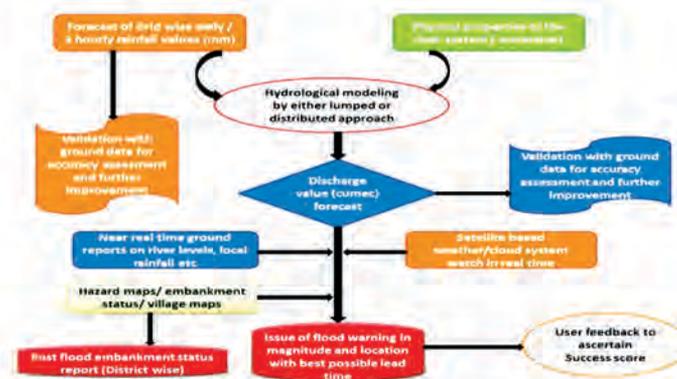


- c) The proposal for repair/restoration of infrastructure works should be based strictly on the Damage Assessment Reports and DDMA should recommend only those works that are in immediate need of repairment. The infrastructure related proposals for funding under the State Disaster Response Fund should be submitted latest by 15th of October as per the proscribed procedure.
- d) Rehabilitation of the severely affected people need not be confined to the financial assistance under SDRF. There are several schemes with the Government that can be diverted for their assistance. It is essential is that the Deputy Commissioner has a plan of action in place for rehabilitation with clear description of the schematic provisions to be leveraged in specific situations, keeping the schematic norms in mind.
- e) It is equally important to have the bank account of all the people in the flood-prone zones opened, so that financial assistances can be routed to their bank accounts.
- f) Prevention of the spread of diseases in the immediate aftermath of floods is an important challenge. Special attention will have to be paid to the disposal of dead bodies and carcasses of animals, treatment of water and rigorous health check-up.

### 7.3 Flood Early Warning System



The North East Space Application Centre under the Flood Early Warning System (FLEWS) will issue flood alerts to the SEOC and designated officials of ASDMA, Water Resource Department and others. The SEOC at ASDMA in turn will notify the concerned district Deputy Commissioner and other concerned officials of the said district through Phones/ Fax/SMS alerts and other forms of communication.

### 7.4 Response on receipt of flood warning:

The concerned officials will take necessary measures as per the Standard Operating Procedure (SOP) given in Appendix XXXIV

## 7.5 Roles and Responsibilities of different district agencies/line departments for Flood Management

7.5.1 Deputy Commissioner/DDMA	
<b>Pre Flood</b>	<p>1) Convene meetings of the DDMA for flood preparedness of which the first meeting is to be held by the 15<sup>th</sup> of February to advise on the following in aspect of the district headquarters/ subdivision</p> <ul style="list-style-type: none"> <li>Maximum number of relief centres likely to be set up</li> <li>Facilities to be available at each centre</li> <li>Maximum likely number of relief parties</li> <li>The manner in which individuals and voluntary organizations are to be associated with the relief teams</li> <li>The manner in which Panchayats will be associated with relief operations.</li> <li>List of protection works to be completed by the 30<sup>th</sup> of April by the Water Resource department/ Panchayats.</li> <li>Labour-oriented works likely to be taken up by P&amp;RD, P.W.D, Irrigation, Forest, Agriculture and others</li> <li>Issues relating to flood affected areas to be tackled by P.W.D, W.R. and the Irrigation Department before the onset of monsoons; and</li> <li>Adequacy or otherwise of the preparations made by the various authorities concerned for dealing with the floods as required</li> </ul> <p>2) Take up steps for implementation by the various authorities as per the recommendations of DDMA meeting on flood preparedness. By 30<sup>th</sup> April, the DC as Chairperson DDMA will:</p> <ul style="list-style-type: none"> <li>Divide the district into compact zones each comprising a group of villages falling under both 'very vulnerable' and 'vulnerable' areas as classified in DDMP and each such zone shall be serially numbered.</li> <li>Select responsible officers not below the rank of Circle Officer who have thorough idea of the geographical terrain and other local conditions of the respective zone, to be designated as Relief Officer (RO) for placing him in charge of each zone and shouldering such duties and responsibilities as may be assigned to him</li> <li>Select sites for evacuation centres and relief centres in safe areas.</li> <li>The site for sheltering livestock may be decided in consultation</li> </ul>

with the district A. H. & Veterinary officer. In selecting sites, preference shall be given to high lands, schools, market places and places not likely to be inundated.

Make a rough estimate of requirements:

- ✓ Controlled commodities like rice, *atta*, and controlled cloth and other non-controlled essential commodities like edible oil, salt, kerosene, free sugar, gur, pulses, potatoes, baby food, wheat bran and similar items and intimate the Deputy Director or any other officers of Civil Supplies in the district for necessary arrangement.
- ✓ Petrol for vehicles requisitioned from the public; engine driven mar-boats, launches and arrange with depots or agencies of the IOC for ensuring supply as and when required during floods and intimate such arrangements to the district officers of the concerning departments.
- ✓ Operational cost of the boats for carrying out Search & Rescue and evacuation operation may be incurred from the GR funds.

### 3) Prepare

A sub-division wise list of officers and staff available for deployment of relief duty as and when called for;

A list of jeeps, buses, trucks and other vehicles for requisition in case of necessity, in consultation with the D.T.O;

A list of boats/mar-boats/bailey bridges as shall be available from P.W.D. and the Inland Water Transport Department.

A list of boats, private and public, other than those included in the list prepared under (iii) above, which can be requisitioned in case of necessity.

4) The Deputy Commissioner will undertake a joint inspection by the 10<sup>th</sup> of May along with the E.E., WR department and S.P., as a precautionary measure against breaches in embankments, bunds, drains, nullahs and other flood protection works, to see if necessary repairs and the like have been done and that they are in good condition.

<p><b>During Flood</b></p>	<ol style="list-style-type: none"> <li>1) DDMA will conduct weekly meeting to review flood management during the flood season</li> <li>2) On receipt of flood warning D.C will: Take action as per Standard Operating Procedure (SOP) prepared by the State Send relief officers along with other staff to the respective zones; Request SP to send Police party and install temporary wireless stations if required Direct Station Officer, Fire &amp; Emergency Services to place State Disaster Response Force (SDRF) personnel along with rescue boats if required. Seek suggestion from the WR department for evacuating people from vulnerable places</li> <li>3) On occurrence of Flood the DC will: Visit the places of occurrence Ascertain the nature and extent of flood Make prompt operational decisions Assess requirement of men and materials for relief operations Call for coordinated aid Ensure that services are arranged and materials are mobilized according to the needs Supervise arrangement in Evacuation centres and Relief Camps Arrange to collect donation in cash and kind from local branches of Red Cross, UNICEF etc. &amp; contribution from the Voluntary Organizations Requisition as and when necessary the services of the officers of various departments, Urban Local bodies and Zilla Parishads for undertaking relief works Call for Non-Officials/Volunteers/NYK, Civil Defence, Red Cross Volunteers or members of other voluntary organizations, if circumstances so warrant, to associate for such works as may be considered suitable for Secure assistance from the Army/NDRF or other Central Government Response agencies when arrangement made by civil authorities prove to be inadequate D.C will make arrangements for constructing shelter in Relief Camps if required and will arrange in the Relief Camps sanitation and maintenance of clean lines and water</li> </ol>
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	<p>supply through the P.H.E.DC will, within the scales prescribed by the State, grant gratuitous relief in cash and kind to the deserving affected people. Gratuitous relief will be distributed through responsible Government officers. Details of the GR issued are to be displayed in a notice board in the Relief Camp for public information and maintenance of transparency</p> <p>DC will arrange proper distribution of relief articles received as donation in kind among the deserving affected people through the official and non-official agencies</p> <p>DC will arrange for taking care of the infirm, destitute, orphans, children and expectant/nursing mothers in the relief centres through the assistance of the distribution social welfare officer Supply of cooked food should generally be discouraged.</p> <p>DC will arrange supply of cooked food in evacuation centres/relief camps only in unavoidable cases. Where so supplied, the quantity should as far as possible be at the scales prescribed by the State</p>
<p><b>Post Flood</b></p>	<ol style="list-style-type: none"> <li>1) DC will collect agricultural statistics from the revenue staff and the district agricultural officer about areas under crops actually affected by flood, damage to crops and the number of cultivators involved</li> <li>2) Immediately after the flood water recedes, a report on losses and damages of each district is to be submitted to the Government in the Revenue &amp; Disaster Management Department in the form as given in <b>Appendix X</b></li> <li>3) Make: <ul style="list-style-type: none"> <li>✓ Assessment of the requirement and arrangement for distribution through the Agriculture department</li> <li>i) Seeds and seedlings as grants-in-aid and</li> <li>ii) Agricultural loans in cash and kind such as seeds, seedlings, manures, agricultural equipment and</li> <li>✓ Grant rehabilitation loans for construction repairment of houses in deserving cases among the affected people</li> </ul> </li> <li>4) Provide in case of persons who are uprooted by erosion, alternative lands for homestead or cultivation as the case may be and also arrange for distribution among them, if necessary,</li> </ol>

agricultural grant and loans. Endeavor should however, be made to provide alternative land near about their original villages.

***Contraction & closure of relief:***

While it is necessary to provide all kinds of relief required, it is equally essential that strict economy is exercised so that resources of the state do not get strained unduly. Generally, full pictures as to the duration of relief measures will emerge as soon as the waters have subsided. DC will judge for how long the relief operation is to be continued and when contraction/closures of operation is needed. In declaring closures of relief operation he will take the approval of the divisional commissioner and inform all concerned.

The following factors should weigh in declaration of contraction/ closure of relief operation.

The actual point at which relief operation can safely be closed down will depend on the severity of the crop failure.

Where there has been a serious failure of *Ahu* crop it will usually be necessary to continue relief measures till the next Rabi crop is reaped and where there is a failure of *Bao* crop relief should usually be continued till such time as DC in consultation with the Commissioner may decide. In other cases, relief measures should not normally be allowed to continue longer than the situation demands.

The process of gradual closure of works should normally begin as soon as the demand for field employment sets in. Also, the physical condition of the people and the extent to which private employment is available and wages earned thereby

5) DC will submit a comprehensive report immediately after the closure of the flood relief operations in the district to the Government in the Revenue and Disaster Management Department through the Commissioner of Division

Submit details of the loses and damages in the prescribed formats for submission of request of assistance to Government of India, if required

Every concerned line department will prepare and submit plans and estimates regarding damaged infrastructure for consideration under SDRF as per the procedures laid down

## 7.5.2 Water Resource Department

<b>Post Flood</b>	<p>The Executive Engineer, Water Resources will visit the generally flood affected areas and shall:</p> <p><b>1) By the 31<sup>st</sup> of December</b></p> <ol style="list-style-type: none"> <li>a) Classify the different areas and localities of district on the basis of the flood hazard atlas</li> <li>b) Re-prepare/update the map if there be any change in classification of areas shown in the map.</li> <li>c) Forward by the 31<sup>st</sup> of January the list of areas classified along with the re-prepared/updated map to the DCs and SDOs and other district level officers</li> <li>d) Suggest D.C. for undertaking village work on: <ul style="list-style-type: none"> <li>Digging link drains and other drains to prevent water congestion in localized depressions and</li> <li>Construction of bunds or repairment of bunds to protect agricultural lands against flood;</li> <li>Prepare detailed plans and estimates for works as may be required by DC and render necessary technical assistance to DC in execution of works.</li> </ul> </li> </ol> <p><b>2) By the 30<sup>th</sup> of April</b></p> <ol style="list-style-type: none"> <li>a) Prepare a tentative list of flood control personnel for flood fighting, patrolling on embankments, dykes and other flood protection structures;</li> <li>b) Arrange and store in suitable places: <ul style="list-style-type: none"> <li>Materials for erecting temporary sheds at the work sites</li> <li>Other materials for protection from danger by floods to flood control structures;</li> </ul> </li> <li>c) Keep all departmental vehicles, boats and launches in fit-for-operation condition;</li> <li>d) Ensure that the embankments, dykes and other structures are in good condition;</li> <li>e) Complete short term emergent flood protection measures in areas, such as drains, closure of breaches, construction of retirement bunds, anti-erosion measures and others</li> </ol> <p>3) By the 10<sup>th</sup> of May, accompany DC along with SP for a joint verification of vulnerable areas</p>
<b>During Flood</b>	<p><b>The Executive Engineer, Water Resources will:</b></p> <ol style="list-style-type: none"> <li>1) Follow the Flood Warning System</li> </ol>

	<ol style="list-style-type: none"> <li>2) As soon as the river is within one metre of the danger level start vigorous patrolling at the reach of the embankments/dykes and other flood protection structures; and;</li> <li>3) Keep close touch with DC</li> </ol> <p>On occurrence of flood, the EE shall</p> <ol style="list-style-type: none"> <li>1) Examine the physical conditions of the embankments/dykes and ensure that leakages, seepages if any are promptly attended to;</li> <li>2) Take protective measures without loss of time in case of any signs of breach;</li> <li>3) Assist DC in the flood operation by sparing personnel equipment, vehicles, boats and launches as available.</li> </ol>
<p><b>Post Flood</b></p>	<p>As soon as flood water recedes, the Executive Engineer, Water Resources shall:</p> <ol style="list-style-type: none"> <li>(i) Suggest DC in order of priority, the works to be taken up on test relief which may include the following: Digging link drains and other drains to drain outstanding flood water    Construction and repairment to ring and other <i>abadi</i> protection bunds; and Repairment to and deepening of existing drainages to eliminate possibility of future floods</li> <li>(ii) Prepare plans and estimates of those items of work as may be required</li> <li>(iii) Render technical assistance, as necessary to DC in execution of works.</li> </ol> <ol style="list-style-type: none"> <li>2) Finalize and start labour-oriented departmental works for test relief in consultation with DC. This may include the following: Repairs to damaged embankments/dykes, other flood protection structures out of their own funds and render technical assistance to P&amp;RD and Agriculture department to undertake similar works involving embankment and bunds; Minor flood protection works; Works already provided for in the approved schemes for these areas.</li> <li>3) Restore tools, equipment, vehicles and other stores;</li> <li>4) Collect materials, vehicles lent to DC; and</li> <li>5) Repair/replace damaged tools/equipment</li> </ol>

	6) Prepare plan and estimates for repairing damaged structures/embankments and place it before the DDMA for onward submission to the Government for necessary approval for State Disaster Response Funds (SDRF).
<b>7.5.3 Agriculture Department</b>	
<b>Pre Flood</b>	<p>The District Agricultural officer shall:</p> <ol style="list-style-type: none"> <li>1) Undertake extension measures relating to the latest result of research available from the Assam Agricultural University or from other sources on already released varieties including flood tolerant varieties and other cultural practise for agriculture in the generally flood affected areas;</li> <li>2) Advice the dates after which seed transplantation should not be undertaken; and</li> <li>3) Advise on the suitable cropping patterns</li> <li>4) By the 30<sup>th</sup> of April the district Agricultural officer will visit the generally flood affected areas and  Make an assessment along with the Revenue staff of the acreage under crops and number of cultivators likely to be affected in each of the areas;  Prepare a block-wise agricultural map showing areas under different crops in the generally flood affected areas and forward a copy each to the Deputy Commissioner, the Zonal Joint Director of Agriculture and the Director of Agriculture;  Assess requirement of and assist DC in arranging for seeds, seedlings and manures for grants; and agricultural loans in cash and kind (seeds, seedling, manures, agricultural implements bullocks)  Assess requirement and arrangement for pesticides for protection of crops after floods and tools and plants relief works.</li> <li>5) Make arrangements for raising seedling in specific government agriculture farms/nurseries. If the quantity to be raised in the government farms/nurseries is not enough, the balance should be raised by arrangement with cultivators</li> </ol>
<b>During Flood</b>	<p>On receipt of flood warning the district Agricultural Officer (AO) shall:</p> <ol style="list-style-type: none"> <li>1. Alert allthe subordinate officers and field staff</li> </ol>

	<ol style="list-style-type: none"> <li>2. Check stock of seeds, manures implements and make arrangements for raising seedlings and</li> <li>3. Draw up a tentative programme for relief works On occurrence of floods, he will keep in constant touch with DC and will shall: <ol style="list-style-type: none"> <li>1. Immediately collect agricultural statistics along with Revenue staff about acreage under crops affected by flood, damage to crops, and number of cultivators involved</li> <li>2. Arrange distribution of agricultural inputs in consultation with DC3 <ol style="list-style-type: none"> <li>(i) render technical guidance to the needy cultivators for salvage and protection of surviving crops and raising of such varieties of crops as may be suitable during the season or in the next cropping season</li> <li>(ii) Arrange for spraying of pesticides, where necessary; and</li> <li>(iii) Approach the Soil Conservation Department for removal of excessive sand deposits in agricultural fields which cannot be removed by an individual farmer's efforts4.</li> </ol> </li> </ol> </li> <li>4. AO shall constantly visit the flood affected areas to ensure effectiveness of agricultural relief and rehabilitation measures</li> </ol>
<b>Post Flood</b>	<p>After the flood relief operation AO shall:</p> <ol style="list-style-type: none"> <li>1) Restore the tools and plants</li> <li>2) Repair the damaged tools and plants</li> <li>3) Dispose of undistributed seeds and manures which cannot be kept for use beyond a particular crop season</li> </ol>
<b>7.5.4 District Elementary Education Officer/ Inspector of Schools</b>	
<b>Pre Flood</b>	<p>The Inspector of Schools(IS) shall by the 30<sup>th</sup> of April:</p> <ol style="list-style-type: none"> <li>1. Prepare a list of Government and aided schools in the very vulnerable and vulnerable areas showing particulars of buildings <i>i.e.</i>, location, accommodation in square meters in respect of each school and forward a copy of the list to DC/SDO</li> <li>2. Prepare a list of teachers and other staff who may be available from each schools for flood relief work if so required by the DC/SDO and forward a copy of the list to DC/SDO</li> </ol>

	<p>3. Collect a list of suitable N.C.C cadets / Scouts/ NSS volunteers from the District Sports Office who shall be available for flood relief work if required by DC/SDO and forward a copy of the list to DC/SDO</p>
<b>During Flood</b>	<p>1. On receipt of flood warning, the IS shall alert the teachers/ staff/NCC cadets/Scouts/NSS volunteers as per the list prepared to be ready to move for flood relief duties as soon as requisitioned by DC/SDO</p> <p>2. (i) Order closure of a school, the building of which has been requisitioned by the DC/SDO for utilising as evacuation/ relief centre;</p> <p>(ii) Order for closure of any school in the flood affected areas if necessary up to 15 days. The IS shall take the approval of the Director of Secondary Education if closure of a school beyond this period is considered necessary.</p> <p>3. Visit the flood affected areas and assess if any educational concession/assistance is required to be given to the flood affected students/ institutions. If so, draw up scheme on priority basis and submit to government in Education Department through DC/ SDO for sanction and allotment of funds. <i>Duties of the Director of Elementary Education &amp; Director, Secondary Education</i></p> <p>The Director of Elementary/Secondary Education shall:</p> <p>1) Issue standing directions to all school authorities in the State to lend the services of school teachers and other staff if and when required by the DC/SDO for flood and other relief duties</p> <p>2) Request the District Sports Officer to issue standing instructions to the NCC units for deployment of NCC cadets when requested by the Inspector of Schools to assist DC in Flood relief operation</p> <p>3) Request all colleges to lend the services of the college teachers and staff when required by DC/SDO for flood relief duties</p>
<b>Post Flood</b>	<p>Submit details of damaged infrastructures</p>

### 7.5.5 Joint Director, Health Services

#### Pre Flood

The Jt. Director (JD), Health Services will visit generally flood affected areas by the 30<sup>th</sup> of April

- 1) Prepare:
  - a list of hospitals, Primary Health Centres, dispensaries and others institutions located in these areas
  - a list of doctors and paramedical staff already available in each of the areas and the number of additional hands against each category that may be required in each of the areas in case of acute floods
  - a list of doctors paramedical staff of different category who can be withdrawn from their places of works and their services utilized for relief work;
- 2) Ensure that adequate stocks of medicines, vaccines and disinfectants likely to be necessary are kept at the district and subdivision head-quarters;
- 3) Keep ready in the district/subdivision head-quarters materials for
  - Augmenting the hospital beds by at least 10 in case of necessity; and
  - Opening one dispensary camp for each of the very vulnerable areas;
- 4) Arrange for mobilizing at short notice two medical relief teams at the district headquarters in order to rush them for relief works;
- 5) Prepare a detailed plan for utilizing the doctors and other voluntary organizations in the district during floods if so required, and
- 6) Take measures for prevention of epidemic and arrange for necessary vaccinations of the people in these areas.
- 7) Ensure that ambulances and boat clinics are operational.
- 8) The Director Health Services shall arrange before the 30<sup>th</sup> of April.
  - Awareness Programmes for the general public in the very vulnerable and vulnerable flood affected areas on health education measures which are to be implemented prior to the flood season, through specially prepared mass media, like posters, pamphlets, filmstrips and cinema shows;
  - Print adequate numbers of health education materials and send them to the Joint Director, Health Services at the

	<p>District Headquarters before the 15<sup>th</sup> of April for distribution</p> <p>Ensure that the Principal of the medical keep ready medical teams, each consisting of about 10 doctors, paramedics and supporting staff so that the teams can be rushed to the flood affected areas at short notice. The teams should be equipped to move with their own medicines, tents, food items cooking utensils lanterns and other necessities so that they can function as self-contained units without depending on other agencies</p> <p>9) Refresher's course for doctors and paramedical personnel covering such aspects as medical care and prevention of epidemics during natural calamities will be arranged by the Director Health Services with emphasis on special problems on care and prevention during and after floods. The course may consist of: First-aid course by demonstration and practice; Prevention of epidemics lectures and practical demonstrations in application of insecticides and disinfectants and disposal of dead bodies and Emergency sanitation-lectures and demonstration on purification of water, disposal of sewage, construction of temporary latrines, maintenance of cleanliness</p>
<p><b>During Flood</b></p>	<p>On receipt of flood warning, the Joint Director (JD), Health shall:</p> <ol style="list-style-type: none"> <li>1) Alert the doctors and para-medical staff</li> <li>2) Inform DC/SP for arranging transport for staff and ambulance services to be available at the short notice, if departmental vehicles are not available;</li> <li>3) Check personnel, equipment and medical stores</li> </ol> <p>On occurrence of floods JD shall:</p> <ol style="list-style-type: none"> <li>1) Maintain close touch with DC</li> <li>2) Immediately visit the flood affected areas along with one medical team</li> <li>3) Start measure for health relief at a Primary Health Centre /dispensary/sub-centre, if such an institution is located conveniently in the flood affected area</li> <li>4) Make immediate arrangements to open dispensary camps in the affected areas if the existing health institutions cannot cover the areas</li> <li>5) Decide immediately whether isolation of certain patients is necessary and desirable and if so, construct temporary</li> </ol>

	<p>isolation daybeds in the primary health centre/dispensary/ sub centre/ dispensary camp as may be convenient. JD shall also post the required additional staff for maintaining the isolation wards</p> <p>6) Decide whether isolation of certain patients is necessary and if so establish temporary hospital facilities in the nearest PHCs/hospitals. Additionally, JD shall post required staff for maintaining the hospital facilities and arrange transport for the patients to the hospital.</p> <p>7) (i) Decide the extent of health measures to be taken and work out whether additional medical relief teams are required. If so, he will mobilize staff within his district and deploy them. If staff are not sufficient JD shall request the Director of Health Service for additional aid</p> <p>(ii) Entertain for short period additional paramedical and Grade IV staff, as may be absolutely necessary;</p> <p>8) Utilize the services of Red Cross and other voluntary organizations, as may be forthcoming in rendering relief in the flood affected areas</p> <p>9) Arrange other relief measures like disinfection of water sources, vaccination, health education from the nearest PHC with the help of staff attached to those institutions 10) Frequently visit the flood affected areas and ensure effectiveness of health measures.</p>
<p><b>Post Flood</b></p>	<p>After the floods, JD shall:</p> <ol style="list-style-type: none"> <li>1) Restore equipment and stores; and</li> <li>2) Repair/replace damaged equipment; and</li> <li>3) Arrange for disposal of unutilized medicines and disinfectants</li> <li>4) Prepare plan and estimates for repairing damaged structures and place it before DDMA for onward submission to the Government for necessary approval for State Disaster Response Funds (SDRF)</li> </ol>
<p><b>7.5.6 Sub-Divisional Officer/Sectional officer IWT</b></p>	
<p><b>Pre Flood</b></p>	<p>The Subdivision Officer/Sectional Officer, Inland Water Transport shall visit the generally flood affected areas by the 30<sup>th</sup> of April and shall:</p> <p>(1) Keep all vessels and boats fit for operation.</p>

	<p>(2) Periodically arrange training for technical personnel and arrange tools and spare parts in IWT workshop and other stores for maintenances and repairment of boats.</p> <p>(3) Prepare an estimate POL consumption per hour and total carrying capacity available of relief boats and other vessels and inform the DC</p>
<b>During Flood</b>	<p>On receipt of flood warning the SDO/SO IWT shall maintain close touch with DC and:</p> <p>(1) Alert his subordinates to keep themselves ready for floods;</p> <p>(2) Finalize the arrangement for deployment of relief boats and other vessels with necessary tools and plants and other stores;</p> <p>(3) Draw up tentative programs for carrying out duties; and in consultation with DC/SDO (Civil) impose restrictions on the plying of boats on the river during high flood situation to ensure public safety.</p> <p>(4) Take up with EE, IWT Guwahati for arranging additional vessels, stores and spares, if necessary. On occurrence of floods, he will take action as follows:</p> <p>(1) Place relief boats and other vessels, as directed by DC to the flood affected areas and start relief operations;</p> <p>(2) Arrange, purchase and transport POL for vessels from the agencies as arranged by DC; and</p> <p>(3) Undertake constant tours to the affected areas and ensure adequacy of the arrangements made</p>
<b>Post Flood</b>	<p>Post flood relief operations: , he will</p> <p>1) Restore relief boats, other vessels, equipment and stores and</p> <p>2) Take steps for the repairment to of damaged boats/vessels owned by IWT as well as the district administrations.</p>
<b>7.5.7 Executive Engineer, Irrigation Department</b>	
<b>Pre Flood</b>	<p>Executive Engineer, Irrigation shall visit all irrigation works in his jurisdiction with special emphasis to the vulnerable areas and he will by the 30<sup>th</sup> of April:</p> <p>1) Check and ensure that canals and other structures for of irrigation in these areas are in good condition</p>

	<ol style="list-style-type: none"> <li>2) Check against unauthorized construction likely to damage any structures of irrigation department</li> <li>3) Assess requirements and arrangement of tools and plants and other stores</li> <li>4) Keep vehicles, tractors and bull-dozers under the division in good, running condition</li> <li>5) For relief work in vulnerable areas <ul style="list-style-type: none"> <li>◆ Prepare tentative list of works; and coordinate with other department i.e., WR/P&amp;RD/Agriculture to carry out necessary works without which the existing irrigation infrastructures may be damaged by flood.</li> <li>◆ Check provisions already made in approved schemes for these areas.</li> </ul> </li> </ol>
<b>During Flood</b>	<p>On receipt of flood warning, the EE, Irrigation shall:</p> <ol style="list-style-type: none"> <li>1) Keep close touch with the DC;</li> <li>2) Alert staff; and</li> <li>3) Check <ul style="list-style-type: none"> <li>◆ Tools and plants, store,</li> <li>◆ Vehicles, trucks, bull-dozer,</li> </ul> </li> </ol> <p>On occurrence of floods, the EE shall:</p> <ol style="list-style-type: none"> <li>1) Visit the irrigation works in flood affected areas;</li> <li>2) Lend the DC materials (if available) for temporary relief camps, vehicles if required;</li> <li>3) Assess requirements and deploy staff to::Suggest DC for undertaking irrigation works, on test relief and render technical assistance as necessary; and <ul style="list-style-type: none"> <li>◆ Take safety measures for the protection of irrigation canals and other irrigation works.</li> </ul> </li> <li>4) Frequently visit the flood affected areas and ensure measures for safety of irrigation structures; and</li> <li>5) For test relief: <ul style="list-style-type: none"> <li>◆ Finalize list and start works;</li> <li>◆ Take up labour intensive items for approved plan schemes in the areas by engaging flood affected people.</li> </ul> </li> </ol>
<b>Post Flood</b>	<p>After the flood operation, EE shall:</p> <ol style="list-style-type: none"> <li>1) Restore tools, plants and stores</li> <li>2) Repair/replace damage tools and plants; and</li> <li>3) Collect materials, vehicles, lent to Deputy Commissioners</li> </ol>

	<p>4) Prepare plan and estimates for repairing damaged structures and place it before DDMA for onward submission to the Government for necessary approval for State Disaster Response Funds (SDRF).</p>
<b>Pre Flood</b>	<p>The Executive Engineer PWD (Roads) will visit the generally flood affected areas within jurisdiction, and shall by the 30<sup>th</sup> of April:</p> <p>(1) Ensure that:</p> <ul style="list-style-type: none"> <li>◆ The road-side debris/materials are stacked in proper places so that they are not washed away during floods;</li> <li>◆ The passage of all cross drainage works (bridges and culverts) are clear and free from obstructions to allow easy flow of the flood water;</li> <li>◆ The Existing protective works, as exist in culverts and bridges and road approaches flanking such structure will have been repaired as necessary;</li> <li>◆ The bailey bridges, single boats, engine driven mar-boats, bull dozers, road rollers trucks and other vehicles of the division are in good running condition;</li> <li>◆ Materials for constructing temporary bridges and camps for PWD workers are available in stock according to the limit prescribed by the Chief Engineer, PWD</li> <li>◆ Soundings are taken as necessary for structure, situated below the water level in April, and necessary drawings prepared for subsequent reference during floods.</li> </ul> <p>2) Assess stocks of CI sheet, tarpaulins and other materials as are generally used for tents and temporary huts in relief camps, which may be available for lending to the DC if required,</p> <p>3) Assess and prepare list of staff of different categories for duties and make necessary arrangements</p> <p>4) Arrange reserve stock of tools and plants and other stores at scales prescribed by the chief Engineer, PWD</p>
<b>During Flood</b>	<p>On receipt of flood warning the EE shall:</p> <p>1) Under emergent conditions keep constant and continuous contacts with the concerned Deputy Commissioners/Civil Sub Divisional Officers</p> <p>2) Alert his subordinate for floods</p>

	<p>3) Draw up tentative programmes of the measures to be taken.</p> <p>And also:</p> <p>1) Immediately visit the flood affected areas</p> <p>2) Assess requirements and deploy staff for: Keep round the clock vigil of the roads and bridges, threatened by floods; Restore communication within the shortest time possible in all the National Highways, state roads and district roads in consultation with the superintending engineer. In case of village roads at least pedestrian traffic has to be restored; Keep proper vigil that no unauthorized cuts are made in PWD roads for draining out of flood water; and Take measures for the preservation of PWD buildings and other works in the flood affected area and prevent encroachments on Government lands under his charge.</p> <p>3) Report the submergence of roads to the Deputy Commissioner, Superintending Engineer, Chief Engineer and Secretary, PWD immediately after the occurrence indicating concisely the location and extent of submergence, the fact of closure of traffic;</p> <p>4) Report the nature and extent of damage during flood even where there is no subsidence or after subsidence of flood water, as the case may be and if the traffic is closed as a result thereof;</p> <p>5) Press into service baily bridges and vehicles, (as available) for rescue operations and transhipment of marooned people livestock and others as may be required by the DC</p> <p>6) Render technical assistance as may be required by the DC in constructing temporary huts in relief camps and in other test relief works, such as repairs to damaged village roads, culverts, bridges and new village roads.</p>
<b>Post Flood</b>	<p>1) Restore tools and plants;</p> <p>2) Repair/replace damaged tools and plants;</p> <p>3) Collect the items lent to DC for creating temporary structures in relief camps;</p> <p>4) Take steps to repair damaged roads, culverts, bridges, buildings and other structures borne in the books of PWD;</p> <p>5) Report DC, SE, CE and Secretary, PWD soon after</p>

	<p>restoration of communication and also intimate the expenditure/liability incurred thereof;</p> <p>6) Prepare detailed estimate which should also include the expenditure/liability incurred for restoration of traffic, the cost appraisal for the restoration of the road surface/ structures to the original condition and submit together with the statement in the proforma to the SE for onward transmission by the latter to higher authorities in PWD for obtaining sanction and arrangement of funds</p> <p>7) Prepare plan and estimates for immediate restoration of damaged infrastructures and place it before DDMA for forwarding it to the Government (for SDRF).</p>
<b>7.5.9 Executive Engineer, PHE</b>	
<b>Pre flood</b>	<p>The Executive Engineer, Public Health Engineering shall visit the generally flood affected areas by the 30<sup>th</sup> of April, and:</p> <p>1) Assess measures likely to be required for safe water supply in the areas;</p> <p>2) Prepare: A list engineering personnel of different categories already available in the nearest PHE division and the number of additional hands that may be required in each area in case of heavy floods; A list of engineering personnel of different categories who, in case of necessity can be withdrawn from their places of work and utilised for relief work;</p> <p>(3) Arrange for mobilizing at short notice two PHE teams at the district headquarters to rush them for relief work;</p> <p>(4) Ensure adequate stocks of: Equipment and materials for sinking tube well, ring well, pit/sanitary latrines in the relief camps and other places in the flood affected areas; and Camp materials and other stores for workers and keep them in appropriate places. Preposition the water purifier mounted vehicle used for providing packaged drinking water in vulnerable locations in the State.</p> <p>(5) Keep the departmental vehicles in good running condition.</p>
<b>During Flood</b>	<p>On receipt of flood warning, EE shall:</p> <p>1) Alert subordinate officers and staff regarding floods;</p>

	<ol style="list-style-type: none"> <li>2) Check vehicles, equipment, stores and</li> <li>3) Draw up tentative programmes for action.</li> </ol> <p>On occurrence of floods, EE shall:</p> <ol style="list-style-type: none"> <li>1) Keep close touch with the DC;</li> <li>2) Visit the flood affected areas immediately with one PHE team and start measures for water supply and pit/sanitary latrines</li> <li>3) Assess extent of water supply measures required and deploy necessary staff. If the staff available in the district are not sufficient to cope with the situation, arrange through CPHE additional staff; and</li> <li>4) Constantly visit the flood affected areas and ensure adequate safe water supply measures and sanitation in the relief camps.</li> </ol>
<b>Post Flood</b>	<p>After the flood relief operation, EE shall:</p> <ol style="list-style-type: none"> <li>1) Restore tools and equipment, stores, etc. and</li> <li>2) Repair/replace damaged tools and equipment</li> <li>3) SDRF proposals for damaged water supply pipelines and infrastructures</li> </ol>
<b>7.5.10 Superintendent of Police</b>	
<b>Pre Flood</b>	<p>The Superintendent Police (SP) will visit the generally flood affected areas and he will by the 15<sup>th</sup> of May:</p> <ol style="list-style-type: none"> <li>1) Prepare a list indicating the number of Police personnel, Civil Defence and Home guards likely to be deployed in addition to the Police personnel in the existing Police stations and out posts in each such area for purposes like Law &amp; Order, Rescue &amp; Evacuation. The list regarding the Civil Defence and Home guards shall be prepared in consultation with the Commandant, Civil Defence and Home Guards of the district. SP shall indicate the requirement of Civil Defence and Home Guard through the District Magistrate;</li> <li>2) Keep the Police vehicles and equipment, in good working condition;</li> <li>3) Prepare a tentative list of vehicles likely to be required for requisition for patrolling rescue operation, evacuation of affected people live-stock, transport of relief workers and carrying relief articles;</li> <li>4) Arrange for required number of police wireless sets to be</li> </ol>

	kept in readiness for temporary installation in the affected area; and5) Stock the required equipment and stores
<b>During Flood</b>	<p>On receipt of the flood warning, SP shall:</p> <ol style="list-style-type: none"> <li>1) Alert/ready the Police personnel for relief operations;</li> <li>2) Collect intelligence reports about incidences of crime following the flood and take effective measures to prevent and investigate such crimes;</li> <li>3) Assist in rescue operations and evacuation or transfer of affected people to relief camps or safer places through providing security to the rescuers (SDRF/NDRF)</li> <li>4) Help strayed persons to re-establish contact with members of their families or relations;</li> <li>5) Take care of salvaging property including live-stock of the affected people;</li> <li>6) Postpolice guards at vital installations and arranging guard for relief materials at the relief camps;</li> <li>7) Render assistance in restoration of means of communications (police wireless will be commissioned if necessary)</li> <li>8) Arrange special patrol on lines of communications, along with relief materials when carried;</li> <li>9) Arrange required number of vehicles in addition to the available police vehicles, by requisition or otherwise; and</li> <li>10) Undertake constant tours to be able to bring in effective police measures.</li> <li>11) Disseminate information through Police Radio Communication if required.</li> </ol>
<b>After Flood</b>	<p>After the flood relief operation SP shall:</p> <ol style="list-style-type: none"> <li>1) Restore vehicles, equipment and camp materials and</li> <li>2) Repair/replace damaged equipment</li> </ol>
<b>7.5.11 District Animal Husbandry &amp; Veterinary Officer</b>	
<b>Pre Flood</b>	<p>District Animal Husbandry and Veterinary Officer will visit the generally flood affected areas and he will by the 30<sup>th</sup> of April</p> <ol style="list-style-type: none"> <li>1) Assess requirements of veterinary measures to be taken in the areas and arrange Veterinary Assistant Surgeons(VAS), Veterinary Field Assistant(VFA) and other staff; Equipment, medicines,</li> </ol>

	<p>vaccines and disinfectants Materials for installing first aid centres and camp dispensaries.</p> <p>Suitable high places for sheltering live-stock from flood affected areas.</p> <p>Mobilize at short notice two or more veterinary teams (each team normally comprising one VAS and five VFA) at the district headquarters for relief work in case of an emergency.</p> <p>Keep prescribed scales of all essential equipment, medicines, vaccines, disinfectants in every hospital dispensary, first aid centre in the areas to be readily available for relief.</p> <p>Fodder like hay and green grass from live-stock fodder farms or from the other sources</p> <p>Measures for prevention combating a situation like wide-spread disease in epidemic form among animals.</p> <p>2) Assist the Deputy Commissioner in arranging with local traders for supplying animal feed at reasonable price if required during the floods</p> <p>3) Prepare a veterinary map for these areas showing veterinary hospitals, dispensaries, first aid centres, AI. Sub-centres and cattle population covered by each of these institutions and forward a copy each to DC and Director of Animal Husbandry and Veterinary.</p> <p><u>Training in Veterinary relief measures</u></p> <p>The Director of Veterinary shall organize:</p> <p>1) By arrangement with the veterinary college short duration training course in veterinary medical care and prevention of epidemic among animals for staff of the V. &amp; AH. Department; and</p> <p>2) Awareness programmes for general public in these areas on veterinary measures to be implemented prior to flood season through posters, pamphlets and film strips.</p>
<b>During Flood</b>	<p>DAH &amp; VO on receipt of flood warning shall:</p> <p>1) Alert the subordinate officers and field staff;</p> <p>2) Check and arrange personnel stores, equipment, vehicles and</p> <p>3) Draw up tentative programme of relief work;</p> <p>On occurrence of floods DAH &amp; VO shall:</p> <p>1) Keep close touch with DC.;</p>

	<ol style="list-style-type: none"> <li>2) Visit the flood affected areas immediately with a veterinary relief team and start relief measures;</li> <li>3) Arrange with the help of DC shifting of live-stock to suitable high places;</li> <li>4) Assess extent of veterinary services required and deploy necessary staff. If the staff available for relief work in the district are not sufficient then arrangement for drafting of additional staff from outside the district through the Director of Animal Husbandry and Veterinary shall be made;</li> <li>5) Open first aid centres and dispensary camps if the existing first aid centres, dispensaries and hospitals are not sufficient;</li> <li>6) (i) Assist the public in taking preventive measures against any epidemic among live-stock and take measures to vaccinate all susceptible livestock against such diseases</li> <li>7) Arrange and distribute feed and fodder for the animals as directed by the DC; and</li> <li>8) Constantly visit the flood affected areas and ensure effectiveness of the measures</li> </ol>
<b>Post Flood</b>	<p>After the flood DAH &amp; VO shall:</p> <ol style="list-style-type: none"> <li>1) Restore equipment and stores;</li> <li>2) Repair or replace damaged equipment;</li> <li>3) Arrange for the disposal of balance medicines or replenish stock of medicine and stores; and</li> <li>4) Take steps for repair of damaged veterinary buildings</li> <li>5) SDRF proposals be prepared, if any</li> </ol>
<b>7.5.12 Deputy Director, Food &amp; Civil Supplies</b>	
<b>Pre Flood</b>	<p>The Deputy Director of Supply or any other officer of procurement and distribution of civil supplies in the district will by the 30<sup>th</sup> of April:</p> <ol style="list-style-type: none"> <li>1. Arrange for the procurement of controlled commodities like rice and maintain a reserve stock of the required quantities of these items in specified places, with the government agencies to be released during the floods on a requisition from the DC. The reserve stock will not be released for any other purpose without the specific approval of DC.;</li> <li>2. Hold discussions with representatives of the Chamber of Commerce, local traders and co-operatives and ensure</li> </ol>

	<p>that adequate stock of other non-controlled essential commodities like edible oil, salt, kerosene, free sugar, gur, pulses, and potatoes. Baby food, wheat bran and the like are maintained by them so that they can also be made available at reasonable prices to DCs for relief works.</p> <ol style="list-style-type: none"> <li>3. Arrange through the Director of supply for procurement of the controlled and essential non-controlled and essential non-controlled items, which cannot be locally procured from within the district.</li> <li>4. Intimate DC the names of the agencies and the quantity of reserve stock available with each;</li> <li>5. Keep certain quantities of reserve stock by arrangement with the approved dealers of GCI sheets to be made available at reasonable rates to be made flood affected people ; and</li> <li>6. Arrange with the Food Corporation of India, the Assam State Co-operative Marketing and Consumers' Federation Limited and the wholesale Co-operative Societies for lifting by DC from each of these agencies not exceeding 500 quintals each of <i>atta</i> and rice, as necessary, without prior allotment of the Government of India or the Director of Supply. Such lifting of <i>atta</i> or rice will be adjusted against the quota of the next month or regularised by obtaining formal allotment</li> </ol>
<b>During Flood</b>	<p>The D.D.S. or the officer –in-charge of civil supplies shall:</p> <ol style="list-style-type: none"> <li>1. Ensure adequate supply position of essential commodities, particularly the controlled commodities not only in the affected areas but also in the other areas of the district;</li> <li>2. Keep constant vigil by the supply staff so that the traders do not take advantage of the situation create any condition of artificial scarcity and inflate the price of the commodities. Any tendency towards hoarding and profiteering should be dealt with sternly;</li> <li>3. Take steps on priority basis for arranging additional supplies from within or outside the district, if the reserve stock of the controlled commodities is not enough for relief due to widespread floods;</li> <li>4. Cause retail outlets to be opened, where necessary, in the affected areas as may be directed by the DC</li> </ol>

	<p>5. Deploy staff for relief in the affected areas; and 6. Seek at once the assistance of DC in case of difficulty regarding transport of essential commodities:</p> <p>If it is due to shortage of wagons, to move government for taking up with the railway authorities at the appropriate level for placing of sufficient number of wagons; and</p> <p>For taking up with the Assam State Transport Corporation, Inland Water Transport Organisation and other transport agencies for giving priority in transporting essential commodities in the flood affected areas. If the fleet of these organizations is not sufficient to cope with the situation, the vehicles, boats and motor launches. requisitioned by DC for relief may also be utilized.</p>
<b>Post Flood</b>	<p>D.D.S. or the officer in-charge shall:</p> <ol style="list-style-type: none"> <li>1) Obtain the particulars from the government agencies regarding the quantity of each of the commodities released from the reserve or other stock for relief and submit a complete return within one month from the date of expiry of the emergency to DC and to the Director of Supply</li> <li>2) Allow with the approval of DC the balance of the reserve stock, with different government agencies to be utilised for general purposes as soon as the flood relief is over.</li> </ol>
<b>7.5.13 District Social Welfare Officer</b>	
<b>Pre Flood</b>	<p>The District Social Welfare Officer (SWO) will visit generally flood affected areas under jurisdiction and shall by the 30<sup>th</sup> of April:</p> <ol style="list-style-type: none"> <li>(1) Make arrangements for Mobile units of maternity and child welfare centres likely to be necessary in the affected areas</li> </ol> <p>Draw up nutrition programmes for children below 6 years and expectant/nursing mothers in the flood prone areas through the Anganwadi Centres; Provide community education (material support and activities ) on promoting early initiation and exclusive breastfeeding and timely quality complementary feeding for young children and also special nutritional needs of pregnant and lactating mothers ,hand washing ,safe water,hygiene and sanitation.</p> <p>Make arrangements for taking care in the relief centres of orphans, old, infirm and the destitute; and</p>

	<ol style="list-style-type: none"> <li>2) Make a list and the facilities of voluntary social welfare organisations and AnganwadiCentres located in the district which may be associated, in case of necessity, in relief operation and a list of personnel for rendering services in the relief centres.</li> <li>3) Keep vehicles in good running condition.</li> </ol>
<b>During Flood</b>	<p>On receipt of flood warning SWO shall:</p> <ol style="list-style-type: none"> <li>1) Keep constant touch with DC; and2) Alert personnel about floods</li> </ol> <p>On occurrence of floods, SWO shall:</p> <ol style="list-style-type: none"> <li>1) See that orphans, old, infirm and destitute accommodated in the relief/evacuation centre are properly taken care of ;</li> <li>2) Requisition the services of the voluntary social welfare organizations for rendering assistance as and when necessary;</li> <li>3) Organize running of kitchen, if required by DC for the persons mentioned in (1) above:</li> <li>4) Shift the destitute, where necessary to the destitute homes; and</li> <li>5) Ensure optimal infant and young child feeding practices i.e.,protect, support and promote early initiation of breast feeding within 1 hour of birth and exclusive breastfeeding of infant s for six months, counsel on safe, adequate and acceptable complementary food for childrenwith continued breastfeeding for 2 years and above.</li> <li>6) Donate milk powder, packaged infant food substitute or milk substitute is not recommended for children under 2 years of age as clearly stipulated in the IMS (Infant Milk Substitute Act)</li> <li>7) Ensure appropriate management of moderate to acute malnutritionof children and supplementary feeding for vulnerable groups including pregnant and lactating women according to identified needs.</li> <li>8) Support and coordinate with NRHM for vitamin supplementation and deworming (12-59 months) with the help of Anganwadi workers.</li> <li>9) In coordination with the Health department support identification of severely acute malnourished children and refer them to health facilities/nutrition rehabilitation centre.</li> <li>10) Ensure the intake of iodized saltamong women and children.</li> </ol>

### 7.5.14 Irrigation Department

<p><b>Pre Flood:</b></p>	<p>The Executive Engineer, Irrigation shall pursue joint verification with the Mechanical/Electrical counterparts of Irrigation Project/schemes that falls under the jurisdiction of the Nodal Division and shall:</p> <p>(1) <u>By 31<sup>st</sup> December</u></p> <p>a) Identify the vulnerable points of irrigation structures like head works, aqueducts, cross drainage, canal embankments and canal system, intake LIC/DTW points and the like.</p> <p>b) Map vulnerable structures and canal systems including vulnerability of mechanical/electrical structures.</p> <p>c) Forward by the 31<sup>st</sup> of January, the prepared maps showing vulnerabilities to DCs and SDOs and other district level officers.</p> <p>d) Suggest DC for undertaking works on Repairing vulnerable structures of the project. Closing branches of canal embankments, raising and strengthening of embankments to protect agricultural lands against flood. Assess the position of pumps/motors including electrical transformers and statuses of electrical connections Prepare a detailed plan and estimate of works as may be required by DC and render necessary technical assistance to DC in execution of the works.</p> <p>(1) <u>By 30<sup>th</sup> April</u></p> <p>a) Prepare a tentative list of Irrigation personal for round the clock patrolling of Irrigation structures and canal system.</p> <p>b) The Addl. CE(I)SEs along with the concerned EE shall visit the generally flood affected area under command of each scheme and ensure that the canal embankments, irrigation pump motors, electrical equipment are in good condition/require immediate measures to protect irrigation assets identified as vulnerable from joint verification.</p> <p>c) Complete short term emergent flood protective measures of electrical/mechanical pump houses, from impending danger from bank erosion.</p> <p><u>By 30<sup>th</sup> May</u></p> <p>a) Accompany DC along with SP for joint verification of vulnerable areas</p>
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	b) Identify drought prone areas under command of irrigation projects
<b>During Flood</b>	<p>The Executive Engineer shall:</p> <ol style="list-style-type: none"> <li>1. Follow the Flood Warning System/message at the upstream release of water from the dam etc. of international country like Bhutan for headwork protection at Major/Medium project Head Work located at National/International boundary</li> <li>2. Keep constant vigil of on canal systems and round the clock monitoring duty of important canal structures like Head Works</li> <li>3. Keep open the Head Work gates during occurrence of flood of a devastating nature</li> <li>4. Keep in touch with DC and take action during unprecedented floods that caused danger/damage to structures and inform higher departmental officials immediately</li> </ol>
<b>Post Flood</b>	<p>As soon as flood water recedes, the EE Irrigation shall:</p> <ol style="list-style-type: none"> <li>1. Prepare plans and estimates for these items of work that may be required for irrigation supply to field after receding of flood.</li> <li>2. Finalize and start labour oriented work for test relief in consultation with DC which includes the following: Repair to damage canal embankments, afflux bunds, guide bunds, bund protection work out of their own funds and render technical assistance to P&amp;RD to undertake works involving canal embankments and bunds</li> <li>3. Prepare plan and estimates for repairing damaged structures embankments/pump houses/intake points and place those before DDMA for onward submission to the Government for necessary approval of the State Disaster Response Fund (SDRF)</li> </ol>

## 7.6 RESPONSE PLAN FOR FLOODS

Sl. No.	TASK	RESPONSIBILITY
1	<p>Early Warning received from the North East Space Application Centre (NESAC)/ IMD/CWC and other sources will be disseminated to the following State level officials through SMS:</p> <p>Minister Revenue and Disaster Management            Chief Secretary            Addl. Chief Secretary - Revenue &amp; DM            Secy-Revenue &amp; DM            CEO-ASDMA            Secretary -WR Dept.,            Secretary -Home Dept,            Commissioner &amp; Spl. Secy PWD(Roads)            CM Office and            SPO-ASDMA</p>	State Emergency Operation Centre
2	<p>Information will also be disseminated to the following designated contacts through SMS/Phone of the concerned district:</p> <p>Concerned Deputy Commissioner,            ADC-Disaster Management/CEO-DDMA,            SDO (Civil) in case of civil Sub Division,            Concerned Revenue Circle Officers &amp; Project Officer, ASDMA posted in the districts.</p> <p>Maps and other information received from NESAC will also be forwarded to DC, SDO (Civil), PO-ASDMA &amp; NIC over e-mail</p>	State Emergency Operation Centre
3	<p>Sub Committee of SEC for Flood Review shall meet if the situation so demands to review the flood situation in the State under the Chairmanship of the Chief Secretary.</p>	ASDMA will be the Secretariat to conduct such meetings
4	<p>SEC may direct CEO ASDMA to requisition NDRF/ Army/AirForce if required</p>	CEO, ASDMA
5	<p>After specific time period (12/24 or 48 hrs. as per the FLEWS) of Flood Warning issued by NESAC, Project Manager/Project Officer Response of ASDMA will monitor the situation and keep CEO, ASDMA informed about the development.</p>	PM, Response/PO Response

<b>Response at District level</b>		
6	<p>On receipt of Flood Warning, DDMA will pass the information for taking necessary measures to:</p> <ul style="list-style-type: none"> <li>The concerned SDO(Civil)</li> <li>Revenue Circle Officer</li> <li>Suptd. of Police</li> <li>Executive Engineer WR Dept.</li> <li>Executive Engineer, PWD(Roads)</li> <li>Station Officer-Fire Service Station and I/C of State Disaster Response Force (SDRF)/National Disaster Response Force (NDRF) if stationed in the district.</li> <li>Deputy Director, F&amp;C Supplies</li> <li>Jt. Director Health Services</li> <li>District Veterinary Officer to take necessary measures so that if necessary assistance can be provided in short notice to the affected areas</li> <li>DIPRO, if requires to give public announcement for evacuating people from vulnerable areas</li> </ul>	Deputy Commissioner (DC) will direct Addl. DC or CEO, DDMA
7	SP will instruct Senior Station officer, Fire and Emergency Services/SDRF to assist the Circle Officer in rescue, evacuation and relocation processes	Superintendent of Police (SP)
8	Senior Station officer, Fire and Emergency Services will mobilize teams of SDRF and boats available in their custody and coordinate with DDMA/Circle Officer for response.	Snr. Station officer, Fire and Emergency Services
9	Executive Engineer, WR Dept. shall mobilize man material to strengthen weak embankment, keep constant vigil on Water Levels & and take necessary temporary measures to avert any breaches in embankments.	Executive Engineer, WR Dept.
10	Take adequate measures to ensure that the road communication is not disrupted; repair any breaches on roads for evacuation and supply of relief to the affected people.	Executive Engineer, PWD (Roads)
11	Jt. Director Health Services on receipt of information will initiate to mobilize medical response team, ambulances and alert all government hospitals in the area	Jt. Director Health Services

<b>Response at District level</b>		
	likely to be affected. JD shall also direct SDMHO and I/C PHC of the concerned area to form a team of doctors equipped with necessary medical equipment and move to the affected places or Relief Camp/centre as required by the Circle Officer.	
12	Take periodic report of the situation and instruct Circle Officers, Jt. Director Health Services, Executive Engineers of PWD(Roads),PHE, WR, Irrigation, Police, Fire & Emergency Services to take necessary measures as required for dealing with the situation	Deputy Commissioner
13	Deputy Commissioner will also inform State HQ about the prevailing situation and actions taken.	Deputy Commissioner
<b>Response at Revenue Circle level</b>		
14	On receipt of warning, mobilize the Lot Mondal, GaonBurah, SDRF and other agencies and resources available under Circle Officer's jurisdiction	Circle Officers (COs) of the concerned Revenue Circle
15	Go to the specific location immediately and inform the villagers on the probability of any flood event and ask them to take necessary precautionary measures	Lot Manadaland GaonBurah
16	In case of probability of high intensity flood, evacuation of people from vulnerable areas to pre-identified safe locations and preposition of quick Response Team/ SDRF/NDRF/Police Force/Sand Bags/ Boats/ Tarpaulin/Tents)	Circle Officers (COs) of the concerned Revenue Circle
17	Keep DC/SDO (Civil) informed on an hourly basis about the situation on the ground level and may request additional resources of man, material and machines if required from DC or SDO (Civil)	Circle Officers (COs) of the concerned Rev. Circle
18	Inform: Block Development Officer (BDO), so that BDO can inform PRI representatives for appropriate action- GP Secretary and GP President for appropriate action	Circle Officers (COs) of the concerned Revenue Circle
19	Open Relief Camps if required and give requisition for GR to DC	Revenue Circle Officer
19	Arrange for distribution of Relief	Revenue Circle Officer

# CHAPTER VIII

## EARTHQUAKE MANAGEMENT

Earthquakes are one of the most destructive of natural hazards. The impact of the event is most traumatic because it affects large areas, occurs all of a sudden and is unpredictable. They can cause large scale loss of life and property and disrupt essential services such as water supply, sewerage systems, communication, power and transport. They not only destroy villages, towns and cities but the aftermath leads to destabilization of the economic and social structure of the nation.

According to the latest Seismic map of India, the entire North-East region is one of the seismically most active regions of the world. The entire Himalayan Region is considered to be vulnerable to high intensity earthquakes of a magnitude sometimes exceeding 8.0 on the Richter scale. Amongst the most severe earthquakes in the world are the two great earthquakes which occurred on the 12th of June 1897 near Rongjuli, Assam (magnitude 8.7) and on the 15th of August 1950 at Tajobum, Arunachal Pradesh (magnitude 8.7). As many as 20 destructive earthquakes of magnitudes 6 to 7 have rocked this region during the past century. Scientific publications have warned that very severe earthquakes are likely to occur anytime in the Himalayan Region that could adversely affect the lives of several million people in the region.

Combined with this hazard is the vulnerability profile of the towns and cities where the growth is haphazard and uncontrolled. Huge urban population combined with poor quality and ill-maintained infrastructure, low quality building stock, and lower resilience of the high-density society increases the risks to earthquakes in the urban centres. Moreover, urban infrastructures often designed and constructed without satisfying minimum safety standards.

### 8.1 Critical Areas of Concern for the Management of Earthquakes in Assam

The terrain and natural features of the Brahmaputra Valley make the earthquakes in this region different from earthquakes in other parts of the country and world because of the secondary disasters that are triggered by the earthquakes in this region. Hence, preparedness and mitigation activities for earthquakes in Assam also need to include preparedness and mitigation activities for landslides and floods in vulnerable areas.

Further, if the growth of urbanization, change in housing typology and spread of habitation areas to vulnerable places like slopes and water bodies and increase of big infrastructures are considered, occurrence of major earthquakes in present times will cause devastating damages in the State.

## 8.2 The Approach to Management of Earthquakes

The Approach to Management of Earthquakes in Assam envisages the institutionalization of initiatives and activities based on scientific strategies, covering pre-earthquake components of prevention and early warning indicators or precursors, mitigation and preparedness, as well as post-earthquake components of emergency response, rehabilitation and recovery. The objective of all activities related to the management of earthquakes is to involve the local communities so that they are better informed and prepared to face such disasters in the future, with minimal loss of lives and damage to property, assets and infrastructure. A Risk Management framework which places local communities at the center helps to interface them with decision makers and provides the opportunity for continuous and effective feedback between the community at risk and other stakeholders that can immensely help better management efforts. The essential feature of this Risk Management framework is to view earthquake management issues in a more holistic and integrated manner by identifying, analyzing, evaluating and finally, effectively treating the risks. These steps can be implemented through a consultative and participatory process by involving the key stakeholders and can be monitored and reviewed concurrently at the various stages of implementation.

The earthquake management framework imposes the additional responsibility on professionals to improve their skills and expertise to contribute to capacity development, and to cooperate with other stakeholders in ensuring seismic safety. Specialists particularly scientists, engineers, architects and planners need to be closely involved in various earthquake management initiatives at all levels.

In addition to the above framework, the causation of secondary hazards places severe additional burdens on the Government Departments and the administration. Serious thought needs to be given to the management of landslides and floods that could be triggered by a severe earthquake in the region. The severity of these secondary hazards could depend on the time of the year when a major earthquake occurs. If it is during the peak flood season when the Brahmaputra is in spate, the secondary hazards could be extremely devastating than if it happens to occur during the dry season.

Individuals and Government functionaries have an important role to play in observing and reporting changes in the environment that are closely linked with varied precursors of earthquakes. Timely reporting, collating and analyzing observations and changes can enable the communities and the Government to take timely decisions in reducing loss of lives and property.

### 8.3 Roles & Responsibilities of different agencies/line departments

#### The Roles

8.3.1 Deputy Commissioner/DDMA	
Pre Earthquake	<ol style="list-style-type: none"> <li>1. DDMA shall prepare District Disaster Management Plan including Response Plan for Earthquakes and update it every year.</li> <li>2. The DC on behalf of DDMA shall undertake all preparedness and mitigation measures as laid down in the NDMA guidelines on Earthquake Management</li> <li>3. DC/DDMA shall involve different agencies to undertake vulnerability assessment and conduct safety audit of schools, hospitals and other life line public buildings</li> <li>4. Based on the assessment shall direct the concerned agency to undertake adequate retrofitting measures to ensure safety of the vulnerable buildings.</li> <li>5. If necessary the provisions of National Disaster Management Act 2005 may be invoked to ensure safety of the unsafe premises by barring entry of people into these places and issuing order to evacuate occupants from the vulnerable buildings.</li> <li>6. Awareness programmes on earthquake safety measures should be taken up by DDMA on a large scale.</li> <li>7. Capacity building programmes for Masons, Junior Engineers and Engineers on Earthquake Resistant Construction Practices, Doctors/ Paramedics/Nurses on Mass Casualty Management to be organized for increasing the capacity of the stakeholders so that the risk is reduced.</li> <li>8. Earthquake drills will be conducted regularly by DDMA for testing the preparedness to respond</li> </ol>
During Earthquake	<ol style="list-style-type: none"> <li>1. Activate the District level Incident Response Team and the District Emergency Operation Centre (DEOC).</li> <li>2. Direct responses to the emergency as per the Response Plan</li> <li>3. Mobilize SDRF and if necessary requisition NDRF and the Army to conduct Search &amp; Rescue operations if required.</li> <li>4. Direct activation of all Hospitals Emergency Management Plan</li> <li>5. Send incident briefing to State HQ/SEOC regularly</li> <li>6. Open relief camps and shelter places as required</li> <li>7. Provide GR to the affected population</li> </ol>
Post-Earthquake	<ol style="list-style-type: none"> <li>1. Conduct damage assessments through the Circle Officers/ Committee constituted for the purpose and submit details of the damage to Government.</li> </ol>

	<ol style="list-style-type: none"> <li>2. Undertake rehabilitation work for the affected population</li> <li>3. Submit proposal for recovery and reconstruction to the Government under SDRF.</li> </ol>
<b>8.3.2 PWD(Building)/PWD( Roads)</b>	
Pre Earthquake	<ol style="list-style-type: none"> <li>1. Identify core teams for technical/engineering support/decision making in disaster situations</li> <li>2. Develop manuals and guidelines for safe construction practices</li> <li>3. Conduct training of staff in latest advancements of engineering, demolition techniques, health monitoring of infrastructure assets, seismic strengthening and retrofitting of buildings, critical infrastructure protection, DM</li> <li>4. Maintain inventory lists of all key equipment and tools in the state that can be mobilised for response and recovery efforts</li> <li>5. Integrate risk reduction as a component in design and construction practice of the department</li> <li>6. Identify weak lifeline buildings/roads and bridges and develop strategy for strengthening/retrofitting so as to minimize damage/disruption</li> <li>7. Undertake vulnerability assessment of buildings/roads and bridges and determine mitigation options</li> <li>8. Undertake checks to ensure infrastructure/roads and bridges remain in operational condition, should disaster occur</li> <li>9. Preposition emergency supplies and equipment/tools in high risk concentration areas</li> <li>10. Undertake prevention/protection/structural rehabilitation measures retrofitting measures of lifeline buildings/ roads and bridges</li> <li>11. Ensure that all design and construction in the department are in compliance with the Indian Construction Codes of Practice (BIS) and the National Building Code</li> <li>12. Work towards Performance Based Seismic Designs</li> <li>13. Preposition baily bridge and road clearance equipment in vulnerable places.</li> <li>14. PWD (R) to identify roads that may be blocked by secondary disaster like landslides to ensure that communication not disrupted.</li> </ol>
During Earthquake	<ol style="list-style-type: none"> <li>1. PWD (B) to provide assistance to DDMA in opening shelter places.</li> <li>2. PWD (R) to restore road communication.</li> <li>3. Mobilize resources for debris clearance operation.</li> <li>4. Direct department engineering cadre for emergency response operations</li> <li>5. Coordinate temporary repairs to buildings and related infrastructure</li> </ol>

	<ol style="list-style-type: none"> <li>6. Undertake damage assessment of buildings/roads and bridges and related infrastructure</li> <li>7. Undertake emergency repair and shoring of buildings/roads and bridges</li> <li>8. Undertake construction of temporary structures and supporting structures to provide basic services to the affected population</li> <li>9. Ensure controlled demolition and shoring up of buildings which have turned hazardous due to severe damage/tilting/settlement and the like</li> </ol>
Post Earthquake	<ol style="list-style-type: none"> <li>1. Participate in conduct of structural damage assessments</li> <li>2. Guide urban authorities and line agencies on structural repair works and package development of repair/reconstruction scheme for housing and related social infrastructure</li> <li>3. Undertake detailed damage assessment of buildings/roads and bridges</li> <li>4. Advise reconstruction/recovery of buildings and community infrastructure</li> <li>5. Coordinate, monitor progress and prepare report- repair, reconstruction and strengthening/retrofitting of buildings</li> <li>6. Prepare estimates and undertake repair/strengthening works</li> <li>7. Provide technical guidance/guidelines for construction of new buildings</li> <li>8. Supervise the civil work activities and ensure safe construction practices are streamlined during Recovery/Reconstruction phase</li> </ol>
<b>8.3.3 Health Engineering</b>	
Pre Earthquake	<ol style="list-style-type: none"> <li>1. Undertake conditional assessment of existing infrastructures</li> <li>2. Undertake risk assessment of the department facilities and cite recommendations</li> <li>3. Protect/strengthen the supply network with alternative/complementary source</li> <li>4. Undertake protection measures for the distribution of infrastructure (pumps, motors)</li> <li>5. Identify in advance emergency groundwater resources resistant to natural and man-made disasters that could replace damaged public and domestic drinking water supplies</li> <li>6. Train department engineers in DM</li> <li>7. Plan the movement of staff to disaster affected areas and delegate responsibilities</li> <li>8. Ensure restoration plans for damaged facilities</li> <li>9. Maintain emergency stock of supplies (pre-contract agreement with suppliers can be an add-on)</li> </ol>

During Earthquake	<ol style="list-style-type: none"> <li>1. Provide immediate safe drinking water supply in disaster affected areas</li> <li>2. Provide immediate safe drinking water supply for conduct of response activities at hospitals, emergency shelters, schools designated as shelters and relief camps.</li> </ol>
Post Earthquake	<ol style="list-style-type: none"> <li>1. Help in the conduction of damage assessments</li> <li>2. Help in the management of shelter places and relief camps</li> <li>3. Submit proposals for recovery and reconstruction to the Government</li> <li>4. Undertake swift actions to restore damages lines</li> </ol>

### **8.3.4 Health Department**

Pre Earthquake	<ol style="list-style-type: none"> <li>1. Prepare medical response plan and ensure preparation of Hospital Contingency Plans</li> <li>2. Retrofit or secure structural safety of Operation Theatre/Blood Bank/ICU</li> <li>3. Conduct Hospital Mock drills</li> <li>4. Undertake hospital safety assessment and identify shortcomings/gaps to be addressed</li> <li>5. Ensure emergency supply stock cater to peak demand</li> <li>6. Establish base for field hospitals along with basis/support services</li> <li>7. Impart skills and training to medical practitioners to function in disaster situations/post-disaster situations</li> <li>8. Work towards developing a cadre of volunteers trained in basic first-aid</li> <li>9. Impart skills and training for private medical practitioners/private sector hospitals/private pharmacy to function during disaster/post-disaster situation</li> <li>10. Conduct training of doctors, nurses and paramedics in trauma management and emergency response.</li> </ol>
During Earthquake	<ol style="list-style-type: none"> <li>1. Activate medical response plan and Hospital Contingency Plans</li> <li>2. Designate triage area in field as well at the hospital premises for prioritizing patient management</li> <li>3. Activate Mobile Medical Response team</li> <li>4. Set up field hospital if required</li> <li>5. Provide basic medical assistance to the injured and who are in need of first-aid (pre-hospital care)</li> <li>6. Provide medical assistance to the relief camp inmates</li> </ol>
Post Earthquake	<ol style="list-style-type: none"> <li>1. Activate health surveillance systems to track down epidemic outbreak</li> </ol>

	<ol style="list-style-type: none"> <li>2. Conduct health camps</li> <li>3. Provide support in recovery operations</li> <li>4. Carry out impact assessment on health infrastructure</li> <li>5. Provide support to line departments in recovery and rehabilitation efforts of communities</li> <li>6. Provide support of experts for counselling of disaster victims, psychosocial support</li> </ol>
<b>8.3.5 Urban Local Bodies</b>	
Pre Earthquake	<ol style="list-style-type: none"> <li>1. Support activities to undertake risk assessment of the city</li> <li>2. Incorporate/integrate DM concerns or hazard resistant constructions into process of: Land Use plan, Building byelaws, General development control regulations, City Development Plan, Master Plan</li> <li>3. Facilitate developing a robust response plan in urban areas</li> <li>4. Ensure enforcement of building byelaws and other regulation</li> </ol>
During Earthquake	<ol style="list-style-type: none"> <li>1. Undertake rapid assessment of damage areas</li> <li>2. Ensure housing back people to homes that are determined safe</li> <li>3. Work with line agency for removal of debris</li> <li>4. Mobilize efforts for undertaking heavy urban search and rescue, medical care/mass casualty care</li> <li>5. Make provisions for sheltering the needy and minimize failure of basic services</li> </ol>
Post Earthquake	<ol style="list-style-type: none"> <li>1. Help in the conduct of damage assessments</li> <li>2. Help in the management of shelter places and relief camps</li> <li>3. Submit proposal for recovery and reconstruction to the Government</li> <li>4. Restore basic services</li> <li>5. Ensure provisions for temporary housing and implementation of R&amp;R package for urban areas</li> </ol>
<b>8.3.6 Home Department</b>	
Pre Earthquake	<ol style="list-style-type: none"> <li>1. Establish State Disaster Response Force and conduct regular of training activities</li> <li>2. Conduct scenario exercises/table-top exercises/full scale exercises to determine the state of preparedness of key response institutions and provide feedback for improvement</li> <li>3. Ensure operational readiness of the key units functional (Police, Fire &amp; Emergency Services) within the Home Department</li> <li>4. Develop fail safe emergency communication plan and initiate measures to reach out to distant communities situated in high altitude or inaccessible areas</li> </ol>

	<ul style="list-style-type: none"> <li>5. Prepare a response plan</li> <li>6. Prepare a Traffic Management Plan</li> <li>7. Undertake vulnerability assessment of all facilities and initiate mitigation actions</li> </ul>
During Earthquake	<ul style="list-style-type: none"> <li>1. Dispatch response teams to the affected areas</li> <li>2. Provide resource support to conduct Search &amp; Rescue Operations</li> <li>3. Maintain law and order at all times</li> <li>4. Initiate further actions based on SITREP prepared by the State Disaster Information Centre</li> <li>5. Relay information through emergency communication lines</li> <li>6. Provide support to Fire &amp; Emergency Services to undertake swift actions</li> </ul>
Post Earthquake	<ul style="list-style-type: none"> <li>1. Provide security cover/arrangements for VIP visits</li> <li>2. Assist the administration in supply and distribution and in maintaining law and order in the State</li> <li>3. Ensure smooth functioning of recovery and rehabilitation efforts</li> <li>4. Assist in management of the dead</li> </ul>

#### 8.4 RESPONSE PLAN FOR EARTHQUAKES

The Response to Earthquakes where the level of disaster is L2 or L3 will require the response mechanism to be in line with the Incident Response System which is detailed in Chapter VI section 6.2. As per the IRS guideline, the Incident Response team will be activated and the Response Plan for the first 72 hours is given below.

##### **(FIRST 72 HOURS )**

Sl. No.	TASK	RESPONSIBILITY
<b>Time Frame: 0-24 Hours</b>		
1	<p>Report the occurrence of earthquake with details regarding magnitude, epicentre and related details from agencies like IMD, NEIST and other sources.</p> <p>If large scale damages are likely to occur, SEOC to inform all concerned officers of IRT.</p>	SEOC
2	<p>If it is a L2/L3 disaster, the State level Incident Response team (IRT) shall be activated immediately without any formal notice and the team to assemble at the ASDMA Office which</p>	State level IRT/District level IRT

	will function as the SEOC. Simultaneously in the districts the District level IRT will be activated and shall meet at the Conference Room of the DC's office which will now function as the DEOC.	
3	IRT to be activated by a responsible officer. Scale of activation of IRT shall be decided by the RO/IC in SEOC.	Responsible Officer
4	All nodal officers of the line departments will man the desks both at the SEOC and DEOC levels with their departmental response plans and resource inventories	All line departments
5	Information from the affected sites shall be collected for briefing the IRT and chalking out strategy for response	Incident Commander/ Planning Section Chief
6	In case of communication link failures, alternate communication linkages with the districts shall be established through satellite phones, HF/VHF sets, HAM Radios and VSATs.	Communication unit, ASDMA and Police communication
7	Activate Operations Section of IRS for Emergency Response Operation	Incident Commander and Operation Section Chief
8	Responding agencies shall mobilize their resources for responding to the event. They are to send their resources to the Staging Area which will be activated by the Staging Manager. Record of entry of the resources and their deployment shall be maintained.	All Responding Departments and Staging Area Manager
9	Mobilize SAR Teams and search & rescue equipment and machinery to affected areas	Operations Section Chief both at State and District level in consultation with Director F&ES (State) and Senior Station Fire Officer ( District), NDRF (if stationed nearby)
10	Mobilize Medical First Response Teams to	State: Director, Health &

	affected areas	Family Welfare, Superintendent Medical College District: Superintendent Medical College/ Civil Hospitals/Joint Director Health Services
11	Set up field hospitals near the affected areas and arrange to shift injured persons to field Hospitals	Director, Health & family Welfare (State)/ Superintendent Medical College or Civil Hospitals/Joint Director Health Services (District)
12	Health Institutions (Government and Private Hospitals) to be activated for receiving patients.	Director, Health & family Welfare (State)/ Superintendent Medical College or Civil Hospitals/Joint Director Health Services (District)
13	Make suitable transportation arrangements for the mobilization of quick response teams to the affected areas	Transport Branch under Operation Section
14	Provide security in the affected areas and maintain the law and order situation	Police
15	Request for the services of NDRF and Armed forces, if required through designated representative	Incident Commander
16	Assess the conditions of road, rail and air communication link for quick mobilization of Emergency Teams and resources to affected areas and take follow up actions	Planning Section Chief
17	Information and Publicity to establish media management / information cell for public information, guidance and rumour control	Information Officer
18	Mobilize relief materials i.e., tents, food materials, water, essential medicines, blankets and other	All concerned departments

	itemsto the affected districts and Revenue Circles	
19	Arrange to shift evacuated persons to temporary shelters and ensure provision of food, water facilities, blankets and storage of relief materials	Revenue Circle Officer
20	Arrange road, rail and air transport at State / District headquarters for dispatch of relief materials to the affected areas	Transport branch under Operations Section
21	Establish relief coordination centres at the airport, railway station and other important placesfor the arrival of Search & Rescue and Medical Teams coming for humanitarian aid	Logistics Section
<b>Time Frame: 0-48 Hours</b>		
22	Arrange information centre at shelter site for maintaining records of victims and to provide guidance to relatives, NGOs and others	Information Officer
23	Arrange for complaints regarding missing persons and initiate search in shelters, hospitals and police records	Team under Information Officer
24	Arrange for quick assessments of safe buildings for residents to enter	Assessment teams from PWD (B)/Engineering Colleges and others
25	Arrange for receiving humanitarian aid teams	Logistics Section
26	Arrange for disposal of dead bodies	Municipalities
<b>Time Frame: 0-72 Hours</b>		
27	Arrange for disposal of unidentified and unclaimed dead bodies	Police/Magistrates/ Municipalities
28	Activate short and interim relief measures	Relief Branch

# CHAPTER IX

## LANDSLIDE MANAGEMENT

Landslides are sudden, short-lived geomorphic events that involve a rapid-to-slow descent of soil or rock in sloping terrains. It can also be caused by excessive precipitation or human activities, such as deforestation or development that disturb the natural slope stability. Landslides are caused when the stability of a slope changes from a stable to an unstable condition. A change in the stability of a slope can be caused by a number of factors, acting together or alone.

The hilly tracts of the northeastern region of India are highly susceptible to slope instability due to the immature and rugged topography, fragile rock conditions, high seismicity resulting from proximity to the plate margins, and high rainfall. Extensive anthropogenic interference as part of developmental activities is another significant factor that increases this hazard manifold.

Assam's vulnerability to landslides is seen in the threat of landslides to housing and infrastructure, farms and fields, vast stretches of border roads and railway lines, hydro-electric and water supply installations, transmission line projects, and may also cut off vital communications affecting essential supplies and causing acute economic distress.

The frequent obstructions caused to the movement of traffic by numerous landslides during the rainy season, sometimes for days together bring untold misery to the people inhabiting the villages and townships in the landslide-prone hilly regions.

### 1.3 Landslide Management

The State Government emphasizes the importance of preventive, mitigation and preparedness aspects to stabilize or mitigate the risks posed by landslide hazards.

The most important role in this process is played by the local Government machinery. Once information is received about the probability of landslide occurrence within its jurisdiction, it initiates steps to warn the communities living in the area about the risks involved and tries to convince landowners/dwellers to shift to safer places. Moreover, further development is avoided in such high risk zones.

Restoration of road communication in such situations require pre identification of alternative roads and prepositioning of bailey bridges and other debris clearance machineries by PWD(Roads) in closest possible locations by PWD(Roads)/DDMA

### 1.4 Landslide Remediation Practices

A comprehensive risk management strategy requires systematic approach in planning and implementation. It includes two main categories, i.e., pre-disaster prevention strategies and

post-disaster management. Pre-disaster strategies include assessment of the hazard, risk analysis through the documentation of existing events, hazard zonation mapping and the application of modern techniques that can help in preventing the activation of dangerous processes. Comprehensive hazard zonation aims at preventing settlements and infrastructural elements from being located in the vulnerable areas and also prescribing, to some extent, the appropriate treatment measures required at vulnerable locations.

In Assam, most landslides occur during the monsoon barring a few, which are caused by earthquakes. Pore-water pressure plays a major role in initiating landslide events. There are also instances where toe erosion by rivers or nullahs and scouring of the hill slopes due to high velocity discharge of streams descending from the crown of the landslide gives rise to debris flows/landslides. Hence, surface and sub-surface water management on the slopes or in the catchments is the most effective remediation measure for controlling many landslides. Management of surface runoff and sub-surface water is done through the construction of drainage networks. Sub-surface drainage management is hardly practiced in our country for the stabilization of landslides. This aspect of prevention calls for immediate attention and agencies like the BRO, Public Works Department (PWDs) and others engaged in slope stabilization activities need to be equipped with modern technologies for the construction of sub-surface drainage networks.

### **1.5 Early Warning signs for Landslides**

An early warning system includes awareness generation and the involvement of local communities as a vital component of an early warning system. If properly trained and adequately motivated, local communities can observe changes in key indicators, which act as early warning signs. The following are some key observable indicators that can provide premonitions of an impending slope failure:

- (a) Rainfall monitoring
- (b) Surface and sub-surface slope movements
- (c) Slope subsidence
- (d) Slope heave, development and widening of cracks
- (e) Tilting of trees and poles
- (f) Sudden oozing out of water or drying of water springs
- (g) Sub slope piping, under slope erosion
- (h) Sudden boulder falls
- (i) Cracking of building floors
- (j) Any other such events often providing irrefutable evidence of unsatisfactory slope behavior

Randomly picked isolated observations of this kind do not convey much but when all such evidence is collected, analyzed, and connected with other inputs, early warning alerts become possible.

<b>9.4.1 Deputy Commissioner/DDMA</b>	
Pre Landslide	<ol style="list-style-type: none"> <li>1 DDMA shall undertake the task for identifying landslide prone areas through concerned department/technical agencies</li> <li>2 Undertake appropriate preventive and mitigation measures to minimise risk.</li> <li>3 Make the concerned community aware of the impending risk and sensitize them on landslide safety measures.</li> <li>4 Constitute and train local teams for sensitization, capacity building, response and coordination with authorities</li> <li>5 DDMP shall be updated each year with recent/up-to-date resource inventories.</li> <li>6 If necessary Deputy Commissioner as Chairperson DDMA shall invoke the provisions of the National Disaster Management Act 2005 to avert probable disasters</li> <li>7 DDMA shall monitor the development activities in the hills and enforce due laws to ensure safe development</li> <li>8 DDMA shall restrict settlement in the forest areas and hills through the Forest Department officials</li> <li>9 DC/DDMA shall take measures in coordination with PWD to remove dangerous stones from hilly slopes with population</li> </ol>
During Landslide	<ol style="list-style-type: none"> <li>1. DC/DDMA shall undertake response measures as per IRS principles</li> <li>2. Mobilize SDRF and if necessary requisition NDRF and Army to conduct Search &amp; Rescue operations in the event of any landslide if required.</li> <li>3. Send incident briefing to State HQ/SEOC</li> <li>4. Open relief camps and shelter places if required</li> <li>5. Provide GR to the affected population if required</li> </ol>
Post Landslide	<ol style="list-style-type: none"> <li>1. Conduct damage assessments through the Circle Officer/ Committee constituted for the purpose &amp; submit details of the damage to Government.</li> <li>2. Undertake rehabilitation work for the affected population</li> <li>3. Submit proposal for recovery &amp; reconstruction to the Government</li> </ol>

<b>Sl. No.</b>	<b>TASK</b>	<b>RESPONSIBILITY</b>
1.	Report of the Incidence: Report the occurrence of Landslide to CS, Addl. CS (R&DM), CEO – ASDMA and Heads of all line departments.	DDMA/ DEOC/SEOC
2	Collect details and establish communication link, if required	Communication Unit ASDMA/Police Communication
3	Search & Rescue Operation/Evacuation: Removal of trapped and injured persons from buildings/ debris at the landslide site. Evacuation of the People affected from the damaged structures.	NDRF/SDRF/ Home Guard & Civil Defence
4	Emergency Medical Services& Public Health: Mass casualty management, emergency trauma life support & pre-hospital care	Comm. & Secy (Health & FW)/Jt. Director Health & FW
5	Provide Transport facility: Provide Transport facility to emergency responders and support coordinating agencies	State transport Dept./ DTO
6	Traffic control: Assure access/control and re-entry of the emergency response operation people	SP Traffic/ DSP Traffic
7	Debris Clearance: Identification, removal and disposal of debris, rubble and other material for proper performance of emergency response	SDRF/Municipal Board and Council
8	Restoration of essential services: Water Supply, Electricity	Comm. & Secy., PHE/ Secy (Power)/ hairman ASEB
9	Set up Relief Camps, if necessary	Concerned Revenue Circle Officer
10	Ensure proper distribution of Relief	Concerned Revenue Circle Officer
11	Damage assessment: Conduct ground survey to determine scope of the damage, casualties and the status of the key facilities	Concerned Revenue Circle Officer
12	Resource mobilization (volunteer support)	Director Sainik Welfare/ DYC- NYK/Civil Defence
13	Reporting: Preparation of the Situation Report of the incidence for appraisal of Chief Secy. /Addl. Chief Secy (Rev. & DM Dept.)/CEO, ASDMA	DDMA

# CHAPTER X

## STORMS AND CYCLONES

Assam is situated in the north eastern direction of Bangladesh (60% of the area) which is highly prone to cyclone/winds. Due to the location aspect, districts like Dhubri, Gaolpara, Hailakandi, Cachar and Karbi Anglong are more prone to cyclone/winds. Districts namely Kokrajhar, Bongaigaon, Kamrup, Barpeta, Nalbari, Darrang, Sonitpur, Nagaon, Marigaon, Lakhimpur, Dhemaji, Sibsagar, Jorhat, Golaghat, Dibrugarh, Tinsukia and Karbi Anglong are likely to experience wind speed of 50 m/s whereas districts like Hailakandi, Karimganj and Cachar has wind speed of more than 55m/s and are more vulnerable to cyclonic storms. Occasional cyclones do occur in western Assam and their severity is more during monsoon. According to BMTPC cyclone zonation, north-west districts of Assam lying in zone of high damage where wind speed can reach up-to 47 m/s. District very close to Bangladesh are in very high damage zone due to close proximity of Bay of Bengal (which is a cyclone basin). In this zone wind speed can reach up-to 55 m/s, can resultant into large scale damage.

The IMD Cyclone e-Atlas track records for the period 1968-2008 shows two cyclone events passing through the State. According to the Lutheran World Federation/Department for World Service India Program (ACT/LWS India) 2003, a short but devastating storm with torrential rains did occur in areas of Dhubri, Dhemaji, and Sonitpur districts of Assam on the 22nd of April 2003, Mancachar Sub Division of Dhubri district situated in the western corner of Assam were affected by this event. Almost 48 people were killed and 1,500 persons were injured in this event. There was also a record of similar event on 23rd December, 2010. During this event, Karbi Anglong, Cachar and Hailakandi were affected by severe winds.

### 10.1 Roles & Responsibilities of various agencies/line departments:

10.1.1 Deputy Commissioner/DDMA	
Pre Storm (before 1 <sup>st</sup> March of every year)	<ol style="list-style-type: none"><li>1. DDMA will conduct adequate awareness programmes on storm safety measures.</li><li>2. Before the storm season, instruct ASEB/Forest to trim the branches and remove dead trees/ branches</li><li>3. Liase with the Power Department to check the condition of the transmission lines/poles</li><li>4. DDMA shall check the safe operational procedures followed by the boats plying through IWT/Private ferries</li><li>5. Randomly check of all vessels during lean season for compliance of safety norms</li><li>6. DDMA shall coordinate with IWT and ensure that the QRTs are equipped and trained</li></ol>

During Storm	<ol style="list-style-type: none"> <li>1. On receipt of warning of impending storm, DDMA shall disseminate the warnings to all concerned</li> <li>2. Activate the DEOC for undertaking response operations</li> <li>3. Impose restrictions on the movement of boats if required</li> <li>4. Mobilize SDRF and if necessary requisition NDRF and Army to conduct Search &amp; Rescue operation in the event of any accident</li> <li>5. Instruct PWD (Roads), Forest and Electricity department for road clearances, debris clearance- falling trees and restoration of power respectively</li> <li>6. Send incident briefing to State HQ/SEOC regularly</li> <li>7. Open relief camps and shelter places if required</li> <li>8. Provide GR to the affected population if required</li> </ol>
Post storm	<ol style="list-style-type: none"> <li>1. Conduct damage assessments through the Circle Officers/ Committee constituted for the purpose and submit details of the damages to the Government.</li> <li>2. Undertake rehabilitation work for the affected population</li> <li>3. Submit RG proposal for recovery and reconstruction to the Government</li> </ol>
<b>10.1.2 IWT</b>	
Pre Storm	<ol style="list-style-type: none"> <li>1. Designate Ghat Managers.</li> <li>2. Establish control room in linkage with the Ghat Managers</li> <li>3. Disseminate daily weather report received from IMD to the Ghat Managers</li> <li>4. Check the safety of the boats and availability of life buoy and life jackets in the boats</li> <li>5. Equip and train QRTs</li> </ol>
During Storm	<ol style="list-style-type: none"> <li>1. Restrict movement of the boats, if required</li> <li>2. Keep Rescue vessels and QRTs in readiness to respond and send immediately in case of boat capsizing</li> <li>3. Coordinate with DDMA for response activities</li> </ol>
Post Storm	<ol style="list-style-type: none"> <li>1. Review events for taking necessary corrective measures</li> </ol>
<b>10.1.3 Fire &amp; Emergency Services /SDRF</b>	
Pre storm	<ol style="list-style-type: none"> <li>1. Prepare response plan and update resources inventories</li> <li>2. Prepare logistic plan for the responders</li> <li>3. Coordinate with DDMA for any storm warnings</li> </ol>
During Storm	<ol style="list-style-type: none"> <li>1. Mobilize and deploy team with deep divers for operation in case of boat capsizing</li> <li>2. Set up own communication networks</li> <li>3. Carry out rescue operation for trapped victims, if required.</li> </ol>

## CHAPTER XI

### **Manmade Disasters**

In addition to natural disasters, the State is susceptible to various man-made disasters. Economic development has brought along the problem of air, water and sound pollution and the challenges are going to accentuate only in the absence of effective and innovative innovations, not only in the realm of impact-minimization, but also in the choice of developmental model to be pursued. The state is a no stranger to the negative effects of faulty developmental planning. The flash floods of 2014 in Goalpara district demonstrated the devastating consequences of construction of railway line without proper thought having been given to the natural drainage system. And this is definitely not an isolated case.

The state has a large number of tea gardens that use chemicals as fertilizers and pesticides. The effect of the use of these chemicals on the soil health and water quality in is yet to be analysed in toto. The state also has a striving oil industry and frequent incidents of oil spill are reported from the pipelines. Besides, the areas around the oil wells have adversely impacted large tracts of agricultural land.

Large scale incidence of malaria, Japanese encephalitis, dengue, cholera, gastroenteritis etc., which take a heavy toll of human lives or cause large scale casualties, often assume disastrous proportions. In addition to this, we are faced with the problems of major road accidents, stampede at important places and on auspicious occasions, frequent fire incidents because of short circuit or improper wiring and connections etc. All these issues need to be studied carefully to find effective solutions and remedial measures.

The numerous industrial accidents involving Hazardous Chemicals (HAZCHEM), which have occurred in the recent past, provide important learning lessons. The growth of chemical industries has led to an increase in the risk of occurrence of incidents associated with hazardous chemicals (HAZCHEM). A chemical industry that incorporates the best principles of safety can largely prevent such incidents. Common causes for chemical accidents are deficiencies in safety management systems and human errors, or they may occur as a consequence of natural calamities or sabotage activities. Chemical accidents result in fire, explosion and/or toxic release. The nature of chemical agents and their concentration during exposure ultimately decides the toxicity and damaging effects on living organisms in the form of symptoms and signs like irreversible pain, suffering, and death

Meteorological conditions such as wind speed, wind direction, height of inversion layer, stability class and others also play an important role by affecting the dispersion pattern of toxic gas clouds. Chemical disasters, though low in frequency, have the potential to cause significant immediate or long-term damage.

Various extremist groups have been perpetrating large scale violence and mayhem by killing and kidnapping innocent people as well as planting bomb and explosive devises in crowed places. Kidnapping and killing by extremists have also given rise of more serious and large scale conflict in several instances in different parts of the State.

The State of Assam with its peculiar topography has a unique demographical composition and ethnic clashes amongst communities have been witnessed in recent times. Certain parts of the State witnessed frequent ethnic violence in the last decades and large scale deployment of armed forces and relief and rehabilitation measures were required in such incidents.

As in case of natural disasters, the departments concerned will have to take action to prevent, mitigate and respond to various forms of man-made disasters. It is not possible within the scope of this manual to describe specific steps to be taken in respect of different kinds of disasters. One thing that can be said with certainty is that each of the departments and where more than one department is involved, all of them, will have to develop Standard Operating Protocols to deal with disasters, specifying the role and responsibility of the officials at different levels and resources required.

Secondly, the departments must bear a serious look at the regulatory regime in place to prevent such disasters and ensure the effectiveness of the enforcement mechanism.

Thirdly, awareness-generation among the masses likely to be affected needs to be done in a more efficacious manner to ensure their participation in preventing or mitigating the threat. Departments and agencies concerned should recognize them as an important stake-holder.

Lastly, long-term investment in creating appropriate infrastructure is required and should form part of the departmental DM plans. For instance, road accidents can be reduced substantially by creating awareness, but to have a holistic solution it will require infusion of innovative technology to monitor the traffic on the roads.

পঞ্জীকৃত নম্বৰ - ৭৬৮/৯৭

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# THE ASSAM GAZETTE

অসাধাৰণ

EXTRAORDINARY

প্ৰাপ্ত কৰ্তৃত্বৰ দ্বাৰা প্ৰকাশিত

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GOVERNMENT OF ASSAM

ORDERS BY THE GOVERNOR

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## NOTIFICATION

The 19th August, 2006

No.LGL.75/2002/115. - The following Act published in the India Gazette are hereby republished for general information.

CENTRAL ACT NO. 53 OF 2005

### THE DISASTER MANAGEMENT ACT, 2005

(As passes by the House of Parliament)

AN  
ACT

to provide for the effective management of disasters and for matters connected therewith or incidental thereto.

be it enacted by Parliament in the Fifty-sixth Year of the Republic of India as follows :-

#### CHAPTER I

##### Preliminary

1. (1) This Act may be called the Disaster Management Act, 2005.

(2) It extends to the whole of India.

(3) It shall come into force on such dated as the Central Government may, by notification in the Official gazette appoint; and different dates may be appointed for different provisions of this Act and for different States, and any reference to commencement in any provision of this Act in relation to any State shall be construed as a reference to the commencement of that provision in that State.

Short title,  
extent and  
commence-  
ment.