

Individual Action Workbook

Unit 2: Relationship Between Science and our Understanding of Disasters

Applying Your Learning

Activity 2.1

Instructions:

Activity Time: 20 minutes (10-minute work, 10 minutes report out)

1. Review the eight principles presented in the unit.
2. Create a table with all eight principles. (Similar to the one below)
3. For each principle, identify an action (or actions) you can take to implement the principle in your daily tasks.
4. In a group, discuss and select eight actions.
5. Write the eight actions on chart paper.
6. Identify a spokesperson to present the team’s work.
7. Be prepared to present in 10 minutes.

Principle	Examples of Actions
Comprehensiveness	
Progressiveness	
Risk-Driven Management	
Integration	
Collaboration	
Coordination	

Principle	Examples of Actions
Flexibility	
Professionalism	

Checklist: Examples of Emergency Management Tasks

Activity 2.2

Instructions:

Activity Time: 20 minutes. Thinking about your current EM role, review the checklist and check the box for each task that is part of your current job.

Pre-disaster Tasks	
Planning	<ul style="list-style-type: none"> • Developing and updating emergency operations plans • Developing special plans (e.g., mitigation, continuity of operations, other) • Developing standard operating procedures (SOPs) and coordinating SOPs with emergency plans • Ensuring that mutual aid agreements and other incident-related documents are up to date and implemented • Identifying strategies for mitigating risk
Response Readiness	<ul style="list-style-type: none"> • Recruiting volunteers • Conducting training • Identifying resource needs and sources of resources • Coordinating training and exercises with other participating organizations • Verifying that all systems and equipment function as intended • Keeping the Emergency Operations Center (EOC) fully stocked • Monitoring information sources on

Pre-disaster Tasks	
	<p>severe weather and other hazards</p> <ul style="list-style-type: none"> • Validating policies, plans, and procedures through exercises
Administrative Tasks	<ul style="list-style-type: none"> • Attending meetings • Handling personnel matters (interviews, hiring, firing, personnel reviews, making work assignments, etc.) • Preparing/reviewing correspondence • Managing the budget • Writing grant applications o Preparing and presenting briefings • Financial reporting
Logistical Tasks	<ul style="list-style-type: none"> • Ensuring interoperability of communications and information management systems • Gaining authorization for (or approving the purchase of) supplies and equipment • Overseeing installation of new systems and equipment • Ensuring ongoing maintenance of systems and equipment • Arranging training and exercise logistics • Ensuring that transportation and other needs are arranged • Other logistical duties as needed
Relationship Building	<ul style="list-style-type: none"> • Building and maintaining relationships with: <ul style="list-style-type: none"> ○ Other levels of government ○ Response agencies in the jurisdiction ○ Other agencies and departments ○ Other jurisdictions ○ Elected and appointed officials ○ Volunteer organizations ○ Businesses and nonprofits in the

Pre-disaster Tasks	
	community
Public Relations and Outreach	<ul style="list-style-type: none"> • “Selling” the program to all stakeholders, including other EOC staff members • Developing and delivering preparedness information for the public • Attending public meetings and other venues to discuss emergency management related issues • Developing and maintaining an emergency management Web site • Providing information to media representatives

Incident Response Tasks	
Coordination	<ul style="list-style-type: none"> • Acting as a liaison with other jurisdictions and levels of government • Supporting communications/messaging • Helping to resolve conflicting policies • Providing and prioritizing resource allocation • Managing public information issues and media requests
Providing Off-Site Support	<ul style="list-style-type: none"> • Providing legal and financial support • Authorizing emergency expenditures, when appropriate

** Incident documentation records the actions taken (or not taken) by the jurisdiction as a protection against liability arising from the response, including issues brought at a later time by responders. It also serves as a record of expenses for potential use as cost sharing if a disaster declaration is made and can help justify future emergency management budgets and/or expenditures.*

*** The jurisdiction's legal counsel should complete a review of incident records, including financial records, to ensure that all actions and transactions were in accordance with contracts and other agreements and within the authorized boundaries of the individual making each decision.*

**** Repair, refurbishment, and/or return of equipment is important whether the jurisdiction owns the equipment or if it is provided by an outside source. Jurisdictional resources must be taken care of to ensure that they are ready for their day-to-day use or the next emergency. Payment for equipment acquired from outside sources may be much higher if it is returned in a lesser state of repair than when it was provided. Destroyed, worn out, and expendable equipment should be replaced as soon as possible following an incident to ensure that the resources are available when needed next.*

Recovery Tasks	
Rebuilding	<ul style="list-style-type: none"> ● Initiating damage assessments ● Initiating short- and long-term recovery plans ● Mitigation planning
Financial and Legal Tasks	<ul style="list-style-type: none"> ● Paying invoices (bills for everything from equipment leases to plastic sheeting and bottled water must be paid for as agreed) ● Auditing financial records to ensure that expenditures were made where appropriate and that no unauthorized funds were expended ● Providing full incident documentation* ● Having a legal review of the incident records performed by the jurisdiction's legal counsel**
Resource Management	<ul style="list-style-type: none"> ● Coordinating with agencies provide food and shelter ● Coordinating with agencies to restore essential services (power, roads, etc.) ● Providing critical incident stress debriefings before releasing personnel from an incident involving extremely long working hours, high-risk response efforts, or serious injuries or fatalities ● Overseeing repair, refurbishment, and/or return of equipment*** ● Ensuring that destroyed, worn out, and expendable equipment is replaced ● Restocking the Emergency Operations Center

Post incident Tasks	
Lessons Learned	<ul style="list-style-type: none"> • Incident debriefing • Corrective action planning and plan revisions • Coordinating implementation of Federal assistance • Training and exercising to ensure that functions, processes, and procedures work as intended • Implementation of mitigation plans

Continuing Your Learning:

Place a check next to those topics that you would like to continue learning about.

- The origin and history of emergency management in the United States
- Emergency management principles
- Emergency management key concepts and doctrine
- The roles and responsibilities of the emergency manager

Review the following suggested resources.

FEMA Courses:

- IS-1: Emergency Manager: An Orientation to the Position
- IS-33: Initial Ethics Orientation
- IS-230: Fundamentals of Emergency Management
- IS-241: Decision Making and Problem Solving

Web Resources:

[International Association of Emergency Managers:](http://www.iaem.com) (This link can also be accessed at the following URL: <http://www.iaem.com>)

[Information about the Stafford Act:](http://www.fema.gov/robert-t-stafford-disaster-relief-and-emergency-assistance-act-public-law-93-288-amended) (This link can also be accessed at the following URL: <http://www.fema.gov/robert-t-stafford-disaster-relief-and-emergency-assistance-act-public-law-93-288-amended>)

[Principles of Emergency Management Supplement:](http://www.iaem.com/documents/EMPrinciples091107.pdf) (This link can also be accessed at the following URL: <http://www.iaem.com/documents/EMPrinciples091107.pdf>)

[Documents related to Emergency Management Principles:](http://training.fema.gov/EMIWeb/edu/emprinciples.aspx) (This link can also be accessed at the following URL: <http://training.fema.gov/EMIWeb/edu/emprinciples.aspx>)

[Presidential Policy Directive 8, Emergency Preparedness](http://www.dhs.gov/xlibrary/assets/presidential-policy-directive-8-national-preparedness.pdf): (This link can also be accessed at the following URL: <http://www.dhs.gov/xlibrary/assets/presidential-policy-directive-8-national-preparedness.pdf>)

[National Preparedness Goal](http://www.fema.gov/pdf/prepared/npg.pdf): (This link can also be accessed at the following URL: <http://www.fema.gov/pdf/prepared/npg.pdf>)

List the actions you plan to take to continue your learning about emergency management introductory information.

Three Interrelated Weather Scales



Global Scale (Largest patterns)



Synoptic Scale (Affects one or several States)



Mesoscale (Weather systems— e.g., squall lines)

Key Points

One of the complications involved with studying the science of weather is that there are three different scales over which weather develops and interacts. Understanding these scales is a necessary preliminary to understanding climate.

- **Global Scale:** The largest weather features occur on the global scale. At this scale, forecasters are thinking about large patterns of winds, temperature, and pressure.
- **Synoptic Scale:** Weather patterns that affect one or several States are called synoptic scale events. Examples of these events include circulations around high- and low-pressure areas, large snowstorms, large-scale droughts, and hurricanes.
- **Mesoscale:** Weather systems smaller than synoptic-scale systems but larger than storm-scale systems. Horizontal dimensions generally range from around 50 miles to several hundred miles. Examples include squall lines and organized clusters of thunderstorms.

All three scales are interrelated, so a mesoscale event will have its roots in global and synoptic patterns. Likewise, a global or synoptic scale event will have a variety of consequences on the mesoscale.

Unit 3: Severe Storms, Tornadoes, and Hurricanes

Applying Your Learning

Activity 3.2 – In Your Community

Instructions:

Activity Time: 10 minutes

1. Refer back to the Back-to-Back La Niñas case study and answer the questions provided.

Based on your region, what events might you see in your jurisdiction?

As an Emergency manager, what steps would you need to take when dealing with these types of events in your jurisdiction?

Continuing Your Learning

The following resources can help you learn more about storms:

[NOAA El Niño Page](https://www.climate.gov/enso) (https://www.climate.gov/enso): Provides:

- General information
- Forecasts
- Impact data

[NWS Climate Prediction Center](http://www.cpc.ncep.noaa.gov/) (http://www.cpc.ncep.noaa.gov/): Provides access to:

- Current status of El Niño/La Niña
- Educational materials

[National Climatic Data Center \(NCDC\) Map Services](http://gis.ncdc.noaa.gov/maps/) (http://gis.ncdc.noaa.gov/maps): Provides access to maps showing:

- Global precipitation
- Global climate data
- **Error! Hyperlink reference not valid.** (https://www.epa.gov/climate-indicators): Provides information on ingredients of climate change and projected impacts.

[National Oceanic and Atmospheric Administration \(NOAA\) National Weather Service \(NWS\)](http://nws.noaa.gov/) (http://nws.noaa.gov/), which has a vast array of information on storms and other weather hazards, including:

- Outlooks, watches, and warnings.
- Forecasts.
- Severe weather monitoring.
- Climate monitoring.
- Hazard maps.
- Radar.
- Educational and outreach programs.

Among the NOAA offerings are:

[Storm Prediction Center](http://www.spc.noaa.gov/) (http://www.spc.noaa.gov/)

[National Weather Service Chat](https://nwschat.weather.gov/) (https://nwschat.weather.gov/)

- **Error! Hyperlink reference not valid.** (https://www.nssl.noaa.gov/education/svrwx101/)

[NWS Mobile Decision Support Services](http://www.nws.noaa.gov/com/weatherreadynation/news/140805_idss.html)

(http://www.nws.noaa.gov/com/weatherreadynation/news/140805_idss.html) —Experimental service providing new mobile and desktop innovations of the National Weather Service, intended for NWS core partners, including emergency managers, community leaders and other government agencies.

- **Error! Hyperlink reference not valid.** (https://oceanservice.noaa.gov/news/historical-hurricanes/) —Allows you to see the tracks of hurricanes in the United States based on location, date, and category.

[National Weather Service Live Chat](https://nwschat.weather.gov/) (https://nwschat.weather.gov/) —A new, enhanced communication from the NWS that allows for communication with local meteorologists.

Local Meteorologists: Remember that your local meteorologists are an important source of weather-related information.

- **Error! Hyperlink reference not valid.** (https://www.weather.gov/safety/winter-noreaster): Describes nor'easters and the perils of coastal living.

[NOAA Winter Weather Information](http://www.cpc.ncep.noaa.gov) (<http://www.cpc.ncep.noaa.gov>): Provides general winter weather information, including snow/freezing rain probabilities, snow maps, hydrologic maps, forecasts, and outlooks.

It is important to think of these events as they impact all of the mission areas. Following are two examples of the Mitigation mission area after Hurricane Sandy.

Article 1: Hurricane Sandy in 2012 heightened the urgency of long-term coastal planning. Large-scale, long-term projects such as levees and seawalls have been the standard approach to coastal protection but the Coastal Resilience Team, a collaboration of scientists and engineers, puts forth a different view, one of coping with occasional flooding rather than fighting it saying, "We will never be able to prevent such hazards. We can only be prepared to reduce their impact." Planning goals include:

- Encourage a reconsideration of the absolute flood zone boundaries on maps produced by the Federal Emergency Management Agency (FEMA), which determine building code requirements and insurance rates. Climate science shows that the geographical borders of flood risk should be based on the probabilities and outcomes of different storm events, not the placements of artificial levees that may be overtopped by high storm surges. Many of the homes and businesses ravaged by Hurricane Sandy were not located in flood hazard zones on FEMA's maps.
- Smarter building codes are also needed because current building code books primarily address earthquake risks, with a very few chapters for wind and even less for flooding.
- Incorporating resilient designs, which call for supporting, revitalizing and in some cases reengineering natural features such as wetlands and beach dunes. This so-called "soft infrastructure" can reduce the impact of waves, improve water quality and create new recreational spaces for coastal residents and visitors. Rather than the exclusive construction of barriers, the project's plans include layered systems of natural and engineered structures that will respond in different ways to different hazards. It is a more nuanced and more resilient approach.
- Flexible design is also an important component, with the sizes and arrangements of structures will be adaptable as predictive models improve.

[Read more about Hurricane Sandy](https://phys.org/news/2015-01-hurricane-sandy-climate-scientists-architects.html) at: (This link can also be accessed at the following URL: <https://phys.org/news/2015-01-hurricane-sandy-climate-scientists-architects.html>)

Article 2: Another project was "Rebuild By Design", which recognized that the mitigation strategies posed after most hurricanes, including Katrina, were just "thought experiments" that never had the support to be implemented. This project, backed by the U.S. Department of Housing and Urban Development (HUD) gave the project the opportunity to be built. One of the concepts was to use "blue-green infrastructure" in place of the old-fashioned grey kind is to recreate a naturally-oriented water cycle that contributes to the amenity of the city by bringing together water and environmental management. This is achieved by combining and protecting

the hydrological and ecological values of the urban landscape while providing resilient and adaptive measures to deal with flood and drought events. In this spirit, publicly accessible green spaces were created that will deliver social, economic and environmental benefits even when the defenses are not keeping out storm surges, which is of course most of the time.

The project's other great advantage is that it's adaptable. Not only will it provide protection now, it also allows for a planned retreat from the coastline should that be necessary in future. This could be the case if, for example, melting of the West Antarctic Ice Sheet drives a larger than expected rise in sea level: unlikely, but not impossible.

[Read more about after Sandy](#) (This link can also be accessed at the following URL: <http://theconversation.com/after-sandy-new-york-plans-to-rebuild-by-blue-green-design-28066>)

Unit 4: Other Hazardous Weather

Activity 4.1 – Long-Term Power Outage

Instructions:

Activity Time: 10 minutes

1. Answer the questions provided.

What are the hazards in for a long-term power outage?

Who is affected?

How can we effectively influence the community to take action?

Unit 4: Other Hazardous Weather

Continuing Your Learning

You can learn more about the weather events covered in this unit from the following sources:

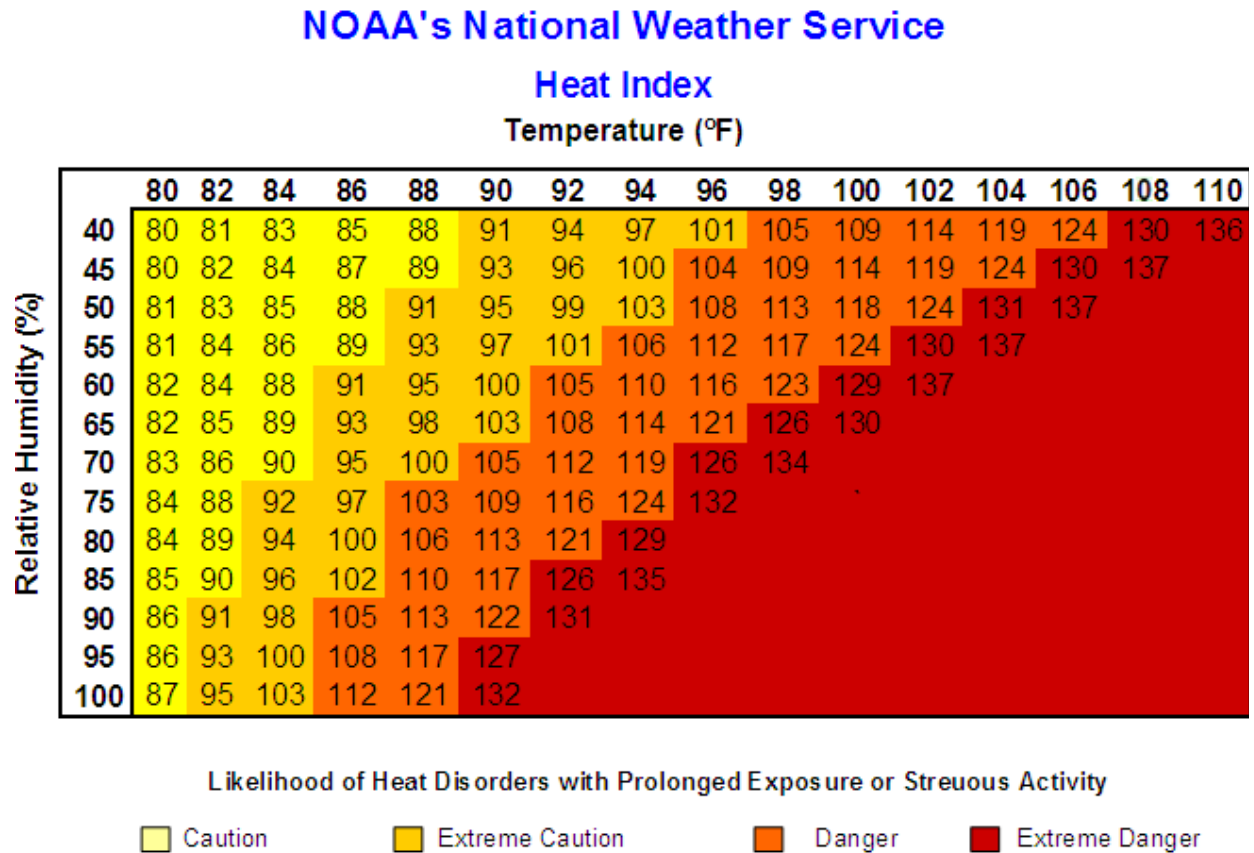
[National Weather Service](http://www.weather.gov/) (<http://www.weather.gov/>): Provides access to all types of weather-related information available from NWS.

[NOAA Heat Information](http://www.nws.noaa.gov/om/heat/index.shtml) (http://www.nws.noaa.gov/om/heat/index.shtml): Provides information on heat hazards, heat index, forecasts, outlooks, etc. A copy has been provided below.

[National Integrated Drought Information System \(NIDIS\)](http://www.drought.gov/) (http://www.drought.gov/): Provides access to products, tools (interactive maps, graphing capabilities), and information available from NIDIS.

- **Local Meteorologists:** Can provide predictive information for the local area.

NWS Heat Index



Unit 5: Floods

Applying Your Learning

Activity 5.1 – Floods That Could Affect My Area

Instructions:

Activity Time: 10 minutes

Identify the types of floods that could occur in your area or jurisdiction.

Floods that Might Occur in My Area

Flood Type	Occurs in my Area? (If so, where?) Yes	Occurs in my Area? (If so, where?) No	Occurs in my Area? (If so, where?) Unsure
Riverine Overbank Flooding			
Riverine Flash Flooding			
Coastal Flooding			
Tsunami			
Shallow Flooding: Sheet Flow			
Shallow Flooding: Ponding			
Shallow Flooding: Urban Drainage			
Specialized Areas: Closed Basins			
Specialized Areas: Uncertain Flow Paths			
Specialized Areas: Dam/Levee Breaks			
Specialized Areas: Ice Jams			
Specialized Areas: Mudflows			

Unit 5: Activity 5.2 - Using a Risk Map

Activity 5.2 - Using a Risk Map

Instructions: Working individually:

1. Go online and find your community's flood map. Some possible locations to find your mapping might be under the Planning & Zoning section, mapping, or GIS. If you cannot quickly (less than 3 minutes) find your community's flood map, please complete the exercise using the Clark County, Nevada flood map provided below.
2. If you used your community's website, write down the URL for your future reference. Otherwise, skip to Question #4.

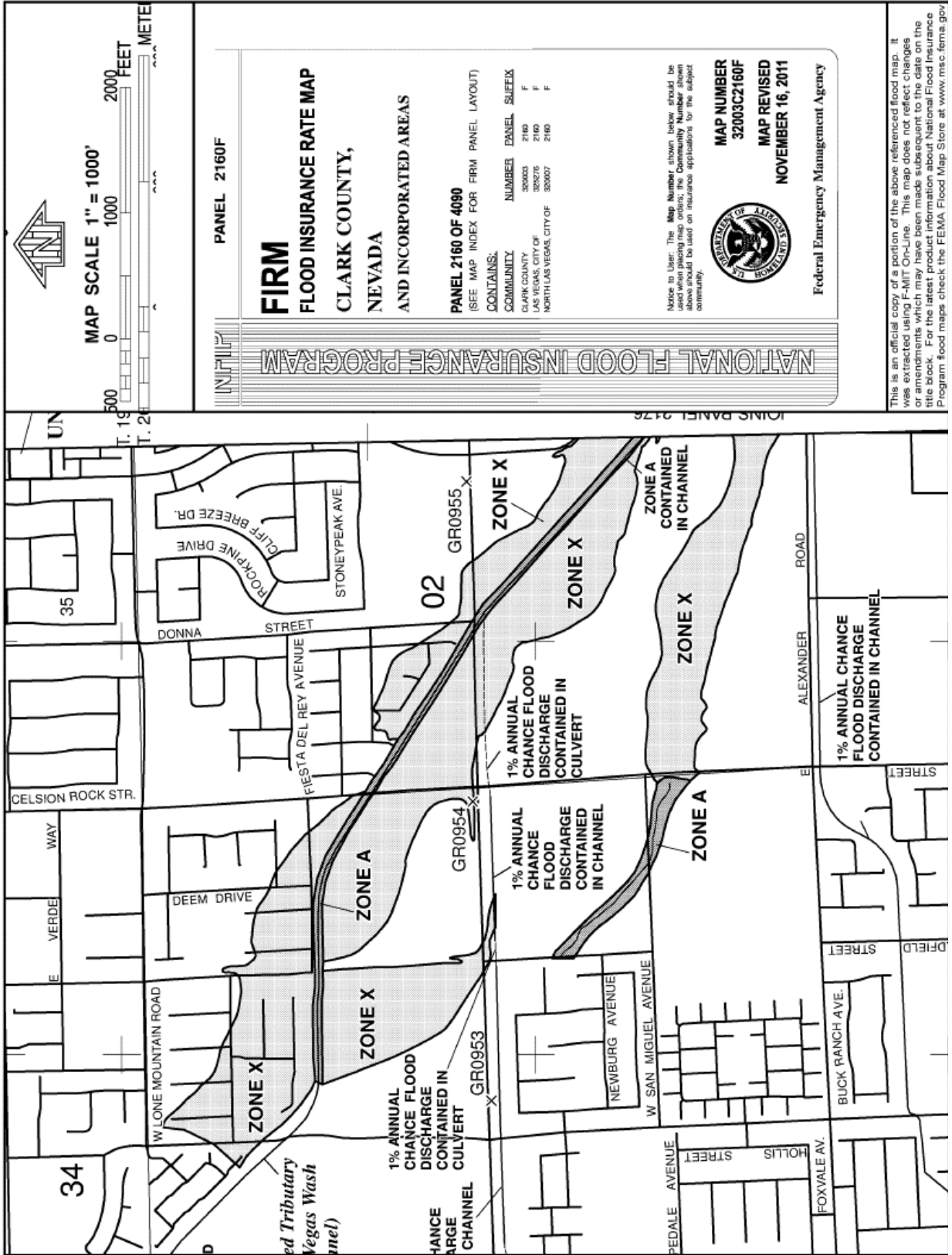
3. What department hosts this data on the website?

4. When was the map last updated?

5. Identify:
 - The types of flood zones found on your map.

 - The corresponding description of each zone.

Clark County, Nevada Flood Map



Unit 5: Floods

Continuing Your Learning

The following resources can help you learn more about floods:

[FEMA's National Flood Insurance Program](http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping) (<http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping>): Flood Hazard Mapping: Through its Flood Hazard Mapping Program, FEMA identifies flood hazards, assesses flood risks, and partners with States and communities to provide accurate flood hazard and risk data to guide them to mitigation actions. This site provides links to flood mapping resources.

[FEMA's flood management courses](http://training.fema.gov/EMI/) (<http://training.fema.gov/EMI/>), including:

- IS0322: Flood Mitigation Basics for Mitigation Staff
- E0273: Managing Floodplain Development Through the National Flood Insurance Program (NFIP)
- G0194: Local Floodplain Manager Roles and Responsibilities
- [FEMA 480: Floodplain Management Requirements: A Study Guide and Desk Reference for Local Officials](https://www.fema.gov/media-library-data/1481032638839-48ec3cc10cf62a791ab44ecc0d49006e/FEMA_480_Complete_reduced_v7.pdf). (https://www.fema.gov/media-library-data/1481032638839-48ec3cc10cf62a791ab44ecc0d49006e/FEMA_480_Complete_reduced_v7.pdf) Available as hard copy or CD-ROM.

U.S. Geological Survey:

[Flood Resources](http://water.usgs.gov/floods/) (<http://water.usgs.gov/floods/>): This Web site brings together information about current and past flooding and USGS flood-focused resources, including information about the Nation's rivers and streams that is crucial in mitigating hazards associated with floods.

[Science Topics: Floods](http://water.usgs.gov/floods/) (<http://water.usgs.gov/floods/>): Provides access to a wide range of flood resources that can be sorted by State.

Unit 6: Earthquakes and Tsunamis

Continuing Your Learning

The following resources can help you learn more about earthquakes: and tsunamis.

[FEMA Earthquake](https://www.fema.gov/earthquake-hazard-maps/) (<https://www.fema.gov/earthquake-hazard-maps/>):

- Educational materials
- Mitigation best practices

[FEMA's National Earthquake Hazards Reduction Program \(NEHRP\)](http://www.nehrp.gov) (<http://www.nehrp.gov>)

- [USGS Seismicity of the Earth](https://www.usgs.gov/media/images/seismicity-earth-maps). (<https://www.usgs.gov/media/images/seismicity-earth-maps>):
 - Seismicity maps
 - Real-time earthquake map
 - "Top 10" lists and map

[USGS ShakeMaps](https://earthquake.usgs.gov/data/shakemap/). (https://earthquake.usgs.gov/data/shakemap/)

[USGS Hazards Index](https://www.usgs.gov/natural-hazards/earthquake-hazards/hazards) (https://www.usgs.gov/natural-hazards/earthquake-hazards/hazards) — Tools for creating custom earthquake maps

[NOAA's Tsunami Web Page](http://www.tsunami.noaa.gov/) (http://www.tsunami.noaa.gov/): Includes information on tsunami basics, the big picture, warning, preparedness, hazard assessment, education, and animations.

[USGS Tsunamis & Earthquakes](http://walrus.wr.usgs.gov/tsunami/) (http://walrus.wr.usgs.gov/tsunami/): Provides basic tsunami information, news, research, historical information, and animations.

- [Pacific Tsunami Warning Center](https://www.tsunami.gov/). (https://www.tsunami.gov/): Provides tsunami warnings, watches, and advisories for the Pacific Ocean, Hawaii, Indian Ocean, and Caribbean Sea.

[Ready.gov/tsunamis](http://www.ready.gov/tsunamis) (http://www.ready.gov/tsunamis): Provides preparedness information related to tsunamis.

[National Geographic](http://environment.nationalgeographic.com/environment/natural-disasters/tsunami-profile/) (http://environment.nationalgeographic.com/environment/natural-disasters/tsunami-profile/): Provides access to articles, photos, and videos on tsunamis.

Unit 7: Landslides and Sinkholes

Applying Your Learning

Complete your Individual Action Workbook for Intergovernmental and Interagency Context of Emergency Management

Activity 7.2

Instructions: Activity Time: 10 minutes

1. Answer the questions in your IAW

What are the landslide/sinkhole risks in your community?

Who are your partners to mitigate these risks/issues?

Unit 7: Landslides and Sinkholes

Continuing Your Learning

The following USGS resources can help you learn more about landslides and sinkholes:

[Landslide Hazards Program](http://landslides.usgs.gov/) (<http://landslides.usgs.gov/>): Describes the LHP program and provides links to various resources.

[Landslide Types and Processes](http://pubs.usgs.gov/fs/2004/3072/fs-2004-3072.html) (<http://pubs.usgs.gov/fs/2004/3072/fs-2004-3072.html>): Provides access to a downloadable publication on landslide types and processes.

[Science Topics: Landslides](https://www2.usgs.gov/science/science.php?term=639) (<https://www2.usgs.gov/science/science.php?term=639>): Provides links to landslide event reports, research, FAQs, learning activities, and more.

[USGS Water Science School: Sinkholes](https://www.usgs.gov/special-topic/water-science-school/science/sinkholes). (<https://www.usgs.gov/special-topic/water-science-school/science/sinkholes>): Has information on sinkholes and related topics.

Unit 8: Volcanoes

Continuing Your Learning

The following resources can help you learn more about volcanoes:

[USGS Volcano Hazards Program](http://volcanoes.usgs.gov/) (<http://volcanoes.usgs.gov/>)

- Educational materials (FAQ, etc.)
- Image library
- Current activity alerts

[Ready.gov: Volcanoes](http://www.ready.gov/volcanoes) (<http://www.ready.gov/volcanoes>)

[RSOE — Emergency and Disaster Information Service](http://hisz.rsoe.hu/alertmap/index2.php) (<http://hisz.rsoe.hu/alertmap/index2.php>) provides a variety of RSS, email, Google Earth, and Common Alerting Protocol (CAP) Services, including earthquake and other disaster alerts.

[Pacific Disaster Center](https://www.pdc.org/partners/) (<https://www.pdc.org/partners/>) has free applications and tools including Disaster Alert, Global Hazards Atlas, and Weather Wall.

Unit 15: Emerging Issues in Science and Technology Affecting Emergency Management

Applying Your Learning

Activity 15.1 – Assessing Your Vulnerabilities

Activity Time: 5 Minutes

1. Answer the questions provided:

Go to <https://haveibeenpwned.com/> and put in one or more of your work or personal e-mail address. What did you find?

Google yourself. Is there anything available about you online that ties you to your organization? Is there anything that reveals your personal information?

Unit 15: Course Wrap-up

Applying Your Learning

Complete your Individual Action Workbook for Stress Management

Activity 15.2 – Course Wrap-Up

Activity Time: 10 Minutes

1. Answer the questions provided:

How can you apply what you learned in this course on the job?

How will you continue learning about the science of disaster?

Unit 15: Course Wrap-up

Applying Your Learning

Complete your Individual Action Workbook for Stress Management

Activity 15.2 – Course Wrap-Up

Activity Time: 10 Minutes

1. Answer the questions provided:

How can you apply what you learned in this course on the job?

How will you continue learning about the science of disaster?