

CHAPTER - 4

Mitigation and Preparedness Plan

Pre- disaster planning consists of activities such as disaster mitigation and disaster preparedness. Disaster mitigation focuses on the hazard that causes the disaster and tries to eliminate or drastically reduce its direct effects. The best example of mitigation is the construction of embankments and construction of proper drainage system in flood prone areas to avoid floods. The other example includes retrofitting of weak buildings to make them earthquake resistant.

And preparedness focuses on plans to respond to a disaster threat or occurrence. It takes into account an estimation of emergency needs and identifies the resources to meet the needs. The first objective of the preparedness is to reduce the disaster impact through appropriate actions and improve the capacity of those who are likely to be affected most. The second is to ensure that ongoing development continues to improve the capacities and capabilities of the system to strengthen preparedness efforts at community level. Finally it guides reconstruction so as to ensure reduction in vulnerability. The best example of preparedness activities are the development of community awareness and sensitization system through community education and administrative preparedness by way of stockpiling of supplies, developing emergency plans for rescue and relief.

Specific Disaster Mitigation Measures

1. Earthquakes

Baksa district falls under earthquake zone-V, so following mitigation measures should be taken to reduce the impact of earthquake:-

- Adoption of building codes for new construction in various areas.
- Public utility buildings must be located in stable areas or in stiff soil.
- Retrofitting of weak structures.
- Relocation of people settling in the steep slope areas and near the river bank.
- Prohibiting settlement of people at hills
- Scientific study of dams proposed to construct in Bhutan and follow earthquake resistance measure in order to avoid dam failure.

2. Flood Mitigation

Flood mitigation refers to the measures aimed at prevention and preparedness. It reduces the actual or probable impact of floods on the people and their environment.

Floods in some parts of Baksa district are inevitable, considering the topography and the river system. Flash flood caused by release of dam located in Bhutan is one of the most contributory factor and mostly the Salbari subdivision affected by flash flood from Beki river. What is required is a system of adjustment with floods, so that the people

experience minimum of disruption and damages. The objective of flood mitigation is to control changes in the volume of run-off, peak stage of the flood, time of rise and duration of floodwaters, and location of flooding.

The main causes of floods in Baksa District are:

- Obstruction in drainage system due to heavy rainfall.
- Increase in siltation in riverbeds due to erosion in the catchment areas and massive deforestation.
- Change of river course because of poor natural drainage system.
- Flash flood caused by release of water from Kurishu dam located in Bhutan.
- Breach of weak embankment
- High gradient

The mitigation measures should be oriented to take proper care of these problems and thus will automatically reduce the impact of flood in the district. The various measures adopted for flood mitigation may be categorized in two groups structural and non-structural.

Structural

- Construction of embankments / floodwalls along the river bank and improvement of the channel (by WRD).s
- Diversion of flood water (by WRD).
- Construction of Dowel bund to stop spilling of river water with earth stack and earth filled cement bags.
- Careful location of new facilities, particularly community facilities such as schools, hospitals and other important infrastructure away from flood prone areas.

Non-structural

- Collection of daily rainfall data (by WRD).
- Flood forecasting and warning through Flood Early Warning System (by WRD, CWC & District Administration).
- Prepare detailed floodplain map of the district, based on extent of land submerged, and assessment of damages. Analyze how the pattern of flooding has changed over a period of time (by WRD & District Administration).
- Plantation in the catchment areas to check soil erosion (by forest dept).
- Preparation of DDMP and awareness programme through IEC (information, education & communication by DDMA).

3. Cyclonic storm

Some parts of the Baksa district is frequently strike by cyclonic storm during pre-monsoon season Causing widespread damage to the crop and other properties. The main mitigation strategies for storm hazards are a well-informed public and an effective

warning system. The following mitigation measures can be adopted to reduce the impact of cyclonic storm:-

- Requesting concern department to place key facilities in less vulnerable areas (by DDMA)
- Planting windbreaks in the most vulnerable locations (by Forest Department).
- Construction of strong, wind safe public buildings which can be used for community shelter in settlements (by DRDA & PWD).
- Crops can be protected by introducing agricultural practices and cultivation of those crops which are more resistant to high winds.
- Compilation of meteorological data for forecasting of storm (by Dept. concerned).
- Public dissemination of information through mass media, poster campaigns and village meetings (by DIPRO, DDMA).

4. Fire Accident:-

Fire accident is very common in Baksa district due to various reasons. The following mitigation measures may be taken up to contain fire accident.

- Installation of fire extinguisher in all the institutions and buildings (by concern authority)
- Use of standard electrical fixtures and appliances
- Never use water on live electrical appliances
- Keep the children away from electrical outlet
- Good housekeeping lower the chances of fire starting and combustible materials in premises should be monitored carefully.
- Use fire retardant display materials wherever possible (suppliers should be able to provide evidence of this)
- Prepare fire escape plan with teachers & parents
- Practice school fire drills at periodical interval.

5. Erosion:-

Erosion is one of the most important problems in some parts of the Baksa district. Areas fall near Beki & Puthimari river are more prone to erosion. The following mitigation measures may be followed to reduce the impact of erosion.

- Gentle slide slope
- Geo textile
- Boulder pitching
- Iron mesh
- Continuous effort for bank building and land reclamation
- Effort to make structure for ensuring central river flow
- Costly structure like spur should be avoided without proper model study

- Cost effective measures like porcupines, bandling, bamboo piling, deflectors, plantation of bushy trees, cribs etc should be done with proper planning and monitoring.

6. Epidemics: -

The Health & Animal Husbandry & Veterinary Department is the nodal agency responsible for monitoring and control of epidemics. Mitigation measures for control of epidemics would include

- a. Identification of areas prone to certain epidemics must be updated to access field requirements (By DMO & DVO)
- b. Testing laboratories in district hospital must be well equipped and updated (by DMO)
- c. Regular flow of data from both Govt establishment and private hospitals (by DDMA)
- d. Analysing and collating the data at regular intervals to access epidemiological monitoring requirements (by DMO /DVO)
- e. Awareness campaign to the PRI members and the villagers about the various kinds disease, their causes that are prevalent in the area (DDMA)

7. Road accidents:-

Many lives are lost and casualties are reported annually due to road accident, which is cause due to reckless driving and poor road conditions. The following measures may be adopted to mitigate road accidents.

- a. Opening of traffic model school in every district.
- b. Installation of speed monitoring machine in busy areas (by police)
- c. Strict implementation of motor vehicle Act (by Police).
- d. Installation of traffic sign boards (by Police)
- e. Carry of First Aid Box in every vehicle must be made mandatory (by Police/DTO)
- f. Insurance of all vehicles must be updated (by Police)
- g. Awareness about the traffic rules should be imparted to all drivers and commuters through IEC.
- h. Organise general awareness for public on road safety through meeting ,consultation & mass media

Preparedness Plan

1. District Disaster Preparedness Committee

The DDMA, Baksa headed by DC would act as District Disaster Preparedness Committee and will identify the high-risk areas and vulnerable groups of population in the district. It will bring together the collective strength and resources of the government and NGO's in addressing all the needs of disaster prevention, preparedness, response and mitigation. The committee will ensure the participation and accountability of all the departments in dealing with disasters.

2. **Standard Operating Procedures and Preparedness Checklist for All Departments/Agencies**

All the action mentioned above are to be carried out by departments / agencies participating in the District Disaster Management Plan. It is necessary that all the departments have well defined standard operating procedures and preparedness checklists.

The Deputy Commissioner will circulate the standard operating procedures among the departments/agencies, and ask for compliance of the preparedness measures in the District Disaster Management Authority meetings. It is absolutely important that all the departments/agencies are very familiar with the overall plan and the procedures specifically applicable to them and report diligently upon their implementation.

Standard Operating procedures should be modified / updated and improve upon in the light of changing circumstances. The Chairman DDMA should encourage all the departments to suggest changes in these procedures with a view to enhance the effectiveness of the District Disaster Management Plan. The Standard Operating Procedures (SOPs) of various departments at district level are given as under:

2.1 **Standard Operating Procedures For District Administration**

In- charge Officer: DC

Role & Responsibilities of the Deputy Commissioner

- The Deputy Commissioner will co-ordinate all disaster management efforts of the district as the Chairman of District Disaster Management Authority.
- The Deputy Commissioner will coordinate the district level response with the concerned departments/officers assisting him and a core group of officers constituting the District Disaster Managements Authority.
- The Deputy Commissioner may be co-opt any other officers or specialists to assist him/her in carrying out the activities of the District Disaster Management Authority.
- Preparation of the District Disaster Management Plan with the assistance of CEO, DDMA and the Emergency Officer (Project Officer).
- Setting up the District Control Room:
- Encouraging the formation of Disaster Management Body consisting of Sub-divisional Officer, Circle Officers, BDOs, Home Guards and other Voluntary Agencies;
- At the disaster site, specific tasks will be given to the designated officers to manage the disaster.
- A Site Operation Manager (Circle /BDO) who would be deployed by the Deputy Commissioner will be the head of Site Operation Centre.
- The Site Manager will coordinate the activities at various campsites and affected areas.
- The Site Operations centers will report to the District Control Room directly and from there the information will pass to the Collector.

- The Deputy Commissioner will coordinate all the field responses. Field Responses include setting up Transit Camps, Relief Camps and Cattle Camps and will respond to the State Relief Commissioner and SDMA accordingly.

Roles and Responsibilities of ADC & CEO, DDMA:

ADC & CEO, DDMA, will act as the overall in-charge of emergency preparedness and operation. He will coordinate in the following activities:

- Liaison with all the concerned depts.. /officials of the dist. In conducting District Disaster Management Authority meeting to be conducted 2-3 times/year (Decision of meetings as per the Chairman DDMA)
- Supervise the activity of Dist Control Room and communicate the information to the Deputy Commissioner.
- Co-ordinate the programme during preparedness, disaster and natural calamity, rescue operation, relief operation, resettlement and rehabilitation.
- Monitor the programme during relief operation, rescue operation etc.
- Evaluation of the operation process.
- Report return and forward to Deputy Commissioner for approval, sanction and onward action.

Preparedness

- Convene the meetings of District Disaster Management Authority.
- Update the District Disaster Management Plan half yearly.
- Maintain and activate the District and Sub-divisional Control Rooms.
- Check upon inventory of resources.
- Check the supplies of food grains through the Public Distribution System.
- Prepare a list of relief items to be distributed.
- Prepare a transportation plan for supply of relief items.
- Prepare an evacuation plan for the villages which are marooned / devastated.
- Prepare a list of transit / temporary shelters, and check upon their suitability for accommodating people.
- Convene meetings of NGOs in the district, and assign them specific responsibilities for relief, recovery and rehabilitation.
- Constitute / activate Village-level Preparedness Committees with the help of local NGOs and District Administration.
- Coordinate with Police, CRPF, BRO and QRT for support towards rescue, evacuation and relief during disaster.

Preparedness Checklist for District Administration

Sr. No	Preparedness Measures	Action Taken / Remarks
1.	Update District Disaster management Plan-Phone	

	Numbers, officials, details of offices and facilities	
2.	Check upon communication network: phones, Wireless, fax, internet	
3.	Update flood and road maps of the district	
4.	Activate District and Sub-divisional Control Rooms Assign employees to the Control Rooms.	
5.	Check upon availability and deployment of Search	
6.	Convene meetings of District Disaster Preparedness Committee	
7.	Convene NGOs meeting; prepare a list of NGOs with their Functional Specialization and Geographical Coverage.	
8.	Check the Availability of Food Grains in PDS shops.	
9.	Prepare a list of Relief Items for Distribution.	
10.	Fix rates and supplies for relief items.	
11.	Prepare a transport plan for evacuation and distribution of relief.	
12.	Prepare a plan for VIPs movement.	
13.	Prepare a media plan for dissemination of information to the people of the district; local newspapers, radio, TV and cable.	

2.2 Standard Operating Procedures for the Police

In-charge Officer: Superintendent of Police, Baksa.

The Superintendent of Police in the district will get in touch with the Deputy Commissioner for assistance in rescue, evacuation and emergency relief measures under intimation to the ASDMA. As disaster and natural calamities can occur at any point of time hence Army may be called on to assist the civil authorities in rendering rescue and relief operation.

Standard Operating Procedures for Police:

- The Superintendent of Police must work in close co-ordination with the District Collector on receipt of a warning or alert on an emergency situation.
- The Superintendent of Police must designate three senior officers of the district for co-coordinating the activities of the police Department in the District Control Room.
- These senior officers deputed by the Superintendent of police for the District Control Room will work in three shifts in the control room.
- During normal times, the police departments under the Superintendent of Police must assess the preparedness level and report the same as per

format (Preparedness Checklist for police) to the District Control Room every six months.

- They should have continues contact with the District Control Room over VHF during the crisis.
- The Police Department under the Superintendent of Police must maintain a list of disaster prone areas in the district, along with the details of nearest police station and their contact phone numbers.
- The police department under the Superintendent of police must organize training programmes on handling of hazardous chemicals for Police Officers in collaboration with Deputy Director of industrial safety and health to facilitate more effective handling of accidents involving hazardous substances.
- The Police Department under the Superintendent of police must Police must identify a police Station in the city, which can be used as a public information center for disseminating information to the public.

Scope of Work Police/ Arm Force

- Road cut off, repairing and Building of approach road.
- Rescue operation / evacuation
- Escort/convoy the relief material
- Referring the dropping zone (Breach site, Cut off marooned areas) do the air dropping
- Relief and Rehabilitation operation

Preparedness

- Prepare a Deployment Plan for the Police force, based on the needs of the most vulnerable areas. Maintain a list of disaster prone areas in the district.
- Ensure that a sufficient number of police force is available for responding to the flood situation during monsoon.
- Constitute institutional arrangements such as ‘Search & Rescue’, ‘Law & Order maintaining teams, Patrolling team from the Police force, and arrange training for these units.
- Establish coordination with the Fire Services and Quick Response Team.
- Check the wireless communication network, and secure additional wireless sets for deployment during a disaster.
- Check communication links with the District and Sub-divisional Control Rooms.
- Keep the police vehicles and boats in readiness for deployment of the police.
- Identify anti – social elements in the area and take appropriate preventive steps to ensure smooth response and relief operations.

Preparedness Checklist for the Police

Sr. No	Preparedness Measures	Action Taken / Remarks
1.	Prepare a deployment plan for police forces	
2.	Check the availability and readiness of the search and rescue teams from within the District Police.	
3.	Check wireless communication network and set up links with the District Control Room and Sub-divisional Control Rooms; Make additional wireless sets available.	
4.	Develop a traffic plan for contingencies arising out of disaster – one-way, blocked ways, alternate route, and traffic diversion.	
5.	Develop a patrolling plan for critical Bundhs/embankments and marooned villages	
6.	Keep the boats, vehicles and other Search & Rescue equipments available with the Police in readiness.	
7.	Prepare a plan for VIP visits to disaster-affected areas.	
8.	Identify anti-social elements that could create nuisance and take suitable preventive action.	

2.3 Standard Operating Procedures for Water Resource Department

In-charge Officer: Executive Engineer, WRD, Mushalpur Division & Chirang Division

Preparedness

- Prepare and update the flood risk map. The map should show the river system, nalas, embankments and irrigation structures. Distribute the copy of maps to all the controls rooms.
- Prepare a contingency plan for the maintenance and repairs of Bundhs and embankments.
- Assign 'Beat' to Junior Engineers and other functionaries of the Irrigation Department. Prepare a duty chart for In-charge Junior Engineer. Make available the list of In-charge Junior Engineers to District/Sub-division Magistrates, and all the control rooms.
- Make a physical inspection of all the embankments after the last floods for seepage, piping, rat holes and assess needs for repairs and reinforcement. Identity Bundhs which are critical for flood protection and control.
- Prepare a list of critical Bundhs/embankments, which needs repairs and reinforcements after the last floods. Submit a list of these Bundhs/embankments to the District Magistrate and the state government, and ask for necessary financial allocation.
- Commence repairs of bundhs /embankments in the month of January every year after surveying the damages of floods last year, and ensure that all the repairs are completed before monsoon.

- Provide special attention to those places where the Bundh/embankments were breached and repaired during the last floods. These are the Bundhs, which will be threatened first, when the floods approach.
- Undertake channel improvement for rivers and nalas. Undertake de-silting/ cleaning of nalas and canals to improve the flow of water.
- Check all the siphons and regulators on the Bundhs/embankments and canals. Clean siphons before the monsoon. Increase their capacity or replace them if the size of siphons and regulators is too small to prevent water from flowing in.
- Check all the rain-gauze stations and ensure that they are functioning properly. Check that the readings from these stations are available immediately to the Water Resource Department. Prescribe a register for recording of rainfall.
- Check the wireless network connecting flood stations and undertake necessary repairs.
- Set up the protocol for exchange of information with nearest Bhutan Govt for release of water from Kurishu dam.
- Set up the protocol for reporting of flood situation to the DDMA/District Control Rooms.
- Keep in readiness essential tool kits and protection material at critical places for emergency deployment. These may includes:
 - Empty cement bags
 - Boulders
 - Ropes
 - Sand
 - Wire mesh
 - Shovels
 - Baskets
 - Lights
- Inform DDMA of the places where these materials have been stored.

Preparedness Checklist for Water Resource Department

S. No.	Preparedness Measures	Action Taken / Remarks
1.	Check the wireless network and ensure that all the flood stations are connected.	
2.	Establish mechanisms for exchange of information with water divisions in Baksa & Chirang division.	
3.	Inspect all the embankments, and check their height and slope.	
4.	Check that all the embankments have been repaired / reinforced, in particular those Bundhs which were damaged during the last floods.	
5.	Check the drainage system of the embankments and ensure that the seepage and rat holes, etc. have been closed.	

6.	Check that all the materials required for protecting Bundhs/embankments have been store at different places, and a list of these places has been furnished to the district administration.	
7.	Check that the Junior engineers and other staff have been assigned their beats, and all the arrangement for continuous vigilance over these embankments has been made.	
8.	Check that all rain gauge stations are functional, and arrangements have been made to report the readings.	
9.	Check the regulators and siphons. Check that they have been repaired and cleaned, for increasing the flow of water.	
10.	Check all the anti-erosion works, necessary to maintain the Bundhs/embankments.	

2.4 Standard Operating Procedures For Health Department

In-charge Officers: Joint Director, Health & Family Welfare, Baksa and Chief Medical Officer,

Preparedness

- Prepare a health contingency plan for the district. It should include a list of civil hospitals, primary health centers and sub-centers, and medical personnel. The contingency plan should also include the details of hospitals and medical practitioners in the private sector.
- Constitute mobile health units consisting of a doctor, health workers and ANMs, and prepare a deployment plan. Each mobile health unit may cover a number of villages.
- Determine types of injures/illnesses expected. In case of floods, it should mostly be cases of drowning, snake bites, and water-borne diseases.
- Undertake vaccination and health camp in the villages most vulnerable to floods.
- Secure medical supplies in adequate quantity for dealing with these situations, which may include:
 - Oral Rehydration Solutions
 - Chlorine Tablets
 - Bleaching Powder
 - Anti- Venom serum
 - Anti diarrheal and Anti emetic Medicines
 - Intravenous fluids
 - Suture Materials
 - Surgical Dressings
 - Splints
 - Plaster Rolls
 - Disposable Needles and Syringes
 - Local Antiseptics

- Other live savings drugs
- Ensure adequate supplies of blood in the district.
- Keeps one operating facility in each block in readiness. Maintain all the equipment necessary for operations.
- Prepare a maternity facility for pregnant women in every block.
- Seek mutual aid arrangement with civil and military hospitals in the district.
- Arrange provision of clean water in hospitals and Primary Health Centers.

Preparedness Checklist for Health Department

S. No.	Preparedness Measures	Action Taken / Remarks
1	Prepare a Health Contingency Plan for deployment of health and medical personnel.	
2	Organize vaccination and health camp in Flood-prone villages.	
3	Ensure necessary stock of medical supplies and blood.	
4	Organize maternity care centers in every block.	
5	Keep operative facilities in readiness.	
6	Seek mutual aid arrangement with private & army hospitals.	

2.5 Standard Operating Procedures for Agriculture Department

In-charge Officer: District Agriculture Officer, Baksa.

Preparedness

- Ensure that certified seeds of required varieties are available in adequate quantities. The Agriculture Department should work with National Seeds Corporation and other suppliers and ensure availability at their depots or have agents appointed for the same.
- Visit the disaster affected area to consult with affected farmers about the needs of the inputs.
- Prepare list of affected farmers and identify feasible area for post disaster cultivation.
- Print and widely distribute the list of points where certified seeds are available along with names of varieties and rates. Notices may be affixed at public places such as bus stands, on buses themselves, PHCs, Block headquarters, etc.
- Suggest variety of seeds and cropping pattern, which can cut losses and reduce the risks to farmers.
- Develop a pest and disease monitoring system so that timely steps can be taken to reduce damage to crops.
- Prepare for post flood programme such as inputs for rabi crops
- To keep in readiness of their departmental farm mechanization machineries and equipment.

- Organize awareness ,training and demonstration before and after flood seasons

Preparedness Checklist for Agriculture

S. No.	Preparedness Measures	Action Taken / Remarks
1.	Check the availability of seeds, and disseminate information about the outlets where seeds can be made available.	
2.	Set up a public information system regarding sowing of crops, alternative crops, pests, and application of fertilizers.	
3.	Prepare a program for spray of pesticides and insecticides after the floods.	
4	Plan for awareness, training and demonstration before and after flood.	

2.6 Standard Operating Procedures For Animal Husbandry

In-charge Officer: District Animal Husbandry & Veterinary Officer, Baksa

Preparedness

- Prepare a list of flood-related diseases that are preventable by vaccination. Publicize the information about common diseases afflicting livestock and the precautions that need to be taken.
- Establish control room at district HQ with specific responsibilities to Dist. Incident Commander, Information cum protocol officer , liaison officer and safety officer
- Assist the District Administration in preparing plans for cattle camps and cattle feeding centers.
- Constitute rapid response team having the VAS/E.O (Vety) as team leader and VFA, Gr-IV as members at the Dispensary level.
- Identify flood prone areas and enlisting population of livestock & poultry to be affected during flood.
- Organize vaccination campaigns in flood-prone villages before, during and after the floods.
- Prepare kits for livestock & poultry diseases, which could be provided to veterinary doctors at the block level and Extension Officers at the village level. Kits can also be provided to the private veterinary doctors.
- Keeping up vehicle ready for safe transportation of goods and support staff.
- Identify raised platform with all facilities like feeds, fodder and drinking water for providing shelter to livestock during disaster.

Preparedness Checklist for Animal Husbandry

S. No.	Preparedness Measures	Action Taken / Remarks
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1.	Publicize the list of common ailments during floods and possible precautions.	
2.	Organization of vaccination for cattle in flood-prone villages.	
3.	Prepare a plan for setting up livestock camps and livestock feeding centers.	
4.	Prepare kits which could be given to Veterinary doctors and Animal Husbandry workers.	
5.	Identify raised platform with all facilities like feeds, fodder and drinking water for providing shelter to livestock during disaster.	

2.7 Standard Operating Procedures for PHED

In-charge Officer: Executive Engineers, Baksa Division, Mushalpur.

Preparedness

- Check all the pumps available with PHED for draining floodwater. All the pumps should be in working condition.
- Raising the existing handpumps by fitting nipples etc.
- Installation of new hand pumps at higher places
- Survey all the flood-affected villages, and find out where the people had taken shelter. Install hand pumps at all such locations. Check these pumps before the monsoon.
- Increase the height of pipe by adding a pipe of 3 to 10 feet. It helps extract clean drinking water during the floods.
- Keep hand pumps, pipes and sockets in readiness and install them as soon as flood situation arises.
- Protect pump stations from water logging.
- Rain water may be harvested during rainy season for alternative drinking water during flood.
- Plan for community awareness, training and demonstration at vulnerable areas for water purification process, preservation process and sanitation methods.
- Keep ready to maintain following standard during disaster

Items	Nos of people	Days of use	Remarks
Hand Pump	150 people per hand pump	180 days	Bleaching powder ,halogen tablets may be used as water purification method
Tara Pump	250 people per Tara Pump	180 days	Do
Ring well	250 people per R/Well	365 days	Do
Temporary latrine	30 people per latrine	60 days	Evacuation method may be followed by

			filling the pit with earth followed by construction of new pits
Concrete latrine	50 people per latrine	180 days	Evacuation method may be followed by use of present leach pit followed by construction of new leach pit.
Earthen pit for solid waste management	30 people per pit	15days	Evacuation method may be followed by filling the pit with earth followed by construction of new pits
Portable pit solid waste management	20 people per pit	7days	Disposing through human labour

Preparedness Checklist for PHED

Sr. No.	Preparedness Measures	Action Taken / Remarks
1.	Check the condition of pumps for draining floodwater. Ensure pumps are in working condition	
2.	Protect water supply pumps from water logging.	
3.	Keep hand pumps, pipes and sockets in readiness for installation / increasing the height of pipes.	
4.	Obtain a list of temporary shelters where people took shelter during last floods. Prepare for installation of hand pumps at all such locations.	
5.	Maintain adequate stock of chlorine tablets and bleaching powder.	

2.8 Standard Operating Procedures for Forest Department

In-charge Officer: Range Forest Officer, Mushalpur.

Preparedness

- Open the forest land for free grazing when flood waters enter villages, and there is not enough fodder available.
- Allow the transportation of fodder from forest areas, when the fodder is not freely available.

- Provide wooden poles bamboo for relief and reconstruction at subsidized rate. Provide these materials to all the technical departments, which need them.
- To keep in readiness of Departmental boat/ferry.
- Keep ready for fencing in order to prevent wild animal depredations.

2.9 Standard Operating Procedures for Public Works Department

In-charge Officer: Executive Engineer, PWD (R&B), Mushalpur Division

Preparedness

- Clean the area beneath bridges before the monsoon so that floodwaters can flow more freely.
- Maintain all the highways and access roads, which are critical from the point of view of supplying relief.
- Increase the size of bridges, if necessary, so as to prevent breach of roads and Bundhs. Smaller bridges prevent flow of water.
- All equipments i.e. Bulldozers, Crane, Truck etc. must be checked and keep in readiness for use during disaster.
- Keep vigil
- Check weak buildings and establishments and take necessary arrangement for retrofitting

2.10 Standard Operating Procedures for the Power Department

In-charge Officer: SDO, Barama Electrical Subdivision

Preparedness

- Protect Power Stations from water logging. Raise the height of compound walls. Arrange gunny bags. Install pump sets for draining water.
- Check the electrical lines on a continuous basis. Switch off the power supply, where the lines have tripped. There are many cases of electrocution.
- Provide information to the people about the state of electrical supply. It is one of the most important sources of information.
- Take special care to ensure that all the critical facilities like hospitals, Control Rooms, etc. continue to get power and they are functional.
- Alternative arrangements should be made for emergency services.
- Check the habitations for illegal and wrong connection of electricity

2.11 Standard Operating Procedure for Department of Transportation

In-charge Officer: District Transport Officer.

Preparedness

- Prepare a list of vehicles – trucks, buses, cranes, jeeps, tractors along with the name, address & contact no – in the district and provide the same to the District Control Room.
- Provide jeeps and other vehicles for mobile health and animal husbandry teams.
- Provide trucks, buses and jeeps for evacuation and relief supplies.
- Issue standing instructions to the Suptd of Transport Department for providing buses for evacuation and relief.

3. Training of Functionaries

The District Disaster Management Authority (DDMA) should arrange periodical training programmes for all concerned departments. The programmes may be organized at district headquarters or at Block Headquarters and selected officials may be sent training at state / national training centers. These trained officials should be entrusted to train other lower level officials and panchayat representatives. Trainings camp may be organized at district level in which experts may be invited from reputed institutes. The following DRR activities should be carried out from time to time

Sl	Name of Activity	Level of Participants	Time of training
1	Orientation workshop for DDMA	Member of DDMA,HODs	Twice in a year
2	Emergency Health Management	Doctors	Once in a year
3	School safety & preparation of school safety plan	Headmasters, Principals ,Teachers School Management Committee	Once in a year
4	NGO coordination workshop	Local NGOs	Once in a year
5	School Mock Drill on Earthquake & Fire Safety	At all schools	Once in a year
6	Update of District Disaster Management Plan	Member of DDMA,HODs	Half yearly
7	Training on earthquake preparedness & Mitigation	Engineers	Once in a year
8	Rapid visual screening	Engineers	Once in a year
9	Specialised training on task forces on S& R ,1st Aids	Members of QRT & Emergency team	Once in a year
10	Awareness for community on disaster Preparedness	Community member of all villages	Once in a year

4. Simulation exercises/ Mock Drill

Periodic simulation exercises may be carried out to test the preparedness of all concerned role players. Drills may be carried out at various sites. The shortcomings and weaknesses observed during this must be identified and eradicated with proper and timely action.

