

FLOODS

Essential Elements of Information – (EEI)

EEI contain Situational Awareness information on People, Systems, and Services Providers that is critical to acquire in the first and perhaps second operational periods. Specific elements stated here may not apply in every event. Additional elements must be generated as the event evolves through Recovery.

Impact of Event or Scenario

Periods of heavy rain can cause flooding. Flooding can result from a slow moving tropical storm or hurricane. (See Hurricane and Tropical Storm EEI and Tornado and Other Severe Weather EEI.)

Flash flooding can occur when the ground becomes saturated with rain that has fallen too quickly to be absorbed. The runoff rapidly flows downhill and collects in low-lying areas. As term implies, flash flooding can occur with of very little warning. Flooding tends to be localized and dissipates relatively quickly, although water can remain for some time in topographic low spots. Flash floods can rapidly inundate roads and cause drowning of vehicle occupants who are suddenly caught in the rapidly moving water or attempt to drive through it.

General flooding occurs because of an accumulation of water over long periods from a series of heavy rain events or a slow moving hurricane or tropical storm. Water tends to build up gradually in streams and rivers until the volume exceeds their normal banks. General flooding can affect very large geographic areas and drain very slowly. People who fail to heed flood warnings may become trapped in their homes and may drown in rising swift waters.

Flooding can occur in Florida from storms passing to the north through Georgia and Alabama that result in swollen rivers that empty into the Gulf. County areas bordering these rivers are prone to flooding.

Flooding can close bridges and roads and isolate communities from their normal access to health and medical facilities.

Flooding of electric utility substations may cause power outages over a prolonged period of time. Down power lines may present an electrocution hazard.

After the water recedes, flooded areas that remain can cause environmental health issues due to inundated drinking water wells and underground sewage treatment systems increasing potential for outbreaks of enteric diseases. Flooded chemical and fuel storage facilities may leak contaminants into flood waters.

Flooding may cause the migration of poisonous snakes, alligators, and dangerous mammals, and fire ants into nearby communities. Areas with prolonged standing water and un-maintained swimming pools can provide breeding areas for mosquitoes and increase the risk for arboviral disease outbreaks. Areas with uncollected garbage, due to flooded roads, can foster intrusion of rats and other opportunistic animals such as raccoons which may be infected with rabies.

People

People include vulnerable populations, the general population, and responders. Vulnerable populations may be classified as static or transitory.

Static populations consist of people who have medically complex conditions, those who are functionally disabled, frail elderly, and children who are two years old or younger. Persons who are functionally disabled may have difficulty evacuating their homes in advance of rising water without assistance. Post storm evacuation of persons in this category who must leave damaged homes can exacerbate medical conditions and cause stress and behavioral health issues.

Transitory populations are those who have chronic medical conditions, seniors in high-rise buildings, and children older than two years old. Power outages that may be associated with flooding of power substation can cause immediate issues for persons who are dependent on electricity for oxygen generation and other medical devices,

Seasonal homes may be located in river basins subject to flooding. Persons living in seasonal home may lack local knowledge about evacuation routes, detours, and alternatives for health and medical services.

Populations in both categories are vulnerable to enteric and arboviral diseases that may spread when recovery operations are prolonged.

Sandbagging efforts to divert flooding may cause injuries to people who are not in good physical condition and have chronic conditions such as heart disease. Strenuous flood control work can cause heat stress injuries in high temperature conditions. Cuts and puncture wounds can become infected with tetanus and other disease agents. Behavioral health issues may also require monitoring and treatment over time.

Depending on the area impacted, there may be seasonal residents or tourists who can be categorized as vulnerable populations that will require post-event assistance.

Systems

Systems include healthcare, medical care, infrastructure, transportation, and communications. Flooding, and power loss will reduce or negate the effectiveness of key systems when they are most needed for flood recovery.

Service Providers

Service providers are those who provide health and medical care and support services. Flooded facilities, power loss, and road closures will reduce or negate the ability of service providers to serve affected populations and the ability of isolated populations or those who must negotiate long detour routes to reach them.

Essential Elements of Information

Water Rising

People Information

- Areas to be evacuated due to anticipated flooding
- Vulnerable population status
- General and Special Needs Shelter locations and opening times
- Confirmed (ESF 16) drowning deaths and other fatality cases
- Injury reports
- Responder health and safety issues
- Current rumors
- Risk communications – swift water hazards, dangerous animal migration, injury prevention, etc.

Systems Information

- Deployment of RERAs
- Status of river levels and additional rainfall predicted
- Anticipated citing and opening of Emergency Support Center (ESC) and Logistics Staging Areas (LSAs)
- Planned Federal ESF 8 assets deployment
- Rising water reports affecting evacuation routes
- Road closure reports
- Agency for Persons with Disability (APD) assessment of sheltering status
- Children's Medical Services (CMS) assessment of sheltering status
- Mental health assessment of sheltering status

Service Providers

- Hospital status (Fully functional) (Partial evacuation/shelter in place) (Evacuated)
- Health care and medical facility status (including dialysis centers, cancer treatment center, and hospice) Fully functional) (Partial evacuation/shelter in place) (Evacuated)
- CHD status (Fully functional) (Partial evacuation/shelter in place) (Evacuated)
- APD assessment of all facilities and clients not being services
- CMS assessment of all patients
- Pharmacy Status – medications and vaccines stock levels
- Dialysis Center assessments
- Non-evacuated health care facilities status

Water Cresting

People Information

- Areas evacuated due to flooding
- Number of residences flooded and people affected
- Vulnerable population status
- General and Special Needs Shelter locations
- Confirmed (ESF 16) drowning deaths and other fatality cases
- Injuries reported
- Responder health and safety issues
- Current rumors
- Risk communications – swift water hazards, dangerous animal migration, injury prevention, etc.
- Community Demographics for ESC locations and configurations

Systems Information

- Status of river levels and additional rainfall predicted
- Monitoring gauges upstream from problematic flood prone facilities
- Forecasted crest levels with dates/times
- Historic flood data and trends
- Long term river forecasts
- Overland water sheeting
- Number of water systems (private) (community) (municipal) in flood zone(s)
- Status of water systems
- Number of inundated on-site sewage treatment and disposal systems (OSTDS).
- Locations and number of OSTDS aerobic systems

- Locations of flooded cemeteries with coffin disinterment
- Hazardous chemical storage locations and releases in to flooded areas
- Fuel storage locations and releases into flooded areas
- Deployment of RERAs
- ESC and LSA locations
- Federal ESF 8 assets deployment
- Road closure and detours
- Impact of road closures on accessibility to health and medical services
- APD assessment of sheltering status
- CMS assessment of sheltering status
- Mental health assessment of sheltering status

Service Providers

- Facility flood plans: evacuation, partial evacuation, shelter in place
- Evacuation transportation profiles/plans/vendors
- Hospital status (Fully functional) (Partial evacuation) (Shelter in place) (Evacuated)
- Hospital bed status
- EMS status
- Health care and medical facility status (including dialysis centers, cancer treatment center, and hospice) Fully functional) (Partial evacuation) (Shelter in place) (Evacuated)
- CHD status Fully functional) (Partial evacuation) (Shelter in place) (Evacuated)
- APD assessment of all facilities and clients
- CMS assessment of all patients
- FEMORS Status
- Pharmacy Status – vaccines for Tetanus, Hepatitis, Rabies
- Dialysis Center assessments
- Non-evacuated health care facilities status
- School closures

Water Falling

People Information

- Status of areas evacuated due to flooding
- Expected time for population re-entry
- Number and condition of damaged residences
- Number person requiring long term displacement and sheltering
- Vulnerable population status
- General and Special Needs Shelter locations
- Confirmed (ESF 16) drowning deaths and other fatality cases

- Injuries reported – trends
- Responder health and safety issues – trends
- Epidemiology surveillance
- Current rumors
- Risk communications – stagnant water hazards, dangerous animal migration, injury prevention, etc.

Systems Information

- Status of river levels
- Number of water systems (private, community, and municipal) in flood zone(s)
- Boil water notices issued
- Number of inundated OSTDS.
- Locations and number of OSTDS aerobic systems
- Locations of flooded cemeteries with coffin disinterment
- Locations of dead livestock, poultry, and other animals
- Hazardous chemical contamination locations
- Fuel contamination locations
- Deployment of RERAs
- Deployment of infrastructure damage assessment teams
- ESC and LSAs locations
- Federal ESF 8 assets deployment
- Road closure and detours
- Impact of road closures on accessibility to health and medical services
- Agency for Persons with Disability (APD) assessment of sheltering status
- Children's Medical Services (CMS) assessment of sheltering status
- Mental health assessment of sheltering status

Service Providers

- Hospital status Fully functional) (Partial evacuation) (Shelter in place) (Evacuated)
- Hospital bed status
- EMS status
- Health care and medical facility status including: dialysis centers, cancer treatment center, and hospice. (Fully functional) (Partial evacuation) (Shelter in place) (Evacuated)
- CHD status Fully functional) (Partial evacuation) (Shelter in place) (Evacuated)
- APD assessment of all facilities and clients
- CMS assessment of all patients
- Community support systems/essential public health and medical services
- FEMORS Status
- Pharmacy Status – vaccines for Tetanus, Hepatitis, Rabies

- Dialysis Center assessments
- Non-evacuated health care facilities status
- School closures

Recovery and Clean up

People Information

- Status of population re-entry
- Number and condition of damaged residences
- Number person requiring long term displacement and sheltering
- Vulnerable population status
- General and Special Needs Shelter locations
- Confirmed (ESF 16) fatality cases
- Injuries reported – trends
- Responder health and safety issues – trends
- Epidemiology surveillance -- trends
- Current rumors
- Risk communications – stagnant water hazards, mosquito control, injury prevention, food safety issues, well chlorination etc.

Systems Information

- Regional Disaster Behavioral Health Assessment Teams deployed – number and location
- Number of water systems (private) (community) and (municipal) in flood zone(s) (Estimated date/time for return to full service)
- Boil water notices issued
- Sampling plans for contaminated wells
- Status of inundated OSTDS and aerobic systems
- Status of flooded cemeteries with coffin disinterment
- Status of dead livestock, poultry and other animals removal and disposition
- Hazardous chemical contamination clean-up status (Estimate date of completion)
- Fuel contamination clean-up status (Estimated date of completion)
- Status of solid waste disposal and vermin control plans
- Deployment of RERAs
- Deployment of Epidemiology Strike Teams (Estimated deployment dates)
- Deployment of Environmental Health Strike Teams (Estimated Deployment dates)
- Infrastructure damage assessment results (Estimate dates of repair)
- ESC and LSAs status (Estimated date to terminate activities)
- Federal ESF 8 assets deployment status

- Road closure and detour status (Estimate date to reopen)
- Impact of road closures on accessibility to health and medical services
- APD assessment of sheltering status (Estimated date to close shelters)
- CMS assessment of sheltering status (Estimated date to close shelters)
- Mental health assessment of sheltering status (Estimated date to close shelters)
- Distribution of larvicide
- Distribution of mosquito repellent
- Mosquito control plan – areas designated for spraying
- Information on coping/stress reduction/psychological first aid

Service Providers

- Hospital status (Estimated date/time for return to full service)
- EMS status
- Health care and medical facility status including: dialysis centers, cancer treatment center, and hospice. (Estimated date/time for return to full service)
- CHD status (Estimated date/time for return to full service)
- APD assessment of all facilities (Estimated date/time for return to full service)
- CMS assessment of all patients
- FEMORS Status
- Pharmacy Status – vaccines for Tetanus, Hepatitis, Rabies
- Dialysis Center assessments (Estimated date/time for return to full service)
- Non-evacuated health care facilities status (Estimated date/time for return to full service)
- School closure status (Estimated date to reopen)