

## Replacement of Telecommunications Tower at Robertson Building EA Everglades National Park – Addressing Climate Change and Natural Hazards

**STOP 1 Natural Hazard Checklist:** The first stop is a screening tool to be used at the earliest stages of project planning to determine the most likely natural hazards a project may confront. The Natural Hazard Checklist will give you some general information to help you identify the full range of risks for your park.

**STOP 2 Background Data:** After identifying general natural hazards that may pose a risk to facilities in STOP 1, you will be prompted to gather data and make judgments that are independent of the specific hazard identified, and will provide a foundation for STOP 3.

**STOP 3 Specific Hazard Considerations:** With the general natural hazards identified in STOP 1 and background data in STOP 2 you are prepared to move forward and address the risks posed by specific hazards in this STOP. This will typically involve further data gathering and analysis. This guidance provides sources for such data and questions you should address as you make facility planning and design decisions. In many cases this STOP should also include the involvement of professionals with expertise in the specific hazard and risk assessment. (Note: This handbook only includes a STOP 3 for coastal storm surge with sea level rise. Additional STOP 3's will be developed in future iterations of the handbook. The checklist (STOP 1) and STOP 2 can still be used to identify other natural hazards that may affect your project. Those would require additional site specific information and evaluation.)

The NPS goal is that park managers have the information and context necessary to ensure that park decision-making appropriately addresses the effects of climate change and other natural hazards. This guidance must be followed when undertaking a planning effort, a major capital investment, facility rehabilitation or a recovery effort. This Handbook is intended only to improve the internal management of the NPS, and is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States, its departments, agencies, instrumentalities or entities, its officers or employees, or any other person.

### **STOP 1. Natural Hazard Checklist**

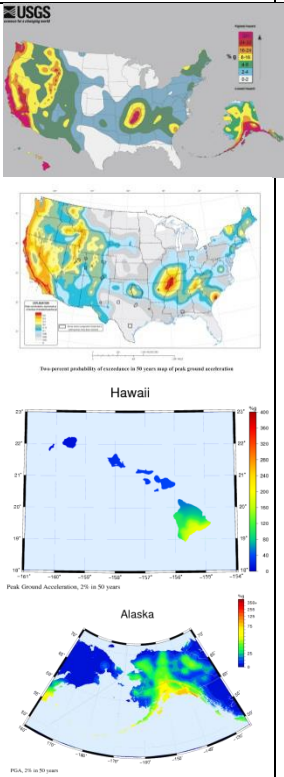
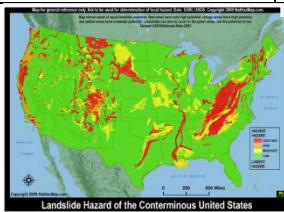
The checklist below is a screening tool to be used at the earliest stages of facility planning to determine the most likely natural hazards a project may confront. This general information may help project teams assess which natural hazards may be applicable for a particular project early in the facility planning and design process. As the effort continues site specific information may be required to make a determination for any of the hazards.

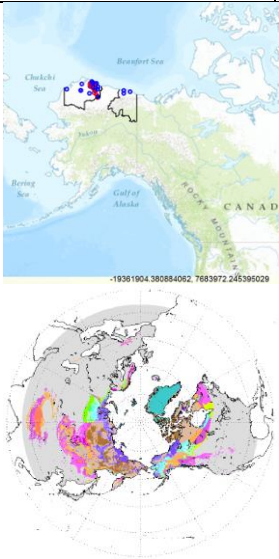
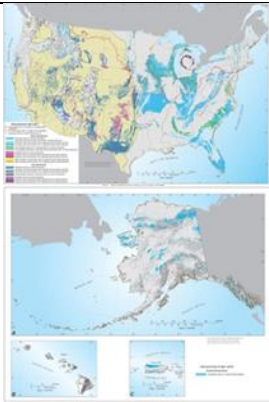

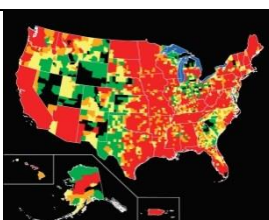
The checklist should be completed with input from appropriate Park personnel and specialists. If considerable questions remain about the applicability of specific hazard, contact the appropriate Region or WASO specialist.


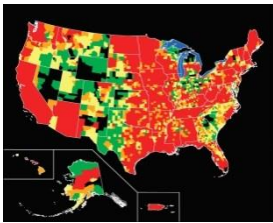
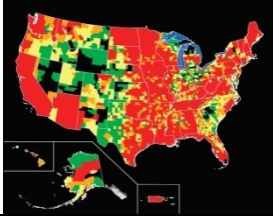

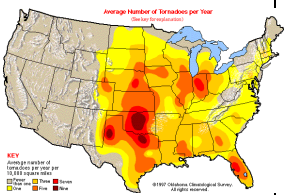
For each of the natural hazards listed below, the person(s) completing the checklist should indicate whether the hazard:


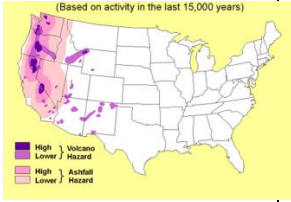
- 1) Is applicable and could pose a risk to the project and/or needs more information for a determination.
- 2) Is not applicable to the project for the following reason(s)
  - a) Hazard does not occur due to geologic setting (e.g., no volcanoes or permafrost are present in Florida).
  - b) A previous hazard assessment concluded this hazard was not applicable at this location.

The project's checklist can be updated at various project milestones as more information is developed. By the time a team completes the schematic design phase the natural hazards applicable to the project should be identified and the checklist should no longer reflect uncertainty associated with any of the hazards listed. To achieve this level of understanding natural hazard assessment(s) may be needed for the project site. Future versions of this handbook may address additional hazards.

Natural Hazard Checklist				
Potential Natural Hazard	Risk or secondary hazard	Sources of General Non-site specific Data	Sources for Site Specific Data	Best Professional Judgment
Earthquake	<ul style="list-style-type: none"> <li>Falling objects.</li> <li>Collapsing structures.</li> <li>Inoperability of major building systems e.g. power, sewer, water.</li> <li>Liquefaction; loss of strength to foundations, silt deposition, standing water.</li> <li>Trigger to other hazards e.g. landslides, debris flows.</li> </ul>	 <p>USGS maps showing seismic hazard across the United States, including the Hawaiian Islands and Alaska. The maps display peak ground acceleration (PGA) for 2% to 50-year return periods.</p>	<ul style="list-style-type: none"> <li>International Building Code</li> <li><a href="#">USGS: 2009 Earthquake Probability Mapping</a></li> <li>State based mapping e.g. <a href="#">WA liquefaction susceptibility and site class maps.</a></li> <li><a href="#">NPS Technical Support</a></li> </ul>	<p>Potential Hazard <input type="checkbox"/></p> <p>Not applicable <input checked="" type="checkbox"/></p>
Landslide/ Avalanche	<ul style="list-style-type: none"> <li>Rockfall.</li> <li>Mud or debris slides or flows onto structures.</li> <li>Mud or debris slides or flows from under structures.</li> <li>Snow avalanche.</li> </ul>	 <p>Map of the conterminous United States showing landslide hazard. The map displays areas of high landslide potential across the country.</p>	<ul style="list-style-type: none"> <li>State geological surveys e.g. <a href="#">CA landslide mapping.</a></li> <li><a href="#">NPS Technical Support</a></li> </ul>	<p>Potential Hazard <input type="checkbox"/></p> <p>Not applicable <input checked="" type="checkbox"/></p>

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Potential Natural Hazard	Risk or secondary hazard	Sources of General Non-site specific Data	Sources for Site Specific Data	Best Professional Judgment
Permafrost	<ul style="list-style-type: none"> <li>• Melting.</li> <li>• Surface collapse.</li> <li>• Increased landslide susceptibility.</li> </ul>		<ul style="list-style-type: none"> <li>• <a href="#">Global Permafrost Zonation Index Map</a></li> <li>• <a href="#">NPS Technical Support</a></li> </ul>	Potential Hazard <input type="checkbox"/>  Not applicable <input checked="" type="checkbox"/>
Cave/Karst (sinkholes)	<ul style="list-style-type: none"> <li>• Surface collapse</li> <li>• Contamination</li> <li>• Abandoned Mineral Lands (AML) features</li> </ul>		<ul style="list-style-type: none"> <li>• State geological hazards maps.</li> <li>• AML features</li> <li>• NPS Technical Support – <a href="#">Cave and Karst</a>; <a href="#">Abandoned Mineral Lands</a></li> </ul>	Potential Hazard <input type="checkbox"/>  Not applicable <input checked="" type="checkbox"/>
Shrink/ Swell soils	<ul style="list-style-type: none"> <li>• Damage to structure</li> <li>• “heaving” of ground beneath structure</li> <li>• Increased landslide susceptibility</li> </ul>		<ul style="list-style-type: none"> <li>• State geological survey site-specific information</li> <li>• <a href="#">NPS Soil Resources Inventory</a></li> <li>• <a href="#">NPS Technical Support</a></li> </ul>	Potential Hazard <input type="checkbox"/>  Not applicable <input checked="" type="checkbox"/>
Coastal Storm Surge	<ul style="list-style-type: none"> <li>• Rising Sea Levels</li> <li>• Rising Water – Wind Driven (i.e. hurricane, nor’easter)</li> </ul>		<ul style="list-style-type: none"> <li>• <a href="#">FEMA Map Service Center</a></li> <li>• <a href="#">NPS Technical Support</a></li> </ul>	Potential Hazard <input type="checkbox"/>  Not applicable <input checked="" type="checkbox"/>

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Potential Natural Hazard	Risk or secondary hazard	Sources of General Non-site specific Data	Sources for Site Specific Data	Best Professional Judgment
Tsunami	<ul style="list-style-type: none"> <li>Coastal area inundation associated with earthquakes or undersea landslides.</li> </ul>		<ul style="list-style-type: none"> <li>State Tsunami Inundation Mapping e.g. <a href="#">OR Tsunami Clearinghouse</a></li> <li>National Tsunami Watch Center</li> <li><a href="#">NPS Technical Support</a></li> </ul>	Potential Hazard <input type="checkbox"/>  Not applicable <input checked="" type="checkbox"/>
Riverine Flood	<ul style="list-style-type: none"> <li>Flooding (i.e. snowmelt, rainfall, etc.)</li> <li>Destruction of infrastructure.</li> <li>Stream channel migration.</li> <li>Stream bank erosion.</li> </ul>		<ul style="list-style-type: none"> <li><a href="#">FEMA Map Service Center</a></li> <li><a href="#">NPS Technical Support</a></li> </ul>	Potential Hazard <input type="checkbox"/>  Not applicable <input checked="" type="checkbox"/>
Flash Flood	<ul style="list-style-type: none"> <li>Sudden rising water (i.e. dry wash)</li> <li>Loss of life due to unexpected flooding.</li> </ul>		<ul style="list-style-type: none"> <li>May require a special flood study</li> <li><a href="#">NPS Technical Support</a></li> </ul>	Potential Hazard <input type="checkbox"/>  Not applicable <input checked="" type="checkbox"/>
Hurricane	<ul style="list-style-type: none"> <li>High wind speed.</li> <li>Flying debris.</li> <li>Storm Surge.</li> </ul>		<ul style="list-style-type: none"> <li>Wind Speed data – from local codes</li> <li>International Building Code</li> <li><a href="#">FEMA Map Service Center</a></li> <li><a href="#">NPS Technical Support</a></li> </ul>	Potential Hazard <input checked="" type="checkbox"/>  Not applicable <input type="checkbox"/>
Tornado	<ul style="list-style-type: none"> <li>Extreme wind speed</li> <li>Flying debris</li> </ul>		<ul style="list-style-type: none"> <li>International Building Code</li> <li>Limited Data for Local Application</li> <li><a href="#">NPS Technical Support</a></li> </ul>	Potential Hazard <input checked="" type="checkbox"/>  Not applicable <input type="checkbox"/>

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Potential Natural Hazard	Risk or secondary hazard	Sources of General Non-site specific Data	Sources for Site Specific Data	Best Professional Judgment
Wildfire	<ul style="list-style-type: none"> <li>• Fire and Heat.</li> <li>• Smoke.</li> </ul>		<ul style="list-style-type: none"> <li>• International Wildland-Urban Interface Code</li> <li>• Limited Data for Local Application</li> <li>• <a href="#">NPS Technical Support</a></li> </ul>	Potential Hazard <input checked="" type="checkbox"/>  Not applicable <input type="checkbox"/>
Volcanic Eruption	<ul style="list-style-type: none"> <li>• <a href="#">Lava Flows</a></li> <li>• Fire</li> <li>• <a href="#">Volcanic Secondary Hazards</a></li> <li>• <a href="#">Toxic gas releases</a></li> </ul>		<ul style="list-style-type: none"> <li>• <a href="#">USGS Volcano Hazards Program</a></li> <li>• <a href="#">NPS Technical Support</a></li> </ul>	Potential Hazard <input type="checkbox"/>  Not applicable <input checked="" type="checkbox"/>
Hydro-thermal Activity (e.g., geysers)	<ul style="list-style-type: none"> <li>• Toxic gas release.</li> <li>• Explosion.</li> <li>• Boiling water</li> <li>• Steam.</li> <li>• Surface collapse into void.</li> </ul>	TBD	<ul style="list-style-type: none"> <li>• <a href="#">Air quality issues and monitoring, including real-time for select locations.</a></li> <li>• <a href="#">NPS Technical support</a></li> </ul>	Potential Hazard <input type="checkbox"/>  Not applicable <input checked="" type="checkbox"/>
Pest Infestation	<ul style="list-style-type: none"> <li>• Historic/ Facility Fabric Loss</li> <li>• Vegetation Loss</li> <li>• Fauna Impacts</li> <li>• Infection</li> <li>• Injury</li> </ul>	TBD	<ul style="list-style-type: none"> <li>• Integrated Pest Management</li> <li>• <a href="#">NPS Technical Support</a></li> </ul>	Potential Hazard <input type="checkbox"/>  Not applicable <input checked="" type="checkbox"/>

## **STOP 2: Background Data**

The condition, mission importance, and significance of assets are already being evaluated and recorded for a large variety of decisions. These data are independent of any natural hazard and are basic attributes that must be known to allow sound decision-making related to park priorities in light of limited resources.

The majority of the background information will be found in your park's General Management Plan (GMP), Park Foundation Documents, Facilities Management Software System (FMSS) database, Park Asset Management Plan (PAMP) or Continuity of Operations Plan. These resources provide the foundation for decisions when planning improvements for the park in an area susceptible to a natural hazard. Upon obtaining this data, you should proceed to the Specific Hazard Considerations, Stop 3 that applies to your park and review the series of considerations outlined to make the best informed decision as early as possible in your planning process.

The list of questions below identifies key aspects of the asset/function being considered regardless of a specific hazard:

- Is the function/asset significant in its own right or under protection of federal law (such as eligibility for listing on the National Register of Historic Places)? **NO**
- Is the function/asset included in the park's enabling legislation or key to the park's legislated significance? **NO**
- Is the function/asset identified as significant in park planning? **NO**
- What is the asset's API (Asset Priority Index)? **This is not an NPS owned asset**
- What priority does this asset have in the Park Asset Management Plan (PAMP) as reflected in its optimizer band? **This is not an NPS owned asset**
- What is the current replacement value (CRV) for the existing, or planned, asset? **This is not an NPS owned asset and the CRV is unknown**
- How important, operationally, is this function? – must it survive intact after all natural hazard events? For example, some functions must be fully operational immediately after an event, such as those necessary to safeguard life/health/safety, while others can be rebuilt/restored over time without significant risk. **The asset is critical in supporting local communications and communications in and around park waters as well as direct communications with Dry Tortugas National Park. The asset must be restored after a natural disaster as quickly as possible.**
- Does this asset include critical infrastructure - i.e., assets and/or systems, without which the park cannot operate or operate safely. Such systems include electric service to building(s) essential to operations (headquarters, command post, etc.), sewage systems serving public or staff restrooms, potable water systems, fire sprinkler systems for buildings essential to operations, etc. Critical infrastructure also includes systems that are essential to the protection of natural or cultural resources. Examples include security systems, fire protection systems, aspects of a Heating, Ventilating and Air Conditioning (HVAC) system that are designed to protect a nationally significant historic building, collections, or irreplaceable records from deterioration, etc. **The asset is critical infrastructure supporting telephone and radio frequency communications for all park and concessions staff, park visitors, boaters, Dry Tortugas National Park and other government agencies.**
- Where is the asset located? (Latitude and longitude, elevation, etc.) **25 23'26.60 N, 80 40'53.82 W; ~ 3-4 feet**
- What are the future costs related to natural hazard risk associated with acquired land with existing assets? **NPS on site communications equipment is valued at \$40,000 to \$50,000.**
- What other planning efforts have been done previously on this asset/zone? **2015 General Management Plan, 2015 Fire Management Plan, 1998 Hole In Donut Restoration Plan.**

## **STOP 3: Specific Hazard Assessment**

There are currently no available assessments for the hazards identified in this project in STOP 1: hurricanes, tornadoes and wildfire. Like all new facilities constructed in the park, this facility will be designed and built to address the natural hazards that occur in this area such as hurricanes. The project will meet current requirements from the Florida Building Code, including Category 4 hurricane winds. The project is located at the site of the park's fire management division, so prompt response will be available as required for any type of fire situation.