ENVIRONMENT STUDY REPORT (RIVERBED SAND MINING PROJECT)

❖ PROPOSAL

- I, Mr. Hareshbhai Gopalbhai Akbari have been extracting the sand (minor mineral) Infront of S. No. Old-352,353 / New-229,230 on river bed of Tapi at Vill- Vaghnera, Ta: Songadh, Dist: Tapi. Lease area is river bed of tapi owned by Government. The mining area of the unit is 03-46-30 Ha that is less than 5 ha. Our sand lease area is not falling under CRZ area. Therefore, Project falls under category B (B2) of schedule 1(a), as per the EIA Notification, September 2006. Therefore, it requires prior Environment Clearance.

- Status of operation & Status of Lease are summarized as under….

⇒ Project operating since L.O.I. dated :18/02/2015
⇒ Lease Area: 03-46-30 ha (In front of S. No. Old-352,353 / New-229,230 on river bed of Tapi at Vill: Vaghnera, Ta: Songadh, Dist: Tapi)

⇒ Production capacity (Mining area/Mining Rate)
  ➢ Extraction of the sand @ 20,000 MT/YEAR (Approx.) from an area of 03-46-30 Ha (In front of S. No. Old-352,353 / New-229,230 on river bed of Tapi at Vill: Vaghnera, Ta: Songadh, Dist: Tapi.

Mining Details

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Details</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Lease Area</td>
<td>03-46-30 ha</td>
</tr>
<tr>
<td>2.</td>
<td>Rate of Production</td>
<td>20,000 MT/Yr</td>
</tr>
<tr>
<td>3.</td>
<td>Method of mining</td>
<td>Semi Mechanized</td>
</tr>
<tr>
<td>4.</td>
<td>Extent of mechanization</td>
<td>Suction Dredger(Extractor), Truck Tractors Trolley</td>
</tr>
</tbody>
</table>

❖ DETAIL OF ENVIRONMENT SETTING

⇒ The lease is on riverbed of Tapi. There is no forest, Wild life sanctuary, eco sensitive area within 10 km from the project site. The details of water bodies and nearest park are mentioned below:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>If located within 15 km, aerial distance of the lease area from the nearest:</th>
<th>Name</th>
<th>Distance(Km)</th>
</tr>
</thead>
</table>

1
### Width of Riverbed

- Width of Riverbed: 458 meter

### Geo-hydrological Detail of River Tapi

- The river Tapi originates near Multal in Betul district in Madhya Pradesh at an elevation of 752m above msl. The Total Length of this West flowing river from its origin to its out fall into the sea is 724 km. For the first 282km the river flows in Madhya Pradesh, Out of which 54km forms the common boundary with Maharashtra state. It flows for 228 km in Maharashtra before entering Gujarat. Traversing a length of 214 km in Gujarat, the Tapi River joins Arabian Sea in the Gulf of Cambay after flowing past the Surat city. The river receives tidal influence for a length of about 25 km upstream from the mouth.

### Lower Tapi Zone

- Brief description: Lower Tapi Basin consist main Tapi stream from Ukai Reservoir to its mouth in the Gulf of Cambay. The Lower Tapi Basin extends over an area of 2920 sq.km. The length of the Tapi River in Lower Tapi Basin is 129 km. There are a series of rapids for a distance of about 32 km. between Kakrapar and aamalpur. Through the Kakrapar rapids, the river falls by nearly 4.6 mtr. In the last reach, the river passes through the Gujarat plains and after flowing past Surat city, empties into the Gulf of Cambay. The tidal influence is felt up to 25 km from its mouth in the Gulf of Cambay (after completion of a Weir cum Causeway at Singanpur near Surat city.)

### Sediment transport characteristics

- A baseline study of the Tapti River was conducted to determine the basic physical and chemical characteristics of the sediment. Surat station was selected along the study area sediment characteristics revealed sandy to loamy(muddy) sand soils with pH of 7.01. Values of organic carbon 0.380%, Electric conductivity 3.99 dsm-1, Available Nitrogen 170.2 kg/ha, Phosphorous 190.0 kg/ha. Available Potassium
estimated 367 kg/ha. The exchangeable Ca and Mg present in Tapti river sediment collected from Surat stations is 15.00 & 20.11 me/100 mg respectively. (Reference: study Report- V. N. College, Shahada Dist. Nandurbar-425412(M.S.)India)

- **Width and condition of access road (kutcha/pucca) to the lease area.**

  ➔ **Mode of Transportation of mineral and Transportation route.**
  ➢ **Mode of Transportation of material:** Trucks (10 Mt & 16 MT)
  ➢ **Transportation route:** as below

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**DETAILS ON MINING/EXCAVATION ACTIVITIES**

- **Method of Mining**

  ➔ Mining of the minerals is done by scraping/dredging the mineral from active channel or Floodplain or terrace.
  ➔ Mining of the minerals is done by scraping/dragging the mineral in ½ meter strip. Then the mining is restricted up to 2 m depth only.
  - We are doing the mining of the minerals (sand) by dredging (by using suction excavator/dredger) the minerals through the floating pipeline from in-stream active channel i.e. riverbed of Tapi at Vaghnera, Ta: Songadh, Dist: Tapi from an area of 03-46-30 ha.
  - **Average depth of Water at lease area is:**
    ➔ Max:09.0 m to 11.0 m Min:04.0 m to 06.0 m
  - **The Average thickness of sand lease area is:** 3.0 m

- **Type of mining is:** Semi Mechanized

- **Equipments used are:** Sand Dredger with pump & truck.

- **Minimum setback distance from river bank is:** 10 meter

- **Minimum distance of Stockpiles/Vehicle loading place from the river bank is:** 30 meter

- **Man Power requirement:** 10-12 people

- **Average No. of Working days in a year:** 200 days(Approx)

- **Time of Working hours in a day is:** 6.00 am to 6.00 pm

- **ANTICIPATED ENVIRONMENTAL IMPACTS**
Over-extraction of sand can destabilize channels and banks, and/or affect the ecologic functioning of rivers.

In-stream extraction of sand from below the water level of a stream generally causes more changes to the natural hydrologic processes than limiting extraction to a reference point above the water level.

Extracting sand from a large river or stream will generally create less impact than extracting the same amount of material from a smaller river or stream.

The potential impacts of sand extraction are as under……

a) Bed degradation and Consequent effects on channel and bank stability
b) Increased sediment loads, decreased water clarity;
c) Changes in channel morphology and disturbance of ecologically important roughness elements in the river bed;
d) Ecological effects on bird nesting, fish migration, etc.
e) Modification of the riparian zone (Wet land) including bank erosion;
f) Discharges from equipment and refuelling;
g) Reduction in groundwater elevations;
h) Impacts on Structures and access;
i) Impacts on Coastal processes.

Impact on Air Environment

Sources:

Fugitive emission occurs due to movement of vehicles on roads. The quantity of emissions depends on various aspects like climatic conditions, moisture in the soil, speed of the vehicle, frequency of the vehicles etc.

The key air emissions from the project are dusting combustion of fuel from the transportation vehicles as well as material handling, The main air pollutants will be particular matter, nitrogen dioxide and sulphur dioxide

The mined sand is transported to the sites through 10/16 MT Trucks.

The loading operation is manual/mechanical using material handling equipment.

IMPACTS:

Respiratory dust generation system can be damaged of Workers/people living in nearby area due to.

Frequent movement of heavily loaded vehicles across the river banks not only imposes land stability problems but also pollutes the river water through Oil/gasoline spillage.

IMPACT OF NOISE

Transportation vehicles used for the transportation of mineral area a source of Noise Pollution at the Mine site.

IMPACT ON LAND USE PATTERN AND CHANGE OF RIVER COURSE

The physical composition and Stability of substrates are altered as a result of in-stream mining and most of these physical effects may exacerbate sediment entrainment in the channel. Excess sediment is considered the greatest pollutant in
water and constitutes one of the major environmental factors in the degradation of stream fisheries.

If the mining is not carried out in a uniform manner then I will disturb the river flow/course in the terms of its uniformity. Unplanned mining activities can lead to river channel shifting as well as degradation of land, causing loss of properties and degradation of landscape. Some physical impacts are under….

1. The Undercutting and Collapse of river banks,
2. The loss of adjacent land and/or structures,
3. Upstream erosion as a result of an increase in channel slope and changes in flow velocity
4. Downstream erosion due to increased carrying capacity of the stream, downstream changes in patterns of Deposition and changes in channel bed and habitat type.
5. Riverbed lowering
6. Changing the course of the riverbed

**Impact on Water Environment**

Mining may cause lowering of riverbed level as well as river water level resulting in lowering of groundwater table due to excessive extraction and draining out of groundwater from the adjacent areas. This may cause shortage of water for the vegetation and human settlements in the vicinity.

Indiscriminate sand mining from the rivers can lead to destruction of riparian vegetation which acts are resting and nesting grounds of many migratory birds.

The in stream fish wealth of the rivers may be decreased year after year consequent to unabated sand mining and subsequent habitat loss.

Extensive use of high power suction pumps for extraction of sand from the river has aggravated the salt water intrusion problems especially in the lowland river reaches.

Effects directly related to extraction and to changes in geomorphology include increased sedimentation, turbidity, and bank full widths, higher stream temperatures, reduced dissolved oxygen, decreased wetted periods in riparian wetlands, and degraded riparian habitat.

**Impact on Topography and Drainage Pattern**

Unplanned mining activities and stocking of unwanted material near the river bank can affect the natural topography of the river bed. Mining pits are responsible for river channel shifting as well as degradation of land and landscape.

**Impact on Soil**

No major impact on soil of study area is envisaged due to mining activities as the minerals are replenishable and get replenished every year.

**Impacts on Biological Environment**
Excessive sediment deposition for replenishment/refilling of pits affect turbidity, prevent the penetration of light require for photosynthesis of micro and macro flora which intern reduces food availability for aquatic fauna. Increase in river gradient may cause excessive erosion causing adverse effect on stream habitats. Riparian flora and fauna suffer seriously from riverbank slumping, channel incision, lowering of water table, etc., as a result of the direct removal of vegetation along the river banks, bank undercutting and channel incision.

ENVIRONMENT MANAGEMENT PLAN AND MITIGATION MEASURES

➤ **Air Quality Management**
- There will be emission from combustion of fuels from the transportation vehicles and material handling.
- Besides this, to control the emission further regular preventive maintenance of equipments will be carried out on contractual basis.
- It shall be ensured that all transportation vehicles should carry a valid PUC certificate.
- Plantation will be carried out on approach roads & nearby vicinity of river bank.
- Regular water sprinkling on road will be carried out to avoid dustiness due to vehicular transportation.
- Speed of vehicles is maintained within the prescribed limits.
- Trucks are not over loaded and should be maintained to the body level.
- Condition of all trucks will be well maintained.
- Old age trucks will not be utilized.

➤ **Noise Management**
- No other equipments except the transportation vehicles and excavator (As and when required) for loading will be allowed. Noise generated by these equipments shall be intermittent and does not cause any impact.
- All vehicles which create high noise will be avoided.
- Plantation will be carried out on approach roads & nearby vicinity of river bank.
- Proper maintenance of vehicles would be ensured.
- Mining activity will be restricted to day time only.

➤ **Management for Land Use Pattern including Change of River Course**.
- The sediment will accumulate /replenish every year during rainy season.
- The minerals will be collected in a uniform way so that the river flow/ channel shall not get disturbed.
- Scrapping/ dredging of minerals shall be started from the centre towards bank periphery in half meter slice so that the river course does not get affected and a barrier of at least 3 meter will be left at both side of bank side for safety of banks.
- Unused material including mineral or spillage (If any) will not be stocked on the bank side as it will hinder the flow of river in monsoon.
- Suitable mitigation measures will be adopted to avoid water logging.
➢ Water Quality Management
   • No waste water will be generated from the mining activity of minerals as the project only involves scraping of Sand from river bed.
   • Mining will not intersect the Water level.
   • Mining will be done well above the riverbed water table therefore impact on water regime is not anticipated.

➢ Solid Waste Management
   • No solid waste will be generated from the sand mining operations.
   • Unused material including mineral or spillage (if any) will not be stocked on the banks side in river bed as it will hinder the flow of river in monsoon season.

➢ Socio Economic Environment
   ⇒ The deployed labourers will be from nearby villages.

➢ Occupational health & Safety
   • Dust masks will be provided to the workers, working in the dust prone zones.
   • Study will be conducted to identify, occupational health hazards if any.
   • Workers will be informed and trained about occupational health hazardous if identified.
   • Any workers health related problem will be properly addressed.

   • Adequate PPEs are provide to the workers during mining activity such as dust mask, ear plug, life jacket, safety shoes, etc.

➢ Greenbelt Development and Plantation Programme
   • As the lease area falls in river bed, plantation & green belt development is not possible within the lease area.
   • Unit is proposed to carry out plantation in the vicinity of river banks, along the approach roads, around Govt. buildings, schools. The Local species will be planted as per the GPCB guidelines.

➢ Plan for tree plantation and budgetary outlay for the same:
   • Total tree plantation area will be about 03-46-30 ha.

Details of Year wise tree plantation programme

<table>
<thead>
<tr>
<th>No. of plants</th>
<th>Area in hectares will be</th>
</tr>
</thead>
</table>

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### Type of plants

<table>
<thead>
<tr>
<th></th>
<th>I Year</th>
<th>II Year</th>
<th>III Year</th>
<th>covered under plantation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nilgiri, Bamboo, Neam, Banyan, Tamarind etc. local Species…</td>
<td>30</td>
<td>30</td>
<td>25</td>
<td>00-03-00</td>
</tr>
<tr>
<td>Total</td>
<td>85</td>
<td></td>
<td></td>
<td>00-03-00</td>
</tr>
</tbody>
</table>

### Budgetary Outlay

The estimated cost of plantation as well as maintenance for 3 years will be as under,

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars</th>
<th>Approximate recurring cost per annum (Rs. IN Lac)</th>
<th>Approximate capital cost (Rs. IN Lac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Green Belt</td>
<td>0.4</td>
<td>1.2</td>
</tr>
</tbody>
</table>

**TOTAL**

0.4                                               1.2