activity commences. Environmental monitoring program includes (i) Environmental surveillance, (ii) analysis & interpretation of data, (iii) Preparation of reports to support environmental management system and (iv) Organizational set up responsible for the implementation of the programme.

6.1 ENVIRONMENTAL MONITORING AND REPORTING PROCEDURE

Monitoring shall confirm that commitments are being met. This may take the form of direct measurement and recording of quantitative information, such as amounts and concentrations of discharges and wastes, for measurement against corporate or statutory standards, consent limits or targets. It may also require measurement of ambient environmental quality in the vicinity of a site using ecological/biological, physical and chemical indicators. Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints.

The preventive approach to environment management may also require monitoring of process inputs, for example, type and method used, resource consumption, equipment and pollution control performance etc.

The key aims of environment monitoring are:

1. To ensure that results/ conditions are as forecast during the planning stage, and where they are not, to pinpoint the cause and implement action to remedy the situation.

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2. To verify the evaluations made during the planning process, in particular with risk and impact assessments and standard & target setting and to measure operational and process efficiency.
3. Monitoring will also be required to meet compliance with statutory and corporate requirements.
4. Finally, monitoring results provide the basis for auditing i.e. to identify unexpected changes.

6.2 MONITORING METHODOLOGIES AND PARAMETERS

Air quality monitoring

Air Quality monitoring is essential for evaluation of the effectiveness of abatement programmes and to develop appropriate control measures. Suspended Particulate Matter (SPM), Sulphur Dioxide (SO₂) and Nitrogen Dioxide (NO₂) will be monitored at the workplace i.e. core zone. The methodology proposed for is shown below:

Table 6.1, Monitoring methodologies and parameters

Parameters	Technique	Technical Protocol
PM ₁₀	Gravimetric method	IS 5182 (Part-XXIII)
Sulphur Dioxide	Improved West and Gaeke	IS-5182 (Part-II)
Nitrogen Dioxide	Modified Jacob & Hochheiser	IS-5182 (Part-VI)

Water quality monitoring

Water quality monitoring involves periodical assessment of quality of surface water and the ground water near the mining project.

- Surface water samples will be analyzed for all the parameters as per EPA, 1986
- Ground water samples will be analyzed for all the parameters as per IS-10500:2012.

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Soil quality monitoring

The soil quality monitoring is carried out to assess the soil characteristic. The soil quality will be analyzed as per CPCB norms.

Noise level monitoring

Noise level monitoring will be done for achieving the following objectives:

- a) To compare sound levels with the values specified in noise regulations
- b) To determine the need and extent of noise control of various noise generating sources

Noise level monitoring will be done at the work zone to assess the occupational noise exposure levels. Noise levels will also be monitored at the noise generating sources like mineral handling arrangements, vehicle movements and also at the nearest village for studying the impact due to higher noise levels for taking necessary control measures at the source.

Socio-economic Survey

Socio economic condition will be monitored to assess the demographic particulars of the area including the impacts on the social & economical condition on the residents nearby.

Plantation Monitoring Programme

Plantation monitoring will be done to ensure survival & growth rate of plantations.

6.3 MONITORING SCHEDULE

The schedule has been shown below for the parameters proposed for monitoring.

Table 6.2, Details of monitoring schedule

S. No.	Description of Parameters	Schedule of Monitoring
1	Air Quality	24 hourly samples twice/Thrice a week in each season except monsoon

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2	Water Quality (Surface & Groundwater)	Once a season for 4 seasons in a year
3	Soil Quality	Once in a year in project area
4	Noise Level	Twice a year for first two years & then once a year
5	Socio-economic Condition	Once in 3 years
6	Plantation Monitoring	Once in a season

6.4 MONITORING SCHEDULE - IMPLEMENTATION

An implementation programme has been prepared as it serves no purpose if it is not implemented in letter and spirit.

Implementation of proposed control measures and monitoring programme has an implication on mining site as well as on the surrounding area. Therefore, mine management should strengthen the existing control measures as elaborated earlier in this report and monitor the efficacy of the control measures implemented in the entire study area:

- a) Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.
- b) Collection of soil samples at strategic locations once every two years and analysis thereof with regard to deleterious constituents, if any.
- c) Measurement of water level fluctuations in the nearby ponds dug wells and bore wells and to assess if mining has got any impact on it or not.
- d) Measurement of noise levels at mine site and adjacent villages will be done twice a year for first two years and thereafter once a year.
- e) Post plantation, the area will be regularly monitored in every season for evaluation of success rate. For selection of plant species local people should also be involved.

An Environmental Management Cell (EMC) is envisaged which will be responsible for monitoring EMP and its implementation. EMC members should meet periodically to assess the progress and analyze the data collected during the month.

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6.5 BUDGET ALLOCATION FOR MONITORING

The EMC will be responsible to carry on the monitoring. Budget allotment has also been proposed for the same:

Table 6.3, Budget for monitoring

S. No.	Description	Cost to be incurred (in lakhs/annum)
1	Water Quality (Surface & Groundwater)	1.0
2	Soil Quality	0.50
3	Air Quality	1.0
4	Noise Level	0.5
5	Plantation Monitoring	0.5
6	Socio-economic Condition	0.5
TOTAL		4.0

6.6 REPORTING SCHEDULES OF THE MONITORING DATA

It is proposed that voluntary reporting of environmental performance with reference to the EMP should be undertaken. The environmental monitoring cell shall co-ordinate all monitoring programmes at site to furnish the data to the State regulatory agencies regularly in respect of the stipulated prior environmental clearance terms and conditions. The proponent shall prominently advertise in the newspapers indicating that the project has been accorded environmental clearance and also the details of website where it is displayed.

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7.0 PUBLIC CONSULTATION

This is Draft EIA report public hearing is yet to be conducted.

7.1 HAZARD IDENTIFICATION AND RISK ASSESSMENT METHODOLOGY

Risk is to expose someone or something to danger, harm or loss. The different steps of risk assessment procedure are as given below:

Step I: Hazard Identification

The purpose of hazard identification is to identify and develop a list of hazards for each job in the organization that are reasonably likely to expose people to injury, illness or disease if not effectively controlled. Workers can then be informed of these hazards and controls put in place to protect workers prior to them being exposed to the actual hazard.

Step II: Risk Assessment

Risk assessment is the process used to determine the likelihood that people exposed to injury, illness or disease in the workplace arising from any situation identified during the hazard identification process prior to consideration or implementation of control measures.

Risk occurs when a person is exposed to a hazard. Risk is the likelihood that exposure to a hazard will lead to injury or health issues. It is a measure of probability and potential severity of harm or loss.

Step III: Risk Control

Risk control is the process used to identify, develop, implement and continually review all practicable measures for eliminating or reducing the likelihood of an injury, illness or diseases in the workplace.

Step IV: Implementation of risk controls

All hazards that have been assessed should be dealt in order of priority in one or more of the following hierarchy of controls

The most effective methods of control are:

- ✓ Elimination of hazards.

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- ✓ Substitute something safer.
- ✓ Use engineering/design controls.
- ✓ Use administrative controls such as safe work procedures.
- ✓ Protect the workers i.e. by ensuring competence through supervision and training, etc.

Each measure must have a designated person assigned for the implementation of controls.

This ensures that all required safety measures will be completed.

Step V: Monitor and Review

Hazard identification, risk assessment and control are an on-going process. Therefore regularly review the effectiveness of your hazard assessment and control measures. Make sure that you undertake a hazard and risk assessment when there is change to the workplace including when work systems, tools, machinery or equipment changes. Provide additional supervision when the new employees with reduced skill levels or knowledge are introduced to the workplace.

A) RISK ANALYSIS

The risk assessment portion of the process involves three levels of site evaluation:

- a) Initial Site Evaluation,
- b) Detailed Site Evaluation,
- c) Priority Site Investigations and Recommendations.

The risk assessment criteria used for all levels of site evaluation take into account two basic factors:

- The existing site conditions
- The level of the travelling public's exposure to those conditions.

The Initial Site Evaluation and Detailed Site Evaluation both apply weighted criteria to the existing information and information obtained from one site visit. The Initial Site Evaluation subdivides the initial inventory listing of sites into 5 risk assessment site groups. The Detailed Site Evaluation risk assessment is then performed on each of the three highest risk site groups in order of the group priority level of risk. The result of the Detailed Site Evaluation process is a prioritized listing of the sites within each of the three highest risk site groups.

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Risk analysis is done for:

- Forecasting any unwanted situation
- Estimating damage potential of such situation
- Decision making to control such situation
- Evaluating effectiveness of control measures

Table 7.1, Risk Likelihood Table for Guidance

Step 1: Assess the Likelihood				Step 2: Assess the Consequences		
L1	Happens every time we operate	Almost Certain	Common or repeating occurrence	C1	Fatality	Catastrophic
L2	Happens regularly (often)	Likely	Known to have occurred "has happened"	C2	Permanent disability	Major
L3	Has happened (occasionally)	Possible	Could occur or "heard of it happening"	C3	Medical/hospital or lost time	Moderate
L4	Happens irregularly (almost never)	Unlikely	Not likely to occur	C4	First aid or no lost time	Minor
L5	Improbable (never)	Rare	Practically impossible	C5	No injury	Insignificant

A logical systematic process is usually followed during a qualitative risk assessment to identify the key risk events and to assess the consequences of the events occurring and the likelihood of their occurrence Table 7.2

Table 7.2, Qualitative Risk Assessment

Risk Rank	L1	L2	L3	L4	L5
Likelihood Consequence	Almost certain	Likely	Possible	Unlikely	Rare
C1 Catastrophic	1	2	4	7	11

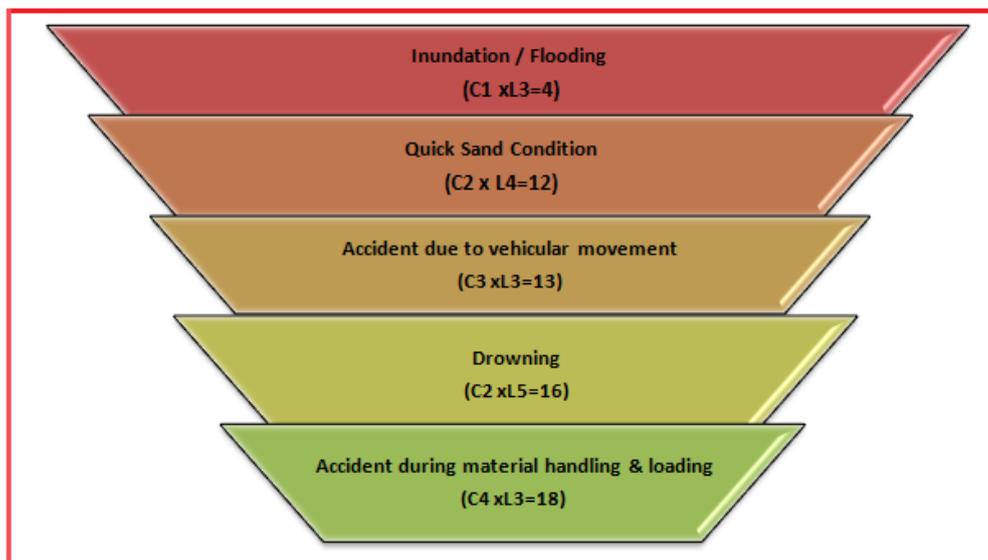
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C2 Major	3	5	8	12	16
C3 Moderate	6	9	13	17	20
C4 Minor	10	14	18	21	23
C5 Insignificant	15	19	22	24	25

RISK RATING:

HIGH RISK 1-6	MEDIUM RISK 7-15	LOW RISK 16-25
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7.2 RISK ASSESSMENT



There are various factors, which can create unsafe working conditions/hazards in mining of minor minerals from bed of river.

The key risk(hazard x probability) event rating associated with sand mining and to assess its consequences of such events occurring and the likelihood based on above Table 7.1 (ii) are as:-

The Risk rating of such hazards is as follows:

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7.2.1 INUNDATION/FLOODING

The risk rating assigned to this activity is assigned as '4' i.e., it is possible and will have catastrophic with major consequences, if work started without assessment of the *river* condition especially during monsoon season.

Inundation or flooding is expected and beneficial for these mines as during this time only the mineral reserve gets replenished.

Measures to prevent consequences of inundation/flooding

Inundation of flooding is expected and beneficial for these mines as during this time only the mineral reserve gets replenished.

1. During monsoon months and heavy rains the mining operations are ceased.
2. There should be mechanism/warning system of heavy rains and discharges from the upstream dams.

7.2.2 Quick Sand Condition

The risk rating assigned to this activity is assigned as '12' i.e., it is an unlikely event with major consequences as frequency of this risk is less likely to occur.

Two things may create the conditions to form quicksand. Underground water may seep-up and saturate the sand, thereby reducing the friction between the sand grains and giving the sand a liquid nature. Or, sand or another soil may be sifted by the force of an earthquake so that friction is lessened and the earth becomes unsteady.

This creates danger condition to the trucks plying near the *river* and banks for transportation of minerals.

Measures to Prevent Quick Sand Condition

1. The only way to avoid quick sand condition is by avoiding mineral lifting below water table.
2. Mining will be done in layers rather than going for maximum depth at one time.

7.2.3 ACCIDENT DUE TO VEHICULAR MOVEMENT

The risk rating assigned to this activity is assigned as '13' i.e., it is possible event with moderate consequences as frequency of this operation is more but the predicted/assumed intensity is less like minor cuts, bodily injury. The possibilities of road accidents are due to

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reckless or untrained driver or overloading of trucks or in case pathway is not compacted suitably, etc.

Measures to Prevent Accidents during Transportation

1. All transportation within the main working should be carried out directly under the supervision and control of the management.
2. The Vehicles will be maintained/repared and checked thoroughly by the competent person.
3. A statutory provision of constant education, training etc. will go a long way in reducing the incidents of such accidents.
4. Overloading will not be permitted and will be covered with tarpaulin.
5. The maximum permissible speed limit will be ensured.
6. The truck drivers will have valid driving license.

7.2.4 DROWNING

The risk rating assigned to this activity is assigned as '16' i.e., it is a rare accident but will have major consequences, if occurred. This may occur due to flash floods etc due to which the workers at the site may get seriously injured or drowned.

Measure to Prevent Drowning

1. The mining will be done under strict supervision and only in the dry part of the *river*.
2. Mining will be completely stopped in monsoon season to avoid such accidents.
3. Deep water areas will be identified and 'No Go Zones' will be clearly marked and made aware to the mine workers.

7.2.5 ACCIDENT DURING MATERIAL HANDLING & LOADING

The risk rating assigned to this activity is assigned as '18' i.e. it is possible event with minor consequences", as frequency of this operation is more but the predicted/assumed intensity is less like minor cuts, abrasion, etc. may be due to bank of *river* collapse, over thrown boulders/pebbles, injuries due to carelessness use of hand tools, etc.

Measures to Prevent Accidents during material handling & loading

1. The truck should be brought to a lower level so that the loading operation suits to the ergonomic condition of the workers.

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2. The loading should be done from one side of the truck only to avoid over throw of materials.
 3. The workers should be provided with gloves and safety shoes during loading.
- All the activities will be done under strict supervision/control to avoid anticipated accidents so that the risk is reduced to a level considered **As Low As Reasonably Practicable (ALARP)** conditions which are adequately safe and healthy.

7.3 DISASTERS & ITS MANAGEMENT

7.3.1 Anticipated Disaster

1. Floods: Most of the areas of this district are flood prone owing to the presence of seasonal rivers. Rivers and its tributaries cause heavy losses to the human lives, livestock, land and property mainly due to flash floods. Hence no mining has been proposed during monsoon and flood alerts will be given, if any.

2. Earth Quake: Banka District like other areas of Bihar is moderately vulnerable to earthquake as it exists in Zone IV. However the vulnerability to damage near the site is quite low as there are no built in structures at the site.

3. Drought: due to deficiency in rainfall prime reasons of recurring drought in Bihar is the nature of soil with low mineral and humus-contents besides extremely poor water holding capacity. Recurrent rainfall variability and sustained departure from the normal rainfall vis-a-vis low reliability, fluctuating both surface and underground water resources and extremely poor water holding capacity of the major soil group appear to have clubbed together to cause frequent droughts in Bihar. Besides, there is a positive relationship between reducing forest land and the increasing rainfall variability and the phenomenon is well manifested in Bihar scenario of recurrent droughts.

7.3.2 Disaster Management Plan & Strategy

The Disaster Management Plan has three components:

(A) Risk Analysis and Vulnerability Assessment:

The Risk Analysis and Vulnerability Assessment depict the present picture for each disaster-exposure, loss of life, property damage, etc. It also shows geographic distribution of each hazard. The various monitoring facilities, regulatory regimes, countermeasures available for each disaster are identified and listed.

(B) Response Plan:

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

The response plan presents an organizational structure of the District to effectively handle the disaster in a coordinated and quickest possible manner to mitigate the impact of disaster. It identifies functional areas such as relief, restoration, communication, information, transport, emergency health services etc and proposes assignments to various departments; including identifying lead and supporting departments. The response plan also lays down preparedness checklists and standing operating procedure (SOP) guidelines.

(C) Mitigation Strategy:

The mitigation strategy and plan focus on the long-term planning for impact reduction. It deals with the issues of continued commitment to hazard identification and risk assessment, applied research and technology transfer, investment- incentives for mitigation, and leadership and co-ordination for mitigation.

The mine management will be in regular contact with the District administration to gather information on natural disasters and will pass on the message at the site to avoid any loss of health or wealth due to impending disasters.

Though the responsibility of disaster management is vested with the center and state Governments, it is extremely difficult for them to deal effectively all the aspects of disaster management according to the needs of the affected people.

Thus disaster management plan of the Banka District has been prepared through incorporation of the features of Community Based Disaster Management and involvement of local governments, Municipalities etc.

7.4 SOCIO-ECONOMIC IMPACT OF THE PROJECT & SAFETY MEASURES

INTRODUCTION

Socio-Economic Impact Assessment (SEIA) refers to systematic analysis of various social and economic characteristics of human being living in a given geographical area during a given period. The geographical area is often called Study Area or Impact Area. SEIA is carried out separately but concurrently with Environment Impact Assessment (EIA). The study area consists of core area where the project is located and a buffer area encircling the project area with a radius of 10 km from the periphery of the core area. For every new project or existing project under expansion or tied for modernization or change in product

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahaul & Nauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

mix, Socio-economic Impact Assessment is mandatory. The Socio-economic impact assessment focuses the effect of the project on social and economic well-being of the community. The impact may be direct or indirect. Further, the impact may be positive or negative.

OBJECTIVES OF SEIA

The prime objective of the current study is to assess the impact of the proposed mining project on socio-economic characteristics of people living in the neighborhoods. Further, it is to be established whether the impending impact would be direct or indirect. Furthermore, it is to be examined whether the said impact would be positive or negative. Lastly, it is to be comprehended if the impact is positive how long it would sustain or if it is negative how soon the same could be eased.

SCOPE

The Scope of the study is as follows:

- a) To collect baseline data of the study area
- b) To comprehend socio-economic status of the people living in the study area.
- c) To assess probable impact of the project on social and economic aspects in the study area.
- d) To measure the impact of the project on Quality of life of the people living in the study area.
- e) To ensure sustainability of positive impact.
- f) To suggest mitigation measures and agency responsible for taking action in case of adverse impact.

SOCIO-ECONOMIC IMPACT OF THE PROJECT

Impact on Demographic Composition

The proposed Project will hardly make any difference in the demographic composition of the study area as the additional employment it envisages to create will be met locally to the maximum extent. Hence, the chances of in-migration of people from outside the study area are remote. Accordingly, there will be no variation in the total population of the study area including that of sex ratio, when the mine starts operating.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Employment Opportunities

The proposed Project will provide employment to the local people. The number of workers to be deployed in the mining project will depend upon the quantity of minerals to be extracted from the mine by the lease holder. Both the miners and the unskilled workers will be recruited locally. It has estimated that around **25 people** will get employment in this mining project for a period of ten months in a year. It is a positive impact of the project since it is providing employment opportunities to the local people. The project will not affect the vulnerable groups of people.

Increased supply of sand in the market

The demand for minerals is ever increasing with the growth of the infrastructure development in our country. Both Government departments and private developers have taken up construction of roads, bridges and buildings in a big way. The requirement for the building materials is always high and there is already an acute shortage of sand in the market and the construction industry is the main sufferer. With the commencement of the proposed mining project the supply of minerals will increase and the gap between demand & supply will decrease to some extent, if not fully.

Impact on agriculture

It is non-forest land and the proposed activity is to take place in the bed of the Sursar River. There will be no negative impact on agriculture as no cultivation is taking place on the proposed mining area. Since, scientific mining will be adopted in the proposed mining project the area will be free from annual floods, which destroy standing crops and land & property. This is a positive impact of the proposed mining project.

Impact on road development

Movement of trucks and other vehicles to and fro the mining site is expected to increase, when mining will start. The existing roads are connecting the quarry with the national highway connected by metalled followed by un-metalled roads. Hence, there is need for road maintenance and repairing regularly in the mining area. Further, there are risks of accidents during loading of extracted minerals into trucks and transportation to markets for sells. However, accidents can be avoided by taking due care and precautions.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Income to Government

The proposed mining activity will benefit the State in the form of royalty, dead rent, fees and earnings from taxes.

Impact on Law & Order

As most of the workers to be employed in the proposed mining project are local residents no law & order problem is envisaged. It is expected that the workers will attend to their duties from their residence and return to their homes after the day's work. There would have been law & order problem if the workers were migrants and lived in shanties closed to the mining area. However, to meet any untoward incident one police post may be set up closed to the mining site.

Impact on Health

There are no chances of occurring diseases, due to mining. The minerals excavated are non-toxic. To avoid respiratory problem from dust necessary protection should be taken.

Few safety measures are outlined below:

- a) **Safe Working Environment:** The project proponent shall ensure health and safety of all the employees at work. Efforts will be made to provide and maintain a safe work environment and ensure that the machinery and equipment in use is safe for employees. Further, it will be ensured that working arrangements are not hazardous to employees.
- b) **Provision of First Aid:** The first aid treatment reflects the hazards associated with the mining of minerals. The first-aiders will be well trained in handling patients working in the Project.
- c) **Regular Health Examination:** For all mine workers regular health examination will be made compulsory. Treatment of serious back injury; existing asthma or respiratory diseases, existing skin diseases, lung function test (pre and post ventolin), Audiograms, Chest X- ray etc. will also be taken care of.
- d) **Health Education:** Adequate health education and information related to the job will be provided to the workers. Baseline health information will be recorded for future references.
- e) **Tie-up with the Nearest Hospital for Medical Assistance:** To meet the medical needs of the mine workers tie-up with nearest hospitals will be made. Efforts will be

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

made to reserve few beds in the above hospitals for the workers of the mining project.

This will ensure timely medical aid to the affected persons.

- f) **Supply of Mask and Gloves:** The workers in the Sand mining project are subject to respiratory diseases. For protection from dust it will be made compulsory for all workers to wear masks and gloves, while working in the mine.
- g) **Administration of Anti-venom Injections:** Provision of Anti-venom therapy will be made available for administration to the workers in case of snake, spider and insect bites, while working in the mine.
- h) **Special Telephone Number:** A special telephone number will be made available to the workers in case of emergency so that they can dial the same for medical assistances. Further, efforts will be made to provide vehicles to the patients in short duration for shifting to a hospital.
- i) **Special Group Insurance Scheme:** All the mine workers will be covered under a Group Insurance Scheme of LIC or any other Insurance company.

CONCLUSION

The commissioning of the Sand Mining Project on Sursar River Unit- 03 Sand Ghat at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, State - Bihar, provides employment to local people who are in search of the same. The granting of environment clearance to make mining of sand legally valid and it will generate revenue for the state. It is expected that prospective entrepreneurs will venture to set up industrial units in the vicinity in the near future making the area a mixed society, dependent on industry, trade and business. With the implementation of the project the occupational pattern of the people in the area will change making more people engaged in mining, industrial and business activities rather in agriculture only. The study area is still lacking in health and educational facilities. It is expected that same will improve to a great extent with opening of the project and associated industrial & business activities.

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8.0 GENERAL

Various benefits are envisaged while planning for the mining of sand from Sursar River Bed. Sand is very important minor mineral and is the principal raw material for meeting the huge demand of construction material required in building construction and infrastructure works, road material for construction and maintenance of roads / highway; elastic ballast material for rail tracks in the State of Bihar & and nearby cities and towns of Bihar. The natural available materials in shoal deposits of Sursar River bed quarry site have been found suitable from techno-economic consideration.

8.1 PHYSICAL BENEFITS

The opening of the proposed project will enhance the following physical infrastructure facilities in the adjoining areas.

- a. **Road Transport:** There will be improved road communication due to the proposed project and maintenance will also be done time to time.
- b. **Market:** Generating useful economic resource for construction. Excavated minor mineral sand will provide a good market opportunity.
- c. **Enhancement of green cover:** As a part of reclamation plan, plantation will be carried along the river banks or along the road sides or near the civic amenities.
- a. **Creation of community assets** (infrastructure) like provision for drinking water, construction of school buildings, village roads/ linked roads, dispensary & health centre, community centre, market place etc, as a part of corporate social responsibility.

8.2 SOCIAL BENEFITS

- a) **Increase in Employment Potential due to the project activity:** Employment opportunities will increase both directly as well indirectly.
- b) **Contribution to the Exchequer** as the saleable minerals will be given royalty. Since the quarries will be leased out to successful allottees, mining operation in the state will get legalized and it will fetch income to the state exchequer.
- c) **Increased Health related activities:** Healthcare promotional activities will be undertaken. Pre-placement & and Periodic medical checkups will be done, which will

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lift the general health status of the residents of the area. Health camps, medical aids, family welfare programs, immunization camp, sports will be arranged.

Table-8.1, Budget for Public Health

S. No.	Activities recommended for communities level services	Tentative cost (Lakh Rs) For Each Mine
1	Awareness campaigns regarding health issues in the nearby villages.	1.0
2	Provide free health checkups & medicines to the nearby villagers of the project site.	1.0
3	Assistance to set up a temporary health center during the lease tenure.	0.5
	Total	2.5

- d) **Educational attainments:** Educational activities will be promoted by the lessee. Awareness program will be arranged covering basic issues related to primary level education, environment, health and hygiene etc.
- e) **Strengthening of existing community** facilities through the Community Development Programme.

Table 8.2, Budget for Occupational Health

Particulars	Recurring Cost per year (Rs.) For Each Mine
For routine checkup	1,00,000
Medical aid as per ESI Scheme	2,00,000
Training	1,00,000
Total	4,00,000

8.3 ENVIRONMENTAL BENEFITS

- a. Protection of banks
- b. Reducing submergence of adjoining agricultural lands due to flooding.

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- c. Reducing aggradations of river level.
- d. Protection of crops being cultivated along the bank.
- e. A check on illegal mining activity.

8.4 CORPORATE ENVIRONMENTAL RESPONSIBILITY

2% of capital cost of the project cost will be allotted for the Corporate Environmental Responsibility as per OM dated 1st May 2018. The following has been proposed considering the needs & demand of the people.

CER cost will be 2% of the total project cost. This amount will be used for social welfare.

CER COST is Rs. 68,62,000 x 2% = Rs. 1,37,240/-

For each activity the funds to be earmarked by the proponent will be decided after discussion with the local authority/people and the beneficiaries during Public Hearing. It has been planned to undertake a concurrent evaluation of the activities to be taken up under the CER programme.

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9.0 INTRODUCTION

The environmental management must be integrated into the process of mine planning so that ecological balance of the area is maintained and adverse effects are minimized. The Environmental Management Plan (EMP) consists of a set of monitoring programme, mitigation measures, and management control strategies to minimize adverse environmental impacts.

The EMP has therefore been made considering implementation and monitoring of environmental protection measures during and after mining operations. Measures to be taken for each of the impact areas are detailed in the following paras:

9.1 ENVIRONMENTAL MANAGEMENT CELL (EMC)

It is imperative to establish an effective organization to implement, maintain, monitor and control the environmental management system. A separate Environmental Management Cell (EMC) will be formed to look after the environment related matter of the mine. The structure of EMC is as follows:

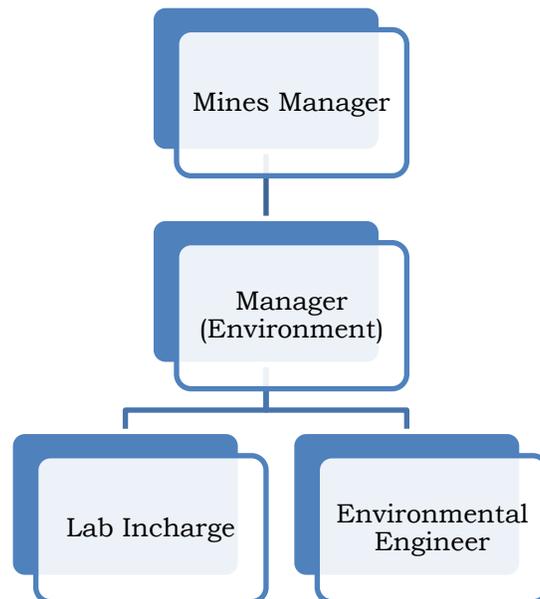


Figure 9.1 Environment Management Cell

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

The EMC will perform the following activities:

- EMC will oversee that environmental control measures are implemented as per the plan.
- EMC will ensure ambient Field monitoring like air monitoring, meteorological monitoring and noise monitoring in coordination with outside agencies.
- Coordinating the environment related activities within the organization as well as with outside agencies.
- Reporting the status report to the statutory authorities.
- Systematically document and record keeping w.r.t. environmental issues.
- Plantation and their maintenance
- Collection statistics of health of workers and population of surrounding villages.
- Environmental compliance to the regulatory authorities.
- Communication with the concerned department on the environmental issue.
- Monitoring the progress of implementation of environmental management programme.

9.2 AIR POLLUTION CONTROL MEASURES

During the course of sand mining, no toxic substances are released into the atmosphere, so there seems to be no potential threat to health of human beings. In river bed mining activities, dust will be generated during mining, loading and transportation. The only source of fugitive gaseous emission during mining is vehicles which will be used for transportation. The environmental management for air pollution control includes:

- Plantation will be done along the road-sides and also the vacant land present under Gram Panchayat after consultation with local villagers/authority.
- Dust mask provided to the workers engaged at dust generation points like excavations, loading and unloading points.
- The only air pollution sources are the road transport network of the trucks. The dust suppression measures like water spraying will be done on the roads.

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- Utmost care will be taken to prevent spillage of sand and stone from the trucks.
- Water sprinkling will be done to reduce the emission of dust due to transportation of minerals.
- Overloading will be prevented. The trucks/ tractor trolley will be covered by tarpaulin covers.
- Plantation activities in consultation with village Panchayat along the roads will also reduce the impact of dust in the nearby villages.

9.3 WATER POLLUTION CONTROL MEASURES

During the operational phase of mine no waste water or industrial effluent will be generated. The environmental management for water pollution control includes:

- Water requirements for drinking, plantation and dust suppression will be met by tanker supply on the daily basis.
- Local people will be employed and no permanent housing will be done so no permanent drainage pattern for sewerage system is required as domestic sewage shall be disposed off into septic tank followed by soak pits.
- Mining in the area will be done up to depth of 1.0m maximum from the surface level well above the ground water table, therefore impact on water regime is not anticipated.
- Monitoring of water quality of nearby surface water, ground water and domestic water will be conducted once in every season except monsoon to evaluate the performance of the mitigation measures.

9.4 NOISE POLLUTION CONTROL MEASURES

As there will be no heavy earth moving machinery there will not be any major impact on noise level due to sand mining and other association activities a detailed noise survey has been carried out and results were cross referenced with standards and were found to be well within limits. Blasting technique is not used for sand mining hence no possibility of land vibration. It was found that the proposed mining activity will not have any significant impact on the noise environment of the region. The only impact will be due to transportation of sand and by excavator involve trucks and tractor trolleys.



Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

- Proper maintenance of all machines is being carried out, which help in reducing generation of noise during operations.
- No other equipments accept the Transportation vehicles and Excavator and Loaders (as and when required) for loading is allowed.
- Noise generated by these equipments is intermittent and does not cause much adverse impact.
- Periodical monitoring of noise will be done to adopt corrective actions wherever needed.
- Plantation will be taken up along the approach roads. The plantation minimizes propagation of noise and also arrests dust.

9.5 BIOLOGICAL ENVIRONMENT

Although, there are no significant adverse impacts from the project, the following measures are proposed to minimize anticipated impacts:

- It will be ensured that no mining activity will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many of the species.
- As the mining site has no vegetation, no clearance of vegetation will be done.
- Prior to closure of mining operations / during the rainy season the eroded bank will be restored / reclaimed to minimize negative impacts on aquatic habitats.
- Sprinkling will be done on the haul roads with water to avoid the dust emission, thus avoiding damage to the crops.
- Mining will be carried out on the dry part of the lease area to avoid disturbance to the aquatic habitat and movement of fish species.
- No discard of food, polythene waste etc. will be allowed in the lease area which would distract/attract the wildlife.
- No night time mining will be allowed which may catch the attention of wild life.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

- Workers will be made aware of the importance of the wildlife and signage will be displayed at the sensitive areas to caution the workers & other passerby.
- Greenery development:** The project will not lead to any tree cutting. However, a social responsibility, greenery will be developed along the both sides of road and the bank of river. Community services will be deployed in raising these plantations. Trees of economic importance and native origin such as fruit trees shall be planted.
- Approx. 98 trees will be planted around haul road during the plan period.
- The trees proposed for plantation are:
- As per Sustainable Sand Management & Mining Guidelines 2016, minimum 05 plant per hectare will be proposed for development of greenbelt but in this project 10 plants per hectare will be proposed for better condition of environment.
- Total Number of plants for cluster of Sand Blocks are given below.

Sand Ghat	Area (Ha)	Plants
Saharsa Sursar River Unit 03	9.80	9.80*10 Plants= 98 plants
Total Plants		98 plants

Table 9.1:- List of Plant selected for Green Belt Development

	Agro-climatic zone & Sub zone	Middle Genetic Plains, North west alluvial sub zone	
S/n	Scientific name	Common Name	Pollution control features
1	<i>Acacia nilotica</i>	Babul	Tolerant to SO ₂
2	<i>Mangifera indica</i>	Aam	Tolerant to Dust control
3	<i>Tectona grandis</i>	Sagon	Tolerant to Dust control
4	<i>Azadirachta indica</i>	Neem	Tolerant to SO ₂
5	<i>Pithecolobium dulce</i>	Jungle jalebi	Tolerant to SO ₂ and Dust control
6	<i>Scigium cumuni</i>	Jamun	To stop river bank erosion
7	<i>Terminalia arjuna</i>	Arjun	To stop river bank erosion

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

8	<i>Populus ciliate</i>	Poplar	Fast growing, broad leaf
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9.6 LAND USE PLANNING

Degradation of land is not a very significant adverse impact of riverbed mining due to creation of access roads, mining operations, transportation of mined material. In order to prevent the environmental degradation of leased mine area and its surroundings, the following measures shall be taken;

- Mineral will be mined out after leaving sufficient safety zone from the bank as per sustainable sand mining guidelines-2016 for bank stability.
- The pits from where the material will be picked should not get deeper than 3.0 meter & shall follow the normal channel direction of the river.
- No foreign material shall be allowed to remain/spill in river bed and catchment area, or no pits/pockets will be allowed to be filled with such material.
- The mining is planned in non-monsoon seasons only, so that the excavated area gets replenished during the monsoon each year.
- Pits will get replenished naturally every year after monsoon.

9.7 OCCUPATIONAL HEALTH & SAFETY

Occupational safety and health is very closely related to productivity and good employer-employee relationship. The factor of occupational health in Sand Ghat of M/S Ratan Coal Supplier Pvt. Ltd., Prop. Prashant Kumar, S/o –Shiv Ratan Prasad, At- QTR. No. 29/2-2, Aaldanga Housing Colony, Post – Chirkunda Nirsa cum Chirkunda,, Dist – Dhanbad, Jharkhand Pin - 828202, (Sand Unit 03), is mainly dust. Safety of employees during operation and maintenance etc. shall be as per Mines rules and regulations.

To avoid any adverse effect on the health of workers due to various pollutants, sufficient measures relating to safety and health will also be practiced:

- Provision of rest shelters for mine workers with amenities like drinking water, portable toilets etc.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

- All safety measures like use of safety appliances, such as dust masks, shoes, non breakable goggles as the case may be, shall be ensured. Safety awareness programs, awards, posters, slogans related to safety etc. will be encouraged.
- Training of employees for use of safety appliances and first aid in vocational training center.
- Regular maintenance and testing of all equipment as per manufacturers' guidelines.
- Periodical Medical Examination (PME) of all workers by a Medical Officer.
- First Aid facility will be provided at the mine site.
- Close surveillance of the factors in working environment and work practices which may affect environment and worker's health.
- Working of mine as per approved mining plan and environmental plans.

9.8 SOCIO-ECONOMIC ENVIRONMENT

This project operation will provide livelihood to the poorest section of the society. The overall impact of riverbed mining of sand on the social economics of the area shall be a very positive one, as not only it will generate employment opportunities for local population at mine site for transportation of mined material, etc. It will also give a good boost to the general economy of the area.

The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes. However, there is an apprehension that local people may get engaged in illegal activities if the proposed mining operation or the project is shelved or there is inordinate delay in its execution.

9.9 ENVIRONMENT POLICY

M/S Ratan Coal Supplier Pvt. Ltd., Prop. Prashant Kumar, S/o –Shiv Ratan Prasad, At- QTR. No. 29/2-2, Aaldanga Housing Colony, Post – Chirkunda Nirsa cum Chirkunda,, Dist – Dhanbad, Jharkhand Pin - 828202, (Sand Unit 03), of Sand Ghat believes that responsible environmental stewardship comprises diligent application of well-established natural resource management, controls and practices for the protection of the mined out land, preservation of

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

biodiversity and proper disposal of waste if any following the best environmental practices during the process of mining.

Environmental policy prescribed for standard operating process to bring into focus any violation/deviation of the environment and forest norms/conditions that the company operations will implement operational and risk management practices that provide for maximum protection of people and the environment. To this end, the owner resolves that company will follow the below mentioned practices:

Operate in accordance with prescribed industry standards while complying with all applicable environmental, health and safety laws and regulations.

- Establish and maintain a well-defined environmental, health and safety management system to guide its operations.
- Ensure that all employees, officers and directors understand and adhere to its environmental, health and safety management program.
- Provide operations with the necessary resources, expertise and training to effectively carry out its EHS management programs.
- Engage employees at all levels in programs directed towards minimizing adverse effects on the environment resulting from mining activity.
- Work proactively with governments and the public in the development of cost effective and realistic regulations that promote enhanced environmental, health and safety protection.
- Promote environmental awareness among its employees, their families and the communities in which it operates.
- Require those who provide services and products to practice good environmental stewardship.
- Mitigate its environmental impacts through efficient use of resources, and the reduction of input materials and waste.
- Maintain a high degree of emergency preparedness.

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9.10 BUDGET ALLOCATION FOR EMP IMPLEMENTATION

Annual budget for EMC is very essential for successful implementation of EMP. Costs will be both Capital and Recurring cost as given below. The fund allocated will not be diverted for any other purposes and the top management will be responsible for this.

Table 9.2, Budget of EMP (Unit 03)

Sl. No	Description	Capital Cost (lakh)	Recurring Cost (lakh)
1	Pollution Control & Dust Suppression	--	1.5
2	Pollution Monitoring i) Air pollution ii) Water pollution iii) Soil pollution iv) Noise Pollution	--	2.0
3	Plantation and salary for one gardener (part time basis).	0.98	0.5
4	Haul road Maintenance Cost	1.575	1.5
TOTAL		2.555	5.5

Note: *98 plants * 1000 Rs (for each plants including hedges and fences) =Rs 98000/-

- Salary of Labour for haul road maintenance 2 labor*300=600 per day
- 600* 250= 1,50,000/-
- * 2.5 lakh per kilometer (2,50,000 *0.63 km haul road) = 157500/-

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

10.0 INTRODUCTION

10.1 Purpose of the Report

Environmental Impact Assessment report is prepared to comply with the Terms of Reference (TOR) received from SEIAA, Bihar under EIA notification of the MoEF&CC dated 14th September, 2006 and its subsequent amendment there-off and also the EIA Guidance Manual for Mining of Minerals (Feb, 2010) of MoEF&CC, Govt. of India, for seeking environmental clearance for mining of Sand in the applied mining lease area.

10.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT

10.2.1 Identification of Project

The Proposed Sand Mining Project is located on Saharsa Sursar River Unit 03 Sand Ghat (Sahsaul Sand Ghat Block 01 , Sahsaul 1 Sand Ghat Block 02 & Nanauti Sand Ghat Block 03) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha, Distt.- Saharsa, Bihar.

The Proposed Production is 58800 Cum/Year or 94080 Tonnes per annum and Area of the project site is 9.80 ha.

As per the Director of Geology, Bihar, the modification of mining plan has been approved .As per EIA notification 2016 and subsequent amendments, the project is coming under category ‘B’ (B1) and the lease area is more than 5.0 Ha, approved Mining Plan, Pre-feasibility Report and EMP are required for Environment Clearance in respect of the said quarry lease. Copy of letter is enclosed as **Annexure No. II**.

10.3 BRIEF DESCRIPTION OF PROJECT

The proposed project is Open Cast Semi-Mechanized Mining of Sand with a proposed production of 58800 Cum/Year or 94080 TPA. The project has been proposed by (Unit 03 - M/S Ratan Coal Supplier Pvt. Ltd., Prop. Prashant Kumar, S/o –Shiv Ratan Prasad, At-QTR., No. 29/2-2, Aaldanga Housing Colony, Post – Chirkunda Nirsa cum Chirkunda, Dist – Dhanbad, Jharkhand Pin - 828202.

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The proposed project is over an area 9.80 ha on Sursar River at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar). As per MoEF, New Delhi Gazette dated 14th September 2006 and amended thereof, the proposed mining project is categorized as **Category ‘B-1’**. The estimated project cost for the proposed project is Rs- 68,62,000 /- (including auction cost).

The proposed mining lease area falls in Survey of India Toposheet 72K/13 & 72K/14.

The mine lease co-ordinates and connectivity details are listed below:

Table: 10.1 Mine lease Co-ordinates

Saharsa Sursar River Unit 03

Sand Ghat Area		Co-ordinates			Ghat/ Address	River
Sahraul Sand Ghat Block 01	4.90	A	25°42'35.63"N	86°46'36.85"E	Mauja – Sahraul, Anchal – Sonvarsha, Dist – Saharsa (Bihar)	Sursar
		B	25°42'37.60"N	86°46'40.91"E		
		C	25°42'40.31"N	86°46'59.05"E		
		D	25°42'37.92"N	86°46'59.18"E		
		E	25°42'34.31"N	86°46'38.04"E		
Sahraul 1 Sand Ghat Block 02	1.0	A	25°42'38.02"N	86°46'16.08"E	Mauja – Sahraul, Anchal - Sonvarsha, Dist – Saharsa (Bihar)	Sursar
		B	25°42'34.02"N	86°46'26.25"E		
		C	25°42'33.56"N	86°46'26.22"E		
		D	25°42'34.71"N	86°46'19.75"E		
		E	25°42'37.08"N	86°46'15.92"E		
Nanauti Sand Ghat Block 03	3.90	A	25°42'41.57"N	86°47'44.87"E	Mauja – Nanauti, Anchal – Sonvarsha, Dist – Saharsa (Bihar)	Sursar
		B	25°42'43.94"N	86°48'12.75"E		
		C	25°42'42.64"N	86°48'13.28"E		
		D	25°42'40.16"N	86°47'44.56"E		

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

The details of environmental setting are given in **Table-10.2**.

Table-10.2: Details of Environmental Setting

Sr. No.	Particulars	Details		
1	Location			
a	Village	Mauja – Sahraul & Nanauti		
b	District	Saharsa		
c	State	Bihar		
2	Elevation above	Unit- 03 Sahraul Sand Ghat Block 01 (36.3 AMSL to 34.8 AMSL) Sahraul 1 Sand Ghat Block 02 (35.5 AMSL to 34.6 AMSL) Nanauti Sand Ghat Block 03 (36.6 AMSL to 35.2 AMSL)		
3	Nearest National /State Highway	NH-131: Approx. 9.50 KM towards ENE direction. NH-231: Approx. 6.50 KM towards SW direction. SH-59: Approx. 6.90 KM towards West direction.		
4	Nearest Railway station	Blocks	Railway Station	Distance (Km) Direction
		Block 01, Block 02 & Block 03	Madhepura Railway Station	approx. 23.0 km towards North direction.
5	Nearest Airport	Blocks	Airport	Distance (Km) Direction
		Block 01	JPN International Airport, Patna	Approx. 170.0 km towards W direction.
		Block 02	JPN International Airport	Approx. 169 km towards W direction.
		Block 03	JPN International Airport	Approx. 172 km towards W direction.
6	Ecological Sensitive Areas (Wildlife Sanctuaries)	There is no any Ecological Sensitive Areas Like National Park, Wildlife Sanctuaries, etc are found within 10 km of the study area.		
7	Seismic Zone	Zone- IV		

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Sr. No.	Particulars	Details
		Source <i>BMTC</i> 2 nd edition https://www.bmtpc.org/disaster%20resistnace%20technolgies/ZONE%20IV.htm

10.4 PROJECT DESCRIPTION

10.4.1 Salient features of mine lease

The salient features of mine lease are given below:

Table-10.3: Salient features of mine lease

Sr. No.	Parameter	Description
1	Name of the Mine	Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).
2	Mining Capacity	58800 Cum/Year or 94080 TPA
3	Method of mining	Open cast semi-mechanized mining/OTFM
4	Total ML area	9.80 ha
5	Depth of mining	1.0 m depth
6	Manpower	25 persons
9	Water Requirement	4.50 KLD
10	Source of Water	Tanker/ Nearby village.

10.4.2 Mineral Reserves and production

Mineable reserves have been computed up to 1 m depth from surface. The volume multiplied by bulk density 1.60 g/cm³ for Sahraul Sand Ghat, 1.60 g/cm³ for Sahraul 1 Sand Ghat and 1.61 g/cm³ for Nanauti Sand Ghat. Average 1.60 g/cm³ is taken for the Sursar River.

The minerals excavated from the river bed will be replenished gradually during the monsoon season every year. And the area pertaining to paleo channels of the river will be leveled & restored back.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Table 10.4 Classification Mineral Reserves

Sand Ghat	Area (Hect)	Geological Reserves (m3)	Mineable Reserves (m3)	Annual Permitted Reserve As per LoI (m3)
Saharsa Sursar River Unit 03	9.80	98000	78173	58800

Total Mineable Reserve of Block 01, Block 02 & Block 03 = (40732 + 6670+30771) cum =78173 cum or 125077 tonnes

The annual extractable RBM comes to 58800 CUM or 94080 Tonnes.

In the lease area the river flow being reduced and sediment load get deposited. During flood season, the area gets replenished with sediments and source of erosion at this location. It is a river bed deposit and mined out area shall be replenished each year during monsoon period and depth of quarry shall be filled back by river sand each year and area will restore its original topography.

10.4.3 Conceptual Plan

Mine Applied Area will be worked for Saharsa Sursar River Unit 03 Sand Ghat. However, as the digging depth will be restricted to 1.0 m only. This will be further replenished during rainy season. Balu Ghat will be worked systematically as the width is limited while length is much more. As the lease period is only 5 (Five) years, some of the area will be left un-worked at the end of lease period.

(i) Final Slope Angle to Be Adopted: Height of the bench is limited to 1 m while width of individual bench shall be kept 6.0 m. River bank side will be protected by working in dry part of the river and by leaving safety distance of the width of the river of 5 meter. Bank side natural slope will not be disturbed. This will prevent collapse of bank and erosion. However, the height of the bank with respect to river bed is varying from 3-4 meters.

(ii) During plan period workings will be carried out in the Balu ghat at a time of the Applied Area simultaneously. Scattered workings will ensure safety, remove congestion of vehicles and will have better control and management.

(iii) Ultimate Capacity of Dumps: There will be no OB removal / during the plan period. Therefore no proposal has been envisaged for its separate dumping. No outside material will be filled up in the extracted zone.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

10.4.4 Method of Mining

Mining activity will be carried out by open cast semi- mechanized method/OTFM. The operation will be semi-mechanized/OTFM with use of excavators/JCBs truck /tractors combination or Manually etc. The sand will be collected in its existing form.

10.5 AFFORESTATION PROGRAMME

Topsoil if any would be utilized for intensive plantation and greenbelt development, all along the bank of the river. The details of plantation and number of saplings to be planted are given below. Approx. 98 trees will be planted around haul road during the plan period.

10.6 LAND USE PATTERN

The mine lease area is flat river bed and river banks. There is no forest land or agriculture land in the mine lease area. The entire mining lease lies within River.

10.7 BASELINE ENVIRONMENTAL STATUS

10.7.1 Soil Quality

Five soil samples were collected in and around the mine lease area to assess the present soil quality of the region. The pH of the soil indicates that the soil is slightly alkaline in nature. Based on the results, it is evident that the soils are not contaminated by any polluting sources.

10.7.2 Meteorology

Meteorological data at the site was monitored during March 2023 to May 2023 representing pre monsoon season. It was observed that the during study period, temperature ranged from 20 °C to 43 °C.

10.7.3 Ambient Air Quality

Ambient Air Quality Monitoring (AAQM) has been carried out at 09 locations. The minimum and maximum level of PM10 recorded within the study area was in the range of 46.72 $\mu\text{g}/\text{m}^3$ to 79.94 $\mu\text{g}/\text{m}^3$. The Particulate Matter (PM_{2.5}) range of 22.56 $\mu\text{g}/\text{m}^3$ to 41.8 $\mu\text{g}/\text{m}^3$. Sulphur dioxide (SO₂) between 5.55 $\mu\text{g}/\text{m}^3$ to 11.69 $\mu\text{g}/\text{m}^3$. Oxides of Nitrogen (NO₂) between 8.47 $\mu\text{g}/\text{m}^3$ to 16.11 $\mu\text{g}/\text{m}^3$. The results thus obtained indicate that the concentrations of PM10,

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

SO₂ and NO₂ in the ambient air are well within the National Ambient Air Quality (NAAQ) standards for Residential and Rural areas.

10.7.4 Water quality

The Ground water sampling was taken from 05 locations. The analysis results indicate that the pH ranges between 7.46 and 7.66, Total hardness varies from 206 mg/l to 351 mg/l & Total dissolved solids vary from 350.35 mg/l to 436 mg/l.

The results indicate groundwater is generally in conformity with the drinking water standards (IS: 10500).

10.7.5 Noise Quality

Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as 42.5 dB(A) to 51.2 dB(A) respectively. The minimum & maximum noise levels at night time were found to be 31.61 dB (A) & 43.3 dB(A) respectively.

10.7.6 Ecological Environment

Based on the field studies and review of published literature, There is no any Ecological Sensitive Areas Like National Park, Wildlife Sanctuaries, etc are found within 10 km of the study area.

10.8 ANTICIPATED ENVIRONMENTAL IMPACTS

10.8.1 Impact on Air Environment

The proposed mining activities loading and movement of other transport vehicles used in mining will generate dust (SPM/RSPM). Proper water sprinkling shall be carried out at the mine site. The mineral will be transported by road through covered tarpaulin trucks/tippers to reduce the fugitive emission caused by the wind.

10.8.2 Impact on Water Environment

Mining of sand from within or near river has an indirect impact on the physico-chemical habitat characteristics during monsoon season. These characteristics include in stream roughness elements, depth, velocity, turbidity, sediment transport and stream discharge.

The detrimental effects, if any, to biota resulting from bed material mining are caused by following:

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

- Alteration of flow patterns resulting from modification of the river
- An excess of suspended sediment during monsoon season.

Project activity will be carried out only in the dry part of the Sursar River. Hence, none of the project activities affect the water environment directly. In the project, it is not proposed to divert or truncate any stream in monsoon season only. No proposal is envisaged for pumping of water either from the *River* (in monsoon) or tapping the ground water.

10.8.3 Impact on Water Quality

Analysis results of water samples collected from the buffer zone indicate that the pH, total dissolved solids (TDS) are well below the prescribed limits.

No wastewater generation is envisaged due to the mining operations. The sanitary wastewater will be sent to septic tanks.

10.8.4 Impact on Noise Environment

The proposed mining activity is semi-mechanized/OTFM in nature. No drilling & blasting is envisaged for the mining activity. Hence, the only impact is anticipated is due to movement of vehicles deployed for transportation of minerals. The vehicles will be maintained in good running condition so that noise will be reduced to minimum possible level.

10.8.5 Impact on Land Environment

The proposed extraction of stream bed materials, mining below the existing streambed, and alteration of channel-bed form and shape may lead to several impacts such as erosion of channel bed and banks, increase in channel slope, and change in channel morphology if, the operations are not carried out systematically.

The systematic and scientific removal of sand will not cause bed degradation. The silt and clay generated as waste will be used for plantation or filling up low lying area elsewhere. The mining is planned in non monsoon seasons only, so that the excavated area gets replenished gradually during the monsoons each year.

10.8.6 Impact on flora and fauna

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

As the proposed mining will be carried out in a scientific manner, not much significant impact is anticipated. No mining will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many of the species. The mining site has no vegetation; no clearance of vegetation will be done. Haul roads will be sprinkled with water which would reduce the dust emission, thus avoiding damage to the crops.

10.8.7 Impact on Socio - Economic Aspects

The mine area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement. No public buildings, places, monuments etc exist within the lease area or in the vicinity. The mining operation will not disturb/ relocate any village or need resettlement. Thus no adverse impact is anticipated. The impact of mining activity in the area is positive on the socio-economic environment of the region. Sand mining will be providing employment to local people whenever there is requirement of manpower.

10.9 ENVIRONMENTAL MANAGEMENT PLAN

- Extraction will be done from the bed leaving safety zone from bank.
- The maximum working depth will remain above ground water table of the area.
- Provide health facilities to the workers & surrounding people in the impact area to reduce the health impacts.
- Ensuring wildlife protection & arranging awareness campaigns for the same.
- Minimize activities that release fine sediment to the river.
- Effective mitigation measures will be adopted to minimize disturbance during transportation & handling of minerals:
- Establishment of reclamation program with plantation of local/native & fast growing species
- Establishment of restoration plan during the closure of mine at the onset of monsoon season.
- Establishment of effective Disaster Management Plan to take timely precautionary measures to avoid effects of impending disasters.
- Establishment of effective Monitoring Program monitored by Environment Management Cell.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

10.10 ENVIRONMENTAL MONITORING PROGRAM

Table 10.5: Post project environmental monitoring

S. No.	Description of Parameters	Schedule of Monitoring
1	Air Quality	24 hourly samples twice a week in each season except monsoon
2	Water Quality (Surface & Groundwater)	Once a season for 4 seasons in a year
3	Soil Quality	Once in a year in project area
4	Noise Level	Twice a year for first two years & then once a year
5	Socio-economic Condition	Once in 3 years
6	Plantation Monitoring	Once in a season

10.11 ENVIRONMENTAL PROTECTION COST

The details of the cost to be incurred for successful monitoring of environmental parameters and implementation of control measures are given in **Table-10.6**.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

Table 10.6: Cost of Environmental Protection Measures

Budget of EMP (Unit 03)

Sl. No	Description	Capital Cost (lakh)	Recurring Cost (lakh)
1	Pollution Control & Dust Suppression	--	1.5
2	Pollution Monitoring i) Air pollution ii) Water pollution iii) Soil pollution iv) Noise Pollution	--	2.0
3	Plantation and salary for one gardener (part time basis).	0.98	0.5
4	Haul road Maintenance Cost	1.575	1.5
TOTAL		2.555	5.5

Note: *98 plants * 1000 Rs (for each plants including hedges and fences) =Rs 98000/-

- Salary of Labour for haul road maintenance 2 labor*300=600 per day
- 600* 250= 1,50,000/-
- * 2.5 lakh per kilometer (2,50,000 *0.63 km haul road) = 157500/-

10.12 ADDITIONAL STUDIES

10.12.1 Risk Assessment

The complete mining operation will be carried out under the management control and direction of a qualified mine manager holding. The DGMS have been regularly issuing standing orders, model, standing orders and circulars to be followed by the mine management in case of disaster, if any.

10.12.2 Disaster Management Plan

Emergency preparedness is an important aspect in the planning of Disaster Management. Personnel would be trained suitably and prepared mentally and physically in emergency

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

response through carefully planned, simulated procedures. Similarly, the key personnel and essential personnel shall be trained in the operations.

10.12.3 Public Consultation

This is a draft EIA report. Public Hearing will be incorporated in FEIA report.

10.13 PROJECT BENEFITS

Physical Benefits: Road Transport, Market, Enhancement of green cover & Creation of community assets.

Social Benefits: Increase in Employment Potential, Contribution to the Exchequer, Increased Health related activities, Educational attainments & Strengthening of existing community facilities.

Environmental Benefits:

- Controlling river channel and protection of banks.
- Reducing submergence of adjoining agricultural lands due to flooding.
- Reducing aggradation of river level.
- A check on illegal mining activity.

Corporate Social Responsibility

2% of capital cost of the project cost will be allotted for the Corporate Environmental Responsibility as per OM dated 1st May 2018. The following has been proposed considering the needs & demand of the people.

CER cost will be 2% of the total project cost. This amount will be used for social welfare.

CER COST is Rs. 68,62,000 x 2% = Rs. 1,37,240/-

For each activity the funds to be earmarked by the proponent will be decided after discussion with the local authority/people and the beneficiaries during Public Hearing. It has been planned to undertake a concurrent evaluation of the activities to be taken up under the CER programme.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

10.14 CONCLUSIONS

- The mining operations will meet the compliance requirements of MoEF&CC;
- Community impacts will be beneficial, as the project will generate significant economic benefits for the region;
- Monitoring program will be followed till the mining operations continue.
- With the effective implementation of the Environment Management Plan (EMP) during the mining activities, the proposed project can proceed without any significant negative impact on environment.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).

CONSULTANT

Name of the Consultant	P and M Solution
Address	C-88, Sector 65, Noida -201301 – U.P
Credentials	Accredited by QCI/NABET

Consultant accreditation details are given below:




Quality Council of India
National Accreditation Board for
Education & Training

CERTIFICATE OF ACCREDITATION

P and M Solution
First Floor, C-88, Sector-65, Noida, Uttar Pradesh- 201301

Accredited as Category -A organization under the QCI-NABET Scheme for Accreditation of EIA Consultant Organizations: Version 3 for preparing EIA/EMP reports in the following sectors:

Sl. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1.	Mining of minerals including opencast / underground mining	1	1 (a) (i)	A
2.	River Valley projects	3	1 (c)	B
3.	Metallurgical industries (ferrous & non-ferrous)	8	3 (a)	B
4.	Highways,	34	7 (f)	A
5.	Building and construction projects	38	8 (a)	B
6.	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in IA AC Minutes dated December 20, 2019 on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/20/1223 dated February 3, 2020. The accreditation needs to be renewed before the expiry date by P and M Solution, Noida following due process of assessment.


 Sr. Director, NABET
 Dated: February 3, 2020

Certificate No.
 NABET/EIA/1922/IA0053

Valid till
 Dec 10, 2022

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, (Bihar).



National Accreditation Board for Education and Training



QCI/NABET/ENV/ACO/23/2770

June 02, 2023

To

P and M Solution
C-88, Sector-65 Noida
Noida, UP

Sub.: Extension of Validity of Accreditation till Sept 01, 2023 – regarding
Ref.. 1. Certificate no. NABET/EIA/1922/IA0053
2. Request e-mail dated May 30, 2023

Dear Sir/Madam

This has reference to the accreditation of your organization under the QCI-NABET EIA Scheme, the validity of **P and M Solution** is hereby extended till Sept 01, 2023 or completion of the assessment process, whichever is earlier.

The above extension is subject to the submitted documents/required information with respect to your application and timely submission and closure of NC/Obs during the process of assessment.

You are requested not to use this letter after expiry of the above stated date.

With best regards.

(A K Jha)
Sr. Director, NABET

NABET

Project: Sand Mining Project (Saharsa Sursar River Unit 03 Sand Ghat) at Mauja – Sahraul & Nanauti. Anchal – Sonvarsha District- Saharsa. (Bihar).

Consultant Contact Details:

P and M Solution

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4	Subhash Kumar	FAE	SC
5	Manoj Kumar Pandey	FAE	EB
6	R K Tiwary	FAE	RH,AP
7	Rahul kumar	FAE	AQ
8	Abhay Nath Mishra	FAE	SE
9	Hussain Ziauddin	FAE	WP
10	Poonam Kumari Mangalam	FAE	LU
11	Jatin Kumar Srivastava	FAE	NV

EXECUTIVE SUMMARY

FOR

SAND MINING PROJECT ON SURSAR RIVER (SAHARSA SURSAR RIVER UNIT - 03 SAND GHAT) DIST – SAHARSA (BIHAR)

(Sahsaul Sand Ghat Block 01 , Sahsaul 1 Sand Ghat Block 02 & Nanauti Sand
Ghat Block 03)

At

**Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha, Distt.- Saharsa,
State – Bihar**

AREA	Block 01 - 4.90 Ha. Block 02 - 1.0Ha. Block 03 – 3.90 Ha. Total Area – 9.80 Ha.
PRODUCTION	58800 cum/year or 94080 TPA

PROJECT PROPONENT

M/S Ratan Coal Supplier Pvt. Ltd.

Prop. Prashant Kumar

S/o –Shiv Ratan Prasad

At- QTR. No. 29/2-2, Aaldanga Housing Colony

Post – Chirkunda Nirsa cum Chirkunda,

Dist – Dhanbad, Jharkhand Pin - 828202

Environment Consultant

P and M Solution

(Accredited by QCI/NABET)

Accreditation No. : NABET/EIA/1992/IA0053

C-88, Sector 65 Noida

www.pmsolution.in



EXECUTIVE SUMMARY

INTRODUCTION

As per MoEF & CC, New Delhi Gazette dated 14th September 2006 and amended thereof, the proposed mining project is categorized as **Category 'B1'** project.

Saharsa Sursar River Unit 03

The project has been proposed by M/S Ratan Coal Supplier Pvt. Ltd. (Prop. Prashant Kumar). The Proposed Sand Mining Project is located on Sursar River at Saharsa Sursar River Unit 03 Sand Ghat (Sahraul Sand Ghat Block 01 , Sahraul 1 Sand Ghat Block 02 & Nanauti Sand Ghat Block 03) at Mauja – Sahraul & Nanauti, Anchal – Sonvarsha, Distt.- Saharsa, Bihar.

LOI issued to lessee via letter no 932 /M, Saharsa dated 22-11-2022. The Draft EIA report has been prepared according to EIA notification 2006 and its subsequent amendment thereof. TOR of the proposed project has been issued by SEIAA Bihar dated 11-05-2023.

It has been proposed to mine around 94080 Tonnes per annum for applied lease. The estimated project cost for the proposed project is Rs 68,62,000 /- (including auction cost)

PROJECT DESCRIPTION

LOCATION

Saharsa Sursar River Unit 03

The proposed mining lease area falls in Survey of India Toposheet Topo sheet No- 72K/13 & 72K/14. The lease area is located in Mauja – Sahraul & Nanauti, Anchal – Sonvarsha District- Saharsa, Bihar The mine lease co-ordinates are listed below:

Sand Ghat	Area	Co-ordinates			Ghat/ Address	River
Sahraul Sand Ghat Block 01	4..90	A	25°42'35.63"N	86°46'36.85"E	Mauja – Sahraul, Anchal – Sonvarsha, Dist – Saharsa (Bihar)	Sursar
		B	25°42'37.60"N	86°46'40.91"E		
		C	25°42'40.31"N	86°46'59.05"E		
		D	25°42'37.92"N	86°46'59.18"E		
		E	25°42'34.31"N	86°46'38.04"E		

Sahsaul 1 Sand Ghat Block 02	1.0	A	25°42'38.02"N	86°46'16.08"E	Mauja – Sahsaul, Anchal -Sonvarsha, Dist – Saharsa (Bihar)	Sursar
		B	25°42'34.02"N	86°46'26.25"E		
		C	25°42'33.56"N	86°46'26.22"E		
		D	25°42'34.71"N	86°46'19.75"E		
		E	25°42'37.08"N	86°46'15.92"E		
Nanauti Sand Ghat Block 03	3.90	A	25°42'41.57"N	86°47'44.87"E	Mauja – Nanauti, Anchal – Sonvarsha, Dist – Saharsa (Bihar)	Sursar
		B	25°42'43.94"N	86°48'12.75"E		
		C	25°42'42.64"N	86°48'13.28"E		
		D	25°42'40.16"N	86°47'44.56"E		

Area & production: The total ML area is 9.80 Ha. Proposed rate of production will be 94080 TPA.

Connectivity:

Saharsa Sursar River Unit 03

Block 01 Sand Ghat is well connected to the nearest metalled road 0.06 km distance from the lease. SH-59: Approx. 6.90 KM towards West direction. Madhepura Railway Station approx. 23.0 km towards North direction.

Block 02 Sand Ghat is well connected to the nearest metalled road 0.27 Km distance from the lease. SH-59: Approx. 6.90 KM towards West direction. Madhepura Railway Station approx. 23.0 km towards North direction.

Block 03 Sand Ghat is well connected to the nearest metalled road 0.30 Km distance from the lease. SH-59: Approx. 6.90 KM towards West direction. Madhepura Railway Station approx. 23.0 km towards North direction.

Salient Features of Project

Saharsa Sursar River Unit 03

Name of the applicant	M/S Ratan Coal Supplier Pvt. Ltd. Prop. Prashant Kumar
Address of Lessee	M/S Ratan Coal Supplier Pvt. Ltd. Prop. Prashant Kumar S/o –Shiv Ratan Prasad At- QTR. No. 29/2-2, Aaldanga Housing Colony Post – Chirkunda Nirsa cum Chirkunda, Dist – Dhanbad, Jharkhand Pin - 828202

Name of Mine	Sand Mining Project on Saharsa Sursar River Unit 03 (Sahsaul Sand Ghat Block 01 , Sahsaul 1 Sand Ghat Block 02 & Nanauti Sand Ghat Block 03) at Mauja – Sahsaul & Nanauti, Anchal – Sonvarsha, Distt.- Saharsa, Bihar.
Village	Block 01 - (Village- Sahsaul, Block 02 - (Village- Sahsaul) Block 03 - (Village- Nanauti)
District & State	Saharsa, Bihar
Mineral	Sand
Area (ha)	9.80 ha (Block 01 = 4.90 ha + Block 02 = 1.0 ha + Block 03 = 3.90 ha)

MINING

The mining process is opencast semi-mechanized method without drilling & blasting. This is an open-cast mining project. The operation will be semi-mechanized/OTFM with use of excavators/JCBs truck /tractors combination or Manually etc. The sand will be collected in its existing form.

The mining will be done in a rotational way. As the working is going to be methodical i.e. mining will be done in benches. There would be no risk to the employee working in the mines.

Mining will be done in layers.

The deposit will be worked from the surface of the bed up to 1 m bgl or above ground water level, whichever comes first. Hence, at no point of time mining will intersect with ground water table. Mining will be done only during the day time and completely stopped during the monsoon season.

RESERVE AND PRODUCTION

Mineable reserves have been computed up to 1 m depth from surface. The volume multiplied by bulk density 1.60 g/cm³ for Sahsaul Sand Ghat, 1.60 g/cm³ for Sahsaul 1 Sand Ghat and 1.61 g/cm³ for Nanauti Sand Ghat. Average 1.60 g/ cm³ is taken for the Sursar River.

The minerals excavated from the river bed will be replenished gradually during the monsoon season every year. And the area pertaining to palaeo channels of the river will be leveled & restored back.

The bench-wise annual exploitation of sand of is given below:

**Saharsa Sursar River Unit 03
Sahsaul Sand Ghat Block 01**

Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
36-35	599	68	1	40732	65172
Total				40732	65172

Sahsaul 1 Sand Ghat Block 02

Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
35-34	290	23	1	6670	10672
Total				6670	10672

Nanauti Sand Ghat Block 03

Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
36-35	789	39	1	30771	49542
Total				30771	49542

Total Mineable Reserve of Block 01, Block 02 & Block 03 = **(40732 + 6670+30771) cum =78173 cum or 125077 tonnes**

It is a river bed deposit and mined out area shall be replenished each year during monsoon period and depth of quarry shall be filled back by river sand each year and area will restore its original topography.

SITE FACILITIES AND UTILITIES

Water Supply

Water will be provided to workers for drinking & domestic purpose. Water will also be required for dust suppression. A total cluster water of **4.50 KLD** will be required for the proposed project. Fresh water will be only used for drinking purpose. The water will be supplied from available sources from nearby village.

Temporary Rest Shelter

A temporary rest shelter will be provided for the workers near to the site for rest. In addition, First aid box along with anti-venoms to counteract poison produced by certain species of small insects, if any and sanitation facility i.e. septic tank or community toilet facility will be provided for the workers.

BASELINE ENVIRONMENTAL STATUS

Environmental data has been collected in relation to proposed mining for Air, Noise, Water, Soil, Flora & Fauna. The baseline environment study was carried out over an area with radial distance of 10 km around the mining lease area during pre monsoon season from March 2023 to May 2023.

Meteorology

The Summarized Meteorological Data for the Monitoring Period March 2023 to May 2023) is given below:

Month	Temperature °C		Wind Speed (Km/Hr)	
	Min	Max	Average	Max
MARCH 2023	20	38	11.3	21
APRIL 2023	25	43	13.2	24.9
MAY 2023	26	42	16.1	27.5

Table Baseline Environmental Status

Attribute	Baseline status
Ambient Air Quality	Ambient Air Quality Monitoring reveals that the minimum & maximum concentrations of PM2.5 amongst all the 09 AQ monitoring stations were found to be 22.56 µg/m ³ to 41.8 µg/m ³ respectively; PM10 was in the range of 46.72 µg/m ³ to 79.94 µg/m ³ . As far as the gaseous pollutants SO ₂ and NO ₂ are concerned, the prescribed CPCB limit of 80 µg/m ³ for residential and rural areas has never been surpassed at any station.
Noise Levels	The results of the monitoring program indicated that both the daytime and night time levels of noise were well within the prescribed limits of NAAQS, at all the 09 locations monitored.
Water Quality	The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by IS: 10500.

Soil Quality	Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.53 to 8.13, which shows that the soil is slightly alkaline in nature.
Ecology and Biodiversity	There is no Ecological Sensitive Areas are found within 10 km of the study area.

ANTICIPATED ENVIRONMENTAL IMPACTS

Impact on Air Environment

The proposed mining activities loading and movement of other transport vehicles used in mining will generate dust (SPM/RSPM). Proper water sprinkling shall be carried out at the mine site. The mineral will be transported by road through covered tarpaulin trucks/tippers to reduce the fugitive emission caused by the wind.

Impact on Water Environment

Mining of sand from within or near *river* has an indirect impact on the physico-chemical habitat characteristics during monsoon season. These characteristics include in stream roughness, elements, depth, velocity, turbidity, sediment transport and stream discharge.

The detrimental effects, if any, to biota resulting from bed material mining are caused by following:

- Alteration of flow patterns resulting from modification of the *river*
- An excess of suspended sediment during monsoon season.

Project activity will be carried out only in the dry part of the Sursar River. Hence, none of the project activities affect the water environment directly. In the project, it is not proposed to divert or truncate any stream in monsoon season only. No proposal is envisaged for pumping of water either from the *River* (in monsoon) or tapping the ground water.

Impact on Land Environment

The proposed extraction of stream bed materials, mining below the existing streambed, and alteration of channel-bed form and shape may lead to several impacts such as erosion of channel

bed and banks, increase in channel slope, and change in channel morphology if, the operations are not carried out systematically.

The systematic and scientific removal of sand will not cause bed degradation. The silt and clay generated as waste will be used for plantation or filling up low lying area elsewhere. The mining is planned in non monsoon seasons only, so that the excavated area gets replenished gradually during the monsoons each year.

Impact on Noise Environment

The proposed mining activity is semi-mechanized in nature. No drilling & blasting is envisaged for the mining activity. Hence, the only impact is anticipated is due to movement of vehicles deployed for transportation of minerals. The vehicles will be maintained in good running condition so that noise will be reduced to minimum possible level.

Impact on Biological Environment

As the proposed mining will be carried out in a scientific manner, not much significant impact is anticipated. No mining will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many of the species. The mining site has no vegetation; no clearance of vegetation will be done. Haul roads will be sprinkled with water which would reduce the dust emission, thus avoiding damage to the crops.

Impact on Socio Economic Environment

The impact of mining activity in the area is positive on the socio-economic environment of the region. Sand mining will be providing employment to local people whenever there is requirement of manpower.

POST PROJECT ENVIRONMENTAL MONITORING

S.No.	Description of Parameters	Schedule of Monitoring
1	Air Quality	24 hourly samples twice/thrice a week in each season except monsoon
2	Water Quality (Surface & Groundwater)	Once a season for 4 seasons in a year
3	Soil Quality	Once in a year in project area
4	Noise Level	Twice a year for first two years & then once a year

5	Socio-economic Condition	Once in 3 years
6	Plantation Monitoring	Once in a season

ADDITIONAL STUDIES

Public Hearing

Public hearing is yet to be conducted.

Risk Assessment

The complete mining operation will be carried out under the management control and direction of a qualified mine manager holding. The DGMS have been regularly issuing standing orders, model standing orders and circulars to be followed by the mine management in case of disaster, if any. Moreover, mining staff will be sent to refresher courses from time to time to keep them alert.

Disaster Management Plan

Emergency preparedness is an important aspect in the planning of Disaster Management. Personnel would be trained suitably and prepared mentally and physically in emergency response through carefully planned, simulated procedures. Similarly, the key personnel and essential personnel shall be trained in the operations.

PROJECT BENEFITS

Physical Benefits: Road Transport, Market, Enhancement of green cover & Creation of community assets.

Social Benefits: Increase in Employment Potential, Contribution to the Exchequer, Increased Health related activities, Educational attainments & Strengthening of existing community facilities.

Environmental Benefits:

- Controlling *river* channel and protection of banks.
- Reducing submergence of adjoining agricultural lands due to flooding.
- Reducing aggradation of *river* level.
- A check on illegal mining activity.

CORPORATE SOCIAL RESPONSIBILITY

2% of capital cost of the project cost will be allotted for the Corporate Environmental Responsibility as per OM dated 1st May 2018. The following has been proposed considering the needs & demand of the people.

CER cost for **Saharsa Sursar River Unit 03** will be 2% of the total project cost. This amount will be used for social welfare. CSR COST is Rs. 68,62,000 x 2% = Rs. 1,37,240/-

For each activity the funds to be earmarked by the proponent will be decided after discussion with the local authority/people and the beneficiaries during Public Hearing. It has been planned to undertake a concurrent evaluation of the activities to be taken up under the CER programme.

❖ PLANTATION:

- The project will not lead to any tree cutting. However, asocial responsibility, greenery will be developed along the both sides of road and the bank of river. Community services will be deployed in raising these plantations. Trees of economic importance and native origin such as fruit trees shall be planted.
- Approx. 98 trees will be planted around haul road during the plan period.
- The trees proposed for plantation are:
- As per Sustainable Sand Management & Mining Guidelines 2016,minimum 5 plant per hectare will be proposed for development of greenbelt but in this cluster of projects 10 plants per hectare will be proposed for better condition of environment.
- Peepal, Arjun, Jamun, Banyan, Neem, Mango etc trees will be planted.

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

- Extraction will be done from the bed leaving safety zone from bank.
- The maximum working depth will remain above ground water table of the area.
- Provide health facilities to the workers & surrounding people in the impact area to reduce the health impacts.
- Ensuring wildlife protection & arranging awareness campaigns for the same.

- Minimize activities that release fine sediment to the *river*.
- Effective mitigation measures will be adopted to minimize disturbance during transportation & handling of minerals
- Establishment of reclamation program with plantation of local/native & fast growing species

- Establishment of restoration plan during the closure of mine at the onset of monsoon season.
- Establishment of effective Disaster Management Plan to take timely precautionary measures to avoid effects of impending disasters.
- Establishment of effective Monitoring Program monitored by Environment Management Cell.

BUDGET ALLOCATION FOR EMP IMPLEMENTATION

Table, Budget of EMP (Saharsa Sursar River Unit 03)

Sl. No	Description	Capital Cost (lakh)	Recurring Cost (lakh)
1	Pollution Control & Dust Suppression	Nil	1.5
2	Pollution Monitoring i) Air pollution ii) Water pollution iii) Soil pollution iv) Noise Pollution	--	2.0
3	Plantation and salary for one gardener (part time basis).	0.98	0.5
4	Haul road Maintenance Cost	1.57	1.5
TOTAL		2.555	5.5

Note: *98 plants * 1000 Rs (for each plants including hedges and fences) =Rs 98,000/-

- Salary of Labour for haul road maintenance 2 labor*300=600 per day
- 600* 250= 1,50,000/-
- * 2.5 lakh per kilometer (2,50,000 *0.63km haul road) = 1,57,000/-

CONCLUSION

Based on the EIA study it is observed that there will be an increase in the dust pollution, which will be controlled by sprinkling of water and plantation. There will be an insignificant impact on ambient environment and ecology due to the mining activities moreover the mining operation will lead to direct and indirect employment generation in the area. Green belt development around the area will also be taken up as an effective pollution mitigative technique, as well as to control the pollutants released from the premises of the Mine. Monitoring program will be followed till the mining operations continue. Hence, it can be summarized that the development of the mine will have a positive impact on the socio-economic environment of the area and lead to sustainable development of the region.

कार्यकारी सारांश

रेत खनन परियोजना

(सहरसा सुरसर नदी यूनिट - 03 रेत घाट)

जिला - सहरसा

(सहसौल रेत घाट ब्लॉक 01, सहसौल 1 रेत घाट ब्लॉक 02 और
ननौती रेत घाट ब्लॉक 03)

के लिए

ग्राम- सहसौल और ननौती, अंचल- सोनबरसा, जिला- सहरसा,
राज्य- बिहार

क्षेत्रफल	ब्लॉक 01 - 4.90 हे. ब्लॉक 02 - 1.0 हे. ब्लॉक 03 - 3.90 हे. कुल क्षेत्र - 9.80 हेक्टेयर
उत्पादन	58800 घनमीटर प्रति वर्ष or 94080 टन प्रति वर्ष

आवेदन कर्ता

मेसर्स रतन कोल सप्लायर प्रा. लिमिटेड

प्रो. प्रशांत कुमार पुत्र शिव रतन प्रसाद

पता- क्वटर नंबर 29/2-2, आलडांगा हाउसिंग कॉलोनी

पद - चिरकुंडा निरसा कम चिरकुंडा,

जिला - धनबाद, झारखण्ड पिन - 828202

एनवायरनमेंट कन्सल्टेंट

पी & एम सल्यूशन

(क्वालिटी कौंसिल ऑफ़ इंडिया द्वारा मान्यता प्राप्त)

सी-88 सेक्टर 65 नॉएडा उत्तर-प्रदेश

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कार्यकारी सारांश

❖ परिचय

MoEF & CC (एमओईएफ एंड सीसी), नई दिल्ली राजपत्र दिनांक 14 सितंबर 2006 और उसमें समय समय पर किये गए संशोधन के अनुसार, प्रस्तावित खनन परियोजना को श्रेणी 'बी1' परियोजना के रूप में वर्गीकृत किया गया है।

सहरसा सुरसर नदी यूनिट 03

परियोजना के प्रस्ताव मेसर्स रतन कोल सप्लायर प्रा. लिमिटेड प्रो. प्रशांत कुमार ने दिया है। प्रस्तावित रेत खनन परियोजना ग्राम- सहसौल और ननौती, अंचल- सोनबरसा, जिला- सहरसा, (बिहार) में सहरसा सुरसर नदी यूनिट 03 रेत घाट (सहसौल रेत घाट ब्लॉक 01, सहसौल 1 रेत घाट ब्लॉक 02 और ननौती रेत घाट ब्लॉक 03) सुरसर नदी पर स्थित है। पत्र संख्या 932/खनन दिनांक 22.11.2022 के माध्यम से पट्टेदार को एलओआई जारी किया गया।

ईआईए अधिसूचना 2006 और इसके बाद के संशोधन के अनुसार ड्राफ्ट ईआईए रिपोर्ट तैयार की गई है। प्रस्तावित परियोजना का टीओआर SEIAA बिहार दिनांक 11-05-2023 द्वारा जारी किया गया है।

आवेदित पट्टे के लिए प्रति वर्ष लगभग 94080 टन खनन प्रस्तावित किया गया है, प्रस्तावित परियोजना के लिए अनुमानित परियोजना लागत 68,62,000/- रुपये (नीलामी लागत सहित) है।

❖ **परियोजना विवरण**

❖ **स्थान**

सहरसा सुरसर नदी यूनिट 03

प्रस्तावित खनन पट्टा क्षेत्र सर्वे ऑफ इंडिया टोपोशीट टोपो शीट संख्या 72K/13 & 72K/14 के अंतर्गत आता है। पट्टा क्षेत्र ग्राम- सहसौल और ननौती, अंचल- सोनबरसा, जिला- सहरसा, राज्य- बिहार में स्थित है। खनन पट्टा समन्वय नीचे सूचीबद्ध हैं:

निर्देशांक					घाट/पता	नदी
सहसौल रेत घाट ब्लॉक 01	4.90	A	25°42'35.63"N	86°46'36.85"E	ग्राम- सहसौल अंचल- सोनबरसा, जिला- सहरसा, राज्य- बिहार	सुरसर
		B	25°42'37.60"N	86°46'40.91"E		
		C	25°42'40.31"N	86°46'59.05"E		
		D	25°42'37.92"N	86°46'59.18"E		
		E	25°42'34.31"N	86°46'38.04"E		
सहसौल 1 रेत घाट ब्लॉक 02	1.0	A	25°42'38.02"N	86°46'16.08"E	ग्राम- सहसौल अंचल- सोनबरसा, जिला- सहरसा, राज्य- बिहार	सुरसर
		B	25°42'34.02"N	86°46'26.25"E		
		C	25°42'33.56"N	86°46'26.22"E		
		D	25°42'34.71"N	86°46'19.75"E		
		E	25°42'37.08"N	86°46'15.92"E		
ननौती रेत घाट ब्लॉक 03	3.90	A	25°42'41.57"N	86°47'44.87"E	ग्राम- ननौती, अंचल- सोनबरसा, जिला- सहरसा, राज्य- बिहार	सुरसर
		B	25°42'43.94"N	86°48'12.75"E		
		C	25°42'42.64"N	86°48'13.28"E		
		D	25°42'40.16"N	86°47'44.56"E		

क्षेत्र और उत्पादन: कुल एमएल क्षेत्र 9.80 हेक्टेयर है। उत्पादन की प्रस्तावित दर 94080 टीपीए होगी।

❖ संयोजकता

सहरसा सुरसर नदी यूनिट 03

ब्लॉक 01 रेत घाट पट्टे से 0.06 कि.मी. की दूरी पर निकटतम पक्की सड़क से अच्छी तरह से जुड़ा हुआ है। SH-59 लगभग 6.90 कि.मी. पूर्व दिशा में है। मधेपुरा रेलवे स्टेशन उत्तर दिशा में लगभग 23.0 कि.मी की दूरी पर है।

ब्लॉक 02 रेत घाट पट्टे से 0.27 कि.मी. की दूरी पर निकटतम पक्की सड़क से अच्छी तरह से जुड़ा हुआ है। SH-59 लगभग 6.90 कि.मी. पश्चिम दिशा में है। मधेपुरा रेलवे स्टेशन उत्तर दिशा में लगभग 23.0 कि.मी की दूरी पर है।

ब्लॉक 03 रेत घाट पट्टे से 0.30 कि.मी. की दूरी पर निकटतम पक्की सड़क से अच्छी तरह से जुड़ा हुआ है। SH-59 लगभग 6.90 कि.मी. पश्चिम दिशा में है। मधेपुरा रेलवे स्टेशन उत्तर दिशा में लगभग 23.0 कि.मी की दूरी पर है।

❖ परियोजना की मुख्य विशेषताएं
सहरसा सुरसर नदी यूनिट 03

आवेदक का नाम	मेसर्स रतन कोल सप्लायर प्रा. लिमिटेड प्रो. प्रशांत कुमार पुत्र शिव रतन प्रसाद
पट्टेदार का पता	मेसर्स रतन कोल सप्लायर प्रा. लिमिटेड प्रो. प्रशांत कुमार पुत्र शिव रतन प्रसाद पता- क्वटर नंबर 29/2-2, आलडांगा हाउसिंग कॉलोनी पद - चिरकुंडा निरसा कम चिरकुंडा, जिला - धनबाद, झारखण्ड पिन - 828202
नाम	रेत खनन परियोजना (सहरसा सुरसर नदी यूनिट 03 रेत घाट) (सहसौल रेत घाट ब्लॉक 01, सहसौल 1 रेत घाट ब्लॉक 02 और ननौती रेत घाट ब्लॉक 03)
गाँव	ब्लॉक 01 - (ग्राम- सहसौल) ब्लॉक 02 - (ग्राम- सहसौल) ब्लॉक 03 - (गाँव- ननौती)
जिला और राज्य	सहरसा, बिहार
खनिज	रेत
क्षेत्र (हेक्टेयर)	कुल क्षेत्र - 9.80 हेक्टेयर (ब्लॉक 01- 4.90 हे. + ब्लॉक 02- 1.0 हे & ब्लॉक 03- 3.90 हे.)

❖ ड्रिलिंग

ड्रिलिंग और ब्लास्टिंग की आवश्यकता नहीं है।

❖ खनिज का उपयोग

रेत का उपयोग निर्माण कार्यवो में किया जाता है सड़क निर्माण में भी इसका उपयोग किया जाता है

❖ खनन

खनन प्रक्रिया ड्रिलिंग और ब्लास्टिंग के बिना खुली अर्ध-मशीनीकृत विधि है। यह एक ओपन कास्ट माइनिंग प्रोजेक्ट है। उत्खनन/जेसीबी ट्रक/ट्रैक्टर संयोजन या मैन्युअल आदि के उपयोग के साथ संचालन अर्ध-मशीनीकृत/ओटीएफएम होगा। रेत को अपने मौजूदा रूप में एकत्र किया जाएगा।

खनन रोटेशनल तरीके से किया जाएगा। चूंकि काम व्यवस्थित होने जा रहा है यानी बेंचों में खनन किया जाएगा। खदान में काम करने वाले कर्मचारी को कोई खतरा नहीं होगा। खनन परतों में किया जाएगा।

निक्षेप को संस्तर की सतह से 1 एमबीजीएल या भूजल स्तर से ऊपर, जो भी पहले आए, तक कार्य किया जाएगा। इसलिए, किसी भी समय खनन भूजल स्तर को नहीं काटेगा। खनन केवल दिन के समय किया जाएगा और मानसून के मौसम में पूरी तरह बंद कर दिया जाएगा।

❖ रिजर्व और उत्पादन

खनन योग्य भंडार की गणना सतह से 1 मीटर की गहराई तक की गई है। टनभार प्राप्त करने के लिए वॉल्यूम को बल्क डेंसिटी (सहस्रौल रेत घाट 1.60 g/cm^3 , सहस्रौल 1 रेत घाट - 1.60 g/cm^3 और ननौती रेत घाट 1.61 g/cm^3) से गुणा किया जाता है। सुरसर नदी के लिए औसतन 1.60 g/cm^3 लिया जाता है।

हर साल मानसून के मौसम के दौरान नदी तल से उत्खनन किए गए खनिजों की फिर से भरपाई (रिप्लेनिशमेंट) हो जाएगा। नदी के पैलियो चैनल से संबंधित क्षेत्र को समतल करके वापस बहाल किया जाएगा।

बेंचवार रेत का वार्षिक दोहन नीचे दिया गया है:

सहरसा सुरसर नदी यूनिट 03
सहसौल रेत घाट ब्लॉक 01

बेंच स्तर (mRL)	लंबाई (M)	चौड़ाई (M)	गहराई (M)	मात्रा (घन मीटर)	टन
36-35	599	68	1	40732	65172
Total				40732	65172

सहसौल 1 रेत घाट ब्लॉक 02

बेंच स्तर (mRL)	लंबाई (M)	चौड़ाई (M)	गहराई (M)	मात्रा (घन मीटर)	टन
35-34	290	23	1	6670	10672
Total				6670	10672

ननौती रेत घाट ब्लॉक 03

बेंच स्तर (mRL)	लंबाई (M)	चौड़ाई (M)	गहराई (M)	मात्रा (घन मीटर)	टन
36-35	789	39	1	30771	49542
Total				30771	49542

कुल खनन योग्य रिजर्व ब्लॉक 01, ब्लॉक 02 और ब्लॉक 03 = (40732 + 6670+30771) घन मीटर = 78173 घन मीटर या 125077 टन

यह नदी तल जमा है और खनन क्षेत्र हर साल मानसून अवधि के दौरान फिर से भर जाएगा और खदान की गहराई हर साल नदी की रेत से भर जाएगा (रिप्लेनिशमेंट) और क्षेत्र अपनी मूल स्थलाकृति बहाल को कर देगा।

❖ **साइट सुविधाएं और उपयोगिताएँ**

• **जलापूर्ति**

श्रमिकों को पीने व घरेलू उपयोग के लिए पानी उपलब्ध कराया जाएगा। धूल के दमन के लिए भी पानी की आवश्यकता होगी। प्रस्तावित परियोजना के लिए 4.50 केएलडी के जल की आवश्यकता होगी। ताजे पानी

का उपयोग केवल पीने के उद्देश्य के लिए किया जाएगा। आसपास के गांव के उपलब्ध स्रोतों से पानी की आपूर्ति की जाएगी।

- **अस्थायी विश्राम गृह**
- विश्राम के लिए स्थल के पास श्रमिकों के लिए एक अस्थायी विश्राम आश्रय प्रदान किया जाएगा। इसके अलावा, छोटे कीड़ों की कुछ प्रजातियों द्वारा उत्पादित जहर का मुकाबला करने के लिए एंटी-वेनम के साथ प्राथमिक उपचार बॉक्स, यदि कोई हो और श्रमिकों के लिए स्वच्छता सुविधा जैसे सेप्टिक टैंक या सामुदायिक शौचालय की सुविधा प्रदान की जाएगी।

- **आधारभूत पर्यावरणीय स्थिति**

वायु, ध्वनि, जल, मिट्टी, वनस्पति एवं जीव-जन्तुओं के लिए प्रस्तावित खनन के संबंध में पर्यावरणीय डाटा एकत्र किया गया है। बेसलाइन पर्यावरण अध्ययन मार्च 2023 से मई 2023 तक प्री मानसून सीजन के मौसम के दौरान खनन पट्टा क्षेत्र के आसपास 10 किमी की रेडियल दूरी वाले क्षेत्र में किया गया था।

- **मौसम विज्ञान**

निगरानी अवधि मार्च 2023 से मई 2023 के लिए संक्षिप्त मौसम संबंधी डेटा नीचे दिया गया है:

महीना	तापमान °C		हवा की गति (किमी/घंटा)	
	न्यूनतम	अधिकतम	औसत	अधिकतम
मार्च 2022	20	38	11.3	21
अप्रैल 2023	25	43	13.2	24.9
मई 2023	26	42	16.1	27.5

आधारभूत पर्यावरणीय स्थिति

गुण	आधारभूत स्थिति
एम्बिएंट(परिवेशी) वायु गुणवत्ता	एम्बिएंट (परिवेशी) वायु गुणवत्ता निगरानी से पता चलता है कि सभी 09 AQ निगरानी स्टेशनों में PM2.5 की न्यूनतम और अधिकतम सांद्रता क्रमशः 22.56 µg/m ³ से 41.8 µg/m ³ पाई गई; PM10 46.72

	$\mu\text{g}/\text{m}^3$ to $79.94 \mu\text{g}/\text{m}^3$ की सीमा में था जहां तक गैसीय प्रदूषकों SO ₂ और NO ₂ का संबंध है, आवासीय और ग्रामीण क्षेत्रों के लिए $80 \mu\text{g}/\text{m}^3$ की निर्धारित CPCB सीमा किसी भी स्टेशन पर पार नहीं की गई है।
शोर का स्तर	निगरानी कार्यक्रम के परिणामों ने संकेत दिया कि निगरानी किए गए सभी 09 स्थानों पर शोर के दिन और रात दोनों समय एनएएक्यूएस की निर्धारित सीमा के भीतर थे।
पानी की गुणवत्ता	सभी स्रोतों से भूजल पीने के उद्देश्यों के लिए उपयुक्त रहता है क्योंकि सभी घटक IS: 10500 द्वारा प्रख्यापित पेयजल मानकों द्वारा निर्धारित सीमा के भीतर हैं।
मिट्टी की गुणवत्ता	चिन्निहित किए गए स्थानों से एकत्र किए गए नमूने इंगित करते हैं कि मिट्टी रेतीली प्रकार की है और पीएच मान 7.53 से 8.13 के बीच है, जो दर्शाता है कि मिट्टी प्रकृति में थोड़ी क्षारीय है।
पारिस्थितिकी और जैव विविधता	अध्ययन क्षेत्र में कोई पर्यावरण-संवेदनशील क्षेत्र नहीं है।
सामाजिक आर्थिक	नदी तल पर रेत खनन परियोजना के कार्यान्वयन से स्थानीय लोगों को प्रत्यक्ष और अप्रत्यक्ष दोनों तरह के रोजगार के अवसर मिलेंगे। अध्ययन क्षेत्र में शिक्षा, स्वास्थ्य, आवास, पानी, बिजली आदि को और बेहतर किया जा सकता है। उम्मीद है कि प्रस्तावित खनन परियोजना और संबद्ध औद्योगिक और व्यावसायिक गतिविधियों के कारण इसमें काफी हद तक और सुधार होगा।

❖ अनुमानित पर्यावरणीय प्रभाव

• वायु पर्यावरण पर प्रभाव

प्रस्तावित खनन गतिविधियां खनन में प्रयुक्त अन्य परिवहन वाहनों की लोडिंग और आवाजाही से धूल (SPM/RSPM) उत्पन्न होगी। खदान स्थल पर उचित जल छिड़काव किया जाएगा। हवा से होने वाले क्षणिक उत्सर्जन को कम करने के लिए खनिज को ढके हुए तिरपाल ट्रकों/टिप्परों के माध्यम से सड़क मार्ग से ले जाया जाएगा।

• जल पर्यावरण पर प्रभाव

नदी के भीतर या उसके पास से रेत के खनन का मानसून के मौसम के दौरान भौतिक-रासायनिक आवास विशेषताओं पर अप्रत्यक्ष प्रभाव पड़ता है। इन विशेषताओं में धारा खुरदरापन, तत्व, गहराई, वेग, मैलापन, तलछट परिवहन और धारा निर्वहन शामिल हैं।

संस्तर सामग्री खनन से उत्पन्न बायोटा पर हानिकारक प्रभाव, यदि कोई हो, निम्नलिखित के कारण होते हैं:

- नदी के परिवर्तन के परिणामस्वरूप प्रवाह पैटर्न में बदलाव
- मानसून के मौसम में निलम्बित तलछट की अधिकता।

परियोजना गतिविधि केवल सोन नदी के शुष्क भाग में की जाएगी। इसलिए, परियोजना की कोई भी गतिविधि सीधे तौर पर जल पर्यावरण को प्रभावित नहीं करती है। परियोजना में केवल मानसून के मौसम में किसी धारा को मोड़ने या काट देने का प्रस्ताव नहीं है। नदी (मानसून में) या भूजल दोहन से पानी की पंपिंग के लिए किसी प्रस्ताव की परिकल्पना नहीं की गई है।

❖ भूमि पर्यावरण पर प्रभाव

स्ट्रीम बेड सामग्री का प्रस्तावित निष्कर्षण, मौजूदा स्ट्रीमबेड के नीचे खनन, और चैनल-बेड फॉर्म और आकार में परिवर्तन से चैनल बेड और बैंकों के क्षरण, चैनल ढलान में वृद्धि, और चैनल आकारिकी में परिवर्तन जैसे कई प्रभाव हो सकते हैं, यदि, संचालन व्यवस्थित रूप से नहीं किया जाता है।

रेत के व्यवस्थित और वैज्ञानिक तरीके से हटाने से क्यारियों का क्षरण नहीं होगा। कचरे के रूप में उत्पन्न गाद और मिट्टी का उपयोग वृक्षारोपण के लिए या निचले इलाकों को कहीं और भरने के लिए किया जाएगा। खनन की योजना गैर-मानसून मौसम में ही बनाई जाती है, ताकि उत्खनित क्षेत्र प्रत्येक वर्ष मानसून के दौरान धीरे-धीरे भर जाए।

❖ शोर पर्यावरण पर प्रभाव

प्रस्तावित खनन गतिविधि प्रकृति में अर्ध-मशीनीकृत है। खनन गतिविधि के लिए कोई ड्रिलिंग और ब्लास्टिंग परिकल्पित नहीं है। इसलिए, केवल खनिजों के परिवहन के लिए तैनात वाहनों की आवाजाही के कारण प्रभाव का अनुमान लगाया गया है। वाहनों को अच्छी चालू स्थिति में रखा जाएगा ताकि शोर को न्यूनतम संभव स्तर तक कम किया जा सके।

❖ जैविक पर्यावरण पर प्रभाव

चूंकि प्रस्तावित खनन वैज्ञानिक तरीके से किया जाएगा, इसलिए ज्यादा महत्वपूर्ण प्रभाव का अनुमान नहीं है। जलीय जीवन पर प्रभाव को कम करने के लिए मानसून के मौसम के दौरान कोई खनन नहीं किया जाएगा जो कि कई प्रजातियों के लिए मुख्य रूप से प्रजनन का मौसम है। खनन स्थल पर कोई वनस्पति नहीं है; वनस्पति की सफाई नहीं की जाएगी। ढोने वाली सड़कों पर पानी का छिड़काव किया जाएगा जिससे धूल का उत्सर्जन कम होगा और इस प्रकार फसलों को होने वाले नुकसान से बचा जा सकेगा।

❖ सामाजिक आर्थिक पर्यावरण पर प्रभाव

क्षेत्र में खनन गतिविधि का प्रभाव क्षेत्र के सामाजिक-आर्थिक वातावरण पर सकारात्मक है। रेत खनन से स्थानीय लोगों को जब भी श्रमबल की आवश्यकता होगी रोजगार उपलब्ध होगा।

पोस्ट प्रोजेक्ट पर्यावरण निगरानी

क्रम संख्या	पैरामीटर्स का विवरण	निगरानी की अनुसूची
1	हवा की गुणवत्ता	मानसून को छोड़कर प्रत्येक मौसम में सप्ताह में दो बार/तीन बार 24 घंटे के नमूने
2	जल गुणवत्ता (सतह और भूजल)	साल में 4 सीजन के लिए एक बार
3	मिट्टी की गुणवत्ता	परियोजना क्षेत्र में वर्ष में एक बार
4	शोर स्तर	साल में दो बार पहले दो साल और फिर साल में एक बार
5	सामाजिक-आर्थिक स्थिति	3 साल में एक बार
6	वृक्षारोपण निगरानी	एक बार एक मौसम में

❖ अतिरिक्त अध्ययन

- सार्वजनिक सुनवाई

जन सुनवाई अभी बाकी है।

❖ जोखिम आकलन

पूर्ण खनन कार्य एक योग्य खदान प्रबंधक होल्डिंग के प्रबंधन नियंत्रण और निर्देशन में किया जाएगा। डीजीएमएस नियमित रूप से स्थायी आदेश, मॉडल स्थायी आदेश और आपदा, यदि कोई हो, के मामले में खान प्रबंधन द्वारा पालन किए जाने वाले परिपत्र जारी करता रहा है। साथ ही खनन कर्मचारियों को सतर्क रखने के लिए समय-समय पर रिफ्रेशर कोर्स में भेजा जाएगा।

❖ आपदा प्रबंधन योजना

आपदा प्रबंधन की योजना में आपातकालीन तैयारी एक महत्वपूर्ण पहलू है। कर्मिकों को उचित रूप से प्रशिक्षित किया जाएगा और सावधानीपूर्वक नियोजित, सिम्युलेटेड प्रक्रियाओं के माध्यम से आपातकालीन प्रतिक्रिया में मानसिक और शारीरिक रूप से तैयार किया जाएगा। इसी तरह, प्रमुख कर्मियों और आवश्यक कर्मियों को संचालन में प्रशिक्षित किया जाएगा।

❖ परियोजना लाभ

- **भौतिक लाभ:** सड़क परिवहन, बाजार, हरित आवरण में वृद्धि और सामुदायिक संपत्तियों का निर्माण।
- **सामाजिक लाभ:** रोजगार क्षमता में वृद्धि, राजकोष में योगदान, स्वास्थ्य संबंधी गतिविधियों में वृद्धि, शैक्षिक उपलब्धियां और मौजूदा सामुदायिक सुविधाओं का सुदृढीकरण।

❖ पर्यावरणीय लाभ:

- ❖ नदी चैनल को नियंत्रित करना और बैंकों की सुरक्षा करना।
- ❖ बाढ़ के कारण आसपास की कृषि भूमि के डूबने को कम करना।
- ❖ नदी के स्तर के उन्नयन को कम करना।
- ❖ अवैध खनन गतिविधि पर एक जांच।

❖ कॉर्पोरेट की सामाजिक जिम्मेदारी

दिनांक 1 मई 2018 के कार्यालय ज्ञापन के अनुसार परियोजना लागत की पूंजीगत लागत का 2% कॉर्पोरेट पर्यावरणीय उत्तरदायित्व के लिए आवंटित किया जाएगा। लोगों की जरूरतों और मांग को ध्यान में रखते हुए निम्नलिखित प्रस्तावित किया गया है।

सहरसा सुरसर नदी यूनिट 03 के लिए सीईआर (CER) लागत कुल परियोजना लागत का 2% होगी। इस राशि का उपयोग समाज कल्याण के लिए किया जाएगा। सीएसआर (CSR) लागत रु. 68,62,000 /- x 2% = रु. 1,37,240/-

प्रत्येक गतिविधि के लिए प्रस्तावक द्वारा निर्धारित की जाने वाली धनराशि का निर्धारण जन सुनवाई के दौरान स्थानीय प्राधिकारी/लोगों एवं हितग्राहियों से चर्चा के बाद किया जायेगा। सीईआर कार्यक्रम के तहत की जाने वाली गतिविधियों का समवर्ती मूल्यांकन करने की योजना बनाई गई है।

❖ वृक्षारोपण:

- परियोजना से कोई पेड़ नहीं कटेगा। तथापि, असामाजिक उत्तरदायित्व, सड़क के दोनों ओर और नदी के किनारे हरियाली विकसित की जाएगी। इन वृक्षारोपण को बढ़ाने के लिए सामुदायिक सेवाओं को तैनात किया जाएगा। आर्थिक महत्व के पेड़ और देशी मूल के पेड़ जैसे फलों के पेड़ लगाए जाएंगे।
- योजना अवधि में हॉल रोड के आसपास लगभग 98 पौधे रोपे जाएंगे।
- वृक्षारोपण के लिए प्रस्तावित पेड़ हैं:
- सस्टेनेबल सैंड मैनेजमेंट एंड माइनिंग गाइडलाइंस 2016 के अनुसार ग्रीनबेल्ट के विकास के लिए प्रति हेक्टेयर न्यूनतम 5 पौधे प्रस्तावित किए जाएंगे लेकिन पर्यावरण की बेहतर स्थिति के लिए परियोजनाओं के इस समूह में 10 पौधे प्रति हेक्टेयर प्रस्तावित किए जाएंगे।
- पीपल, अर्जुन, जामुन, बरगद, नीम, आम आदि के पेड़ लगाए जाएंगे।

पर्यावरण प्रबंधन योजना (ईएमपी)

- रिवर बैंक से सुरक्षा क्षेत्र छोड़कर नदी तल से निकासी की जाएगी।
- अधिकतम काम करने की गहराई क्षेत्र के भूजल तालिका के ऊपर रहेगी।
- स्वास्थ्य प्रभावों को कम करने के लिए प्रभाव क्षेत्र में श्रमिकों और आसपास के लोगों को स्वास्थ्य सुविधाएं प्रदान किया जायेगा ।

- वन्यजीव संरक्षण सुनिश्चित करना और उसी के लिए जागरूकता अभियान की व्यवस्था किया जायेगा।
- नदी में महीन तलछट छोड़ने वाली गतिविधियों को किया जायेगा।
- खनिजों के परिवहन और प्रबंधन के दौरान गड़बड़ी को कम करने के लिए प्रभावी शमन उपाय अपनाए जाएंगे
- स्थानीय/देशी और तेजी से बढ़ने वाली प्रजातियों के वृक्षारोपण के साथ सुधार कार्यक्रम की स्थापना किया जायेगा
- मानसून के मौसम की शुरुआत में खान के बंद होने के दौरान बहाली योजना की स्थापना किया जायेगा
- आसन्न आपदाओं के प्रभाव से बचने के लिए समय पर एहतियाती उपाय करने के लिए प्रभावी आपदा प्रबंधन योजना की स्थापना।
- पर्यावरण प्रबंधन प्रकोष्ठ द्वारा प्रभावी निगरानी कार्यक्रम की स्थापना किया जायेगा।

❖ **ईएमपी कार्यान्वयन के लिए बजट आवंटन**

टेबल, ईएमपी का बजट (सहरसा सुरसर नदी यूनिट 03)

क्रम संख्या	विवरण	पूंजी लागत (लाख)	आवर्ती लागत (लाख)
1	प्रदूषण नियंत्रण और धूल दमन	Nil	1.5
2	प्रदूषण निगरानी i) वायु प्रदूषण ii) मृदा प्रदूषण iii) जल प्रदूषण iv) ध्वनि प्रदूषण	--	2.0
3	वृक्षारोपण और वेतन एक माली के लिए (अंशकालिक आधार पर)	0.98	0.5
4	परिवहन सड़क रखरखाव लागत	1.57	1.5
कुल		2.555	5.5

नोट: *98 पौधे * 1000 रुपये (हेज और बाड़ सहित प्रत्येक पौधे के लिए) = 98,000/- रुपये

- खनन परिवहन सड़क रखरखाव के लिए श्रम का वेतन 2 श्रमिक*300=600 प्रति दिन
- 600* 250= 8,12,500/-
- *2.5 लाख प्रति किलोमीटर (2,50,000*0.63 किमी लंबी सड़क) = 1,57,000/-

निष्कर्ष

ईआईए अध्ययन के आधार पर यह देखा गया है कि धूल प्रदूषण में वृद्धि होगी, जिसे पानी के छिड़काव और वृक्षारोपण द्वारा नियंत्रित किया जाएगा। खनन गतिविधियों के कारण (एम्बिएंट) परिवेशी पर्यावरण और पारिस्थितिकी पर नगण्य प्रभाव पड़ेगा, इसके अलावा खनन संचालन से क्षेत्र में प्रत्यक्ष और अप्रत्यक्ष रोजगार सृजन होगा। क्षेत्र के चारों ओर हरित पट्टी का विकास एक प्रभावी प्रदूषण न्यूनीकरण तकनीक के साथ-साथ खान परिसर से निकलने वाले प्रदूषकों को नियंत्रित करने के लिए भी किया जाएगा। खनन कार्य जारी रहने तक निगरानी कार्यक्रम का पालन किया जाएगा। इसलिए, यह संक्षेप में कहा जा सकता है कि खान के विकास से क्षेत्र के सामाजिक-आर्थिक वातावरण पर सकारात्मक प्रभाव पड़ेगा और क्षेत्र के सतत विकास को बढ़ावा मिलेगा।
