

**RISK ANALYSIS & DISASTER MANAGEMENT PLAN**

**In Respect of**

**SANAWAUBARI DEVI NADI SAND QUARRY (8.093 Ha)**

**At- Village Sanawaubari, Tahsil-Biridi, Jagatsinghpur , Odisha**

Risk Analysis & Disaster Management Plan in Respect of Sanawaubari Devi Nadi Sand Quarry (ML Are 8.093 ha) at Village Sanawaubari, Tahasil-Biridi, Dist- Jagatsinghpur, Odisha of Smrt. Krishna Das

## **RISK ANALYSIS & DISASTER MANAGEMENT PLAN**

### **Introduction**

The possible risks in the case of River sand mining projects are erosion, inundation/floods, accidents due to vehicular movement, Drowning, accident during sand loading and transporting etc.

Sand Mining and allied activities are associated with several potential hazards to both the employees and the public. A worker in a quarry should be provided with safety work place and same time the environmental conditions should be such as not to impair his working efficiency. This is possible only when there is adequate safety and health system in quarry.

Risk assessment is the determination of quantitative or qualitative value of risk related to a concrete situation and a recognized threat. Activities requiring assessment of risk due to occurrence of most probable instances of hazard and accident are both onsite and off-site.

Risk assessment is essential for prevention of accidents and there is a need to be aware about the risk of an accident and steps can be taken to prevent the same before its happening

### **Definition of Risk and Hazards**

To under the environmental risk assessment it is important to familiar both the terms i.e. Risk and Hazard.

The definitions of environmental risk are as follows:

- a) Risk: Risk is an actual or potential threat of adverse effects on environment arising out of an organization activity.
- b) Hazards: Hazard is the potential to cause harm. An environmental hazard is a generic term for any situation or state of events which poses threat to the surrounding environment.
- c) A disaster management plan is a preventative plan designed to reduce the harmful effects of a disaster. We can minimize the waste of time and resources that are all too precious after a disaster. But without a disaster management plan, our team can't react efficiently.

### **Objective of Risk Assessment**

- Identifying hazardous activities
- Assessment of risk level and severity in different operations
- Identification of control measures
- Setting monitoring process

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- Reduce the impact of mishaps of all kinds

### **Objective of Disaster Management Plan**

- Reduce Damages and Deaths
- Reduce Personal Suffering
- Speed Recovery
- Protect Victims
- Identifying the hazard and its cause.
- Reducing vulnerability and potential losses of hazard.
- Assessing, reviewing and controlling the risk.
- Reducing the damage, death, sufferings and destruction of any natural and human induced disaster.
- Giving protection to victims.
- Increasing the strength among people to survive against disasters.
- Ensuring the availability of local emergency equipment and transportation

### **Methodology of Risk Assessment:**

Following methodology shall be followed for risk assessment.

### **Identification of Risk due to River sand Mining at Sanawaubari Devi Nadi Sand Quarry**

There is no land degradation due to mining activities as mining is done only on river bed dry surface. There will be no OB or waste generation as the sand is exposed in the river bed and is completely sellable. There will be neither any stacking of soil nor creation of OB dumps in the lease area. The mining activity will carried out upt a depth of 1m below the surface level. So there is no chance of slope failure, bench failure in these mines.

However there are some identified risk in this mining activity which are as below:

1. Accident during sand loading and transportation
2. Inundation/ Flooding
3. Quick Sand Condition

### **Mitigation Measures**

Measures to prevent accidents during loading and transportation: During the loading truck would be brought to a lower level so that the loading operation suits to the ergonomic condition of the workers.

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- The workers will be provided with gloves and safety shoes during loading.
- Opening of the side covers of the truck should be done carefully and with warning to prevent injury to the loaders. Mining Operations will be takes place during
- daylight only.
- The truck will be covered with tarpaulin and maintained to prevent any spillage.
- To avoid danger while reversing the trackless vehicles especially at the embankment and tipping points, all areas for reversing of lorries should be made man free as far as possible.
- All transportation within the main working will be carried out directly under the supervision and control of the management.
- Overloading should not be permitted and the maximum permissible speed limit should be ensured.
- There will be regular maintenance of the trucks and the drivers will have valid driving liscence.

#### **Measures to prevent incidents during Inundation/ Flooding:**

To minimize the risk of flooding/ inundation following measures will be under taken:

- Mining will be completely closed during the monsoon months
- Proper weather information particularly on rain should be kept during the operational period of mines so that precautionary measures will be undertaken.

#### **Measures for mitigation to quick sand condition:**

- Quick sand zone and deep water zone will be clearly demarcated and all the mines workers will made aware of the location.
- Mining will done strictly below 1m of the surface level and as per the approved mining plan.

#### **Other Possible Measures to Avoid Risks/Disaster Due To River sand Mining**

- Unwanted material including mineral or spillage (if any)should not be stacked on the banks as it will hinder the flow of water in monsoon season.
- The minerals will be mined out in a uniform way so that the river flow/course will not be disturbed.
- River bank areas, under operation will be protected by avoiding unauthorized gravel excavation along rivers as that may cause instability to the river bank.
- River banks will not be excavated to form access ramps.
- Only excavated river gravel should be used to deposit against the river bank to form access ramps.

## DISASTER MANAGEMENT PLAN

As the depth of mining will be only 1m below the surface level the risk related to mining activity is much less. The mining operation will be carried out under the supervision experienced and qualified person having Certificate of Competency to manage the mines granted by DGMS. All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955, OMMC 2016 and other laws applicable to mine will strictly be complied with. During heavy rainfall and during the monsoon season the mining activities will be closed. Proper coordination with Irrigation Department will be maintained so that at the time of releasing water, if any, from the dam suitable warning/information is given in advance. Special attention and requisite precautions shall be taken while working in areas of geological weakness like existence of slip, fault etc. The mining site will be supplied with first aid facilities and the entire mines worker will have access to that.

The Disaster Management Plan for the proposed river sand mining project will cover hazard identification due to various mining and allied activities, the risk involved due to the hazards and planning the necessary mitigation measures for the same. The following natural/ industrial hazards as follows:

- Failure of pit slope
- Accident due to transportation & other equipment etc.

This Disaster management plan basically comprises of the following elements

**System of Communication:** There will be an internal communication system for the mines operator and to his line of command with telephone. The telephone numbers and addresses of adjoining mines, rescue station, police station, fire service station, local hospital, electricity supply agency and standing consultative committee members are also maintained for any emergency requirement

**Consultative Committee:** A standing consultative committee will be formed under the head of mines Operator. The members consists of Security person, safety person, Supervisors etc .

**First Aid & Medical facilities:** There will be provision of first aid/ medical centre for use in emergency situation. All casualties would be registered and will be given first aid. The centre will have facilities for first aid & minor treatment, ambulance and transport. It will have proper telephone/wireless set for quick communication with hospitals where the complicated cases are to be sent

**Transport Services:** A well defined transport control system will be provided to deal with the situation

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#### **Functions of Public Relations/ Responsibility of the Management:**

- To make a cordial relation with government officials and other social service organization and working groups.
- To liaise with representatives of the mine to ameliorate the situation of panic, tension, sentiments, grievances and misgivings created by any disaster.
- To ameliorate the injured, survivors and family members of affected persons by providing material, moral support and establishing contact with relatives of victims.

#### **Offsite Emergency Plan**

Offsite emergency plan defining the various steps to tackle any offsite emergencies which may affect surrounding areas of the project has to be prepared after due final discussion with local panchayat and revenue officials. As per this offsite plan, actions have to be promptly initiated to deal with any offsite disastrous situation, with help of Collector and other officials.

#### **OCCUPATIONAL HEALTH HAZARDS**

The project Sand mining involved for excavation of sand from Sanawaubari Devi Nadi Sand Quarry over Devi river may leads to occupational hazard due to dust generation by excavation, loading and transportation of mineral. Dust is the major pollutant which affect the health of the mining worker. Occupational hazard due to sand mining is as below:

#### **Possibly Impacts:**

- The mines worker will be mostly exposed to heat and humidity mainly during summer season.
- The direct effects of heat exposure are heat exhaustion, heat stroke and heat cramps;
- The indirect effects are decreased efficiency, increased fatigue and enhanced accident rates.
- Heat and humidity are encountered in hot and humid condition when temperatures and air temperatures increase in summer time up to 45° C or above in the river bed mining area. During the high windy days in summer the sand could be the problems for eyes like itching and watering of eyes.
- Respiratory disorder may cause due to continuous exposure to dust during excavation, loading and transportation.

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**Mitigation Measures**

- During the summer season proper drinking water facility will be provided for the mines worker so that they will remain hydrated and avoid sun stroke
- First aid facility will made available and easily accessible to all the workers in case of emergency situation
- Mines workers will be provided with PPEs like dust masks, goggles and ear muffs
- Periodic medical examinations will be provided for all workers.