Virtual Training:
Implementing NAPSG's Incident Symbology

September 24, 2015

NAPSG Foundation

Instructor Introductions

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NAPSG: Who We Are

- **Our Vision** - A Nation of emergency responders and leaders equipped with the knowledge and skills in applying technology and data to change the outcome for survivors.

- **Our Mission** - To equip emergency management & public safety with the knowledge, skills, and resources to apply decision support technology and data in enhancing preparedness and building a more resilient nation.

Training Purpose

- Provide awareness level training why and how to implement NAPSG's standardized Incident Symbology Guideline and Symbol Set.

Training Objectives

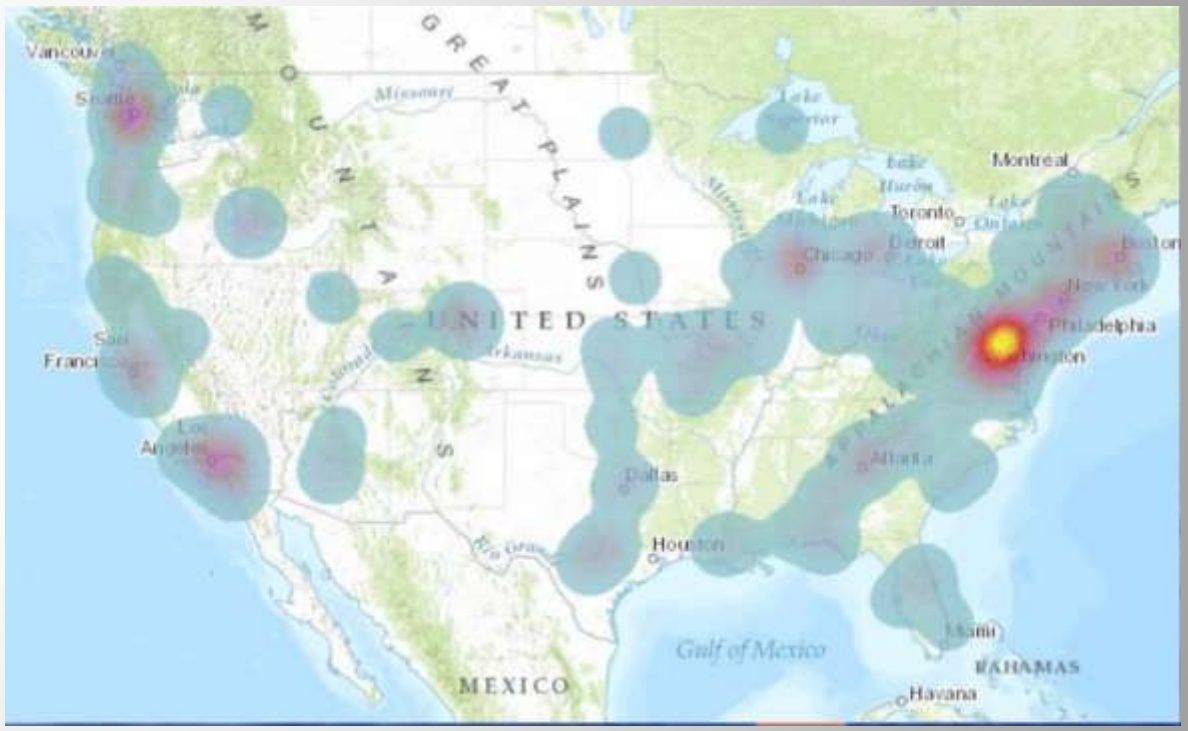
- **Learn what** the Incident Symbology Guideline and Symbol Set is
- **Learn why and how** to implement it in your agency to support a consistent language for communicating incident information
- Learn about **recent additions and enhancements** to the Incident Symbology Guideline and Symbol Set
- Gain access to **valuable implementation tools and guidance**
- **See how** the symbology guideline and symbol set is applied in ArcGIS Desktop, ArcGIS Online, and other mapping tools

Key Terminology

- **Symbology** – the study or interpretation of symbols
- **Web Maps** – a map delivered by geographical information systems (GIS) that is both served and consumed on the World Wide Web
- **GeoPDFs** – Uses a geospatial PDF as a container for maps, imagery, and other data used to deliver an enhanced use experience such as the ability to widely share a map without access to desktop GIS and turn layers on and off to aid decision making

National Engagement

- Over 400 stakeholders participated in a survey to inform incident symbol needs and requirements
- 30 different local, state, and Federal agencies are represented on and participated in NAPSG's Symbology Working Group



What is it?

NAPSG's Incident Symbology Guideline is…

- A flexible and scalable framework for use in developing and applying map symbols

NAPSG's Incident Symbol Sets are…

- Sets of specific symbols that apply the guideline and achieve symbol standardization for emergency response and management functions

History

- Initiated 5 years ago with focus on filling gaps for symbols used in pre-incident planning
  - Not a continuous effort due to resource constraints
- Iterative and grassroots process developed by and for local emergency responders
- Expanded to address harmonization of other incident symbology efforts and formal Standards
  - Hazard Symbols, Incident Symbols, and Pre-Incident Symbols
- Latest version of Incident Symbology Guideline and Symbol Sets will be available at www.napsgfoundation.org in the coming weeks

Why use it?

Consistently communicate incident information on maps

- Gain efficiencies in mutual aid planning and response
- Enhance operational coordination across organizations and jurisdictions

Common Language through Common Symbols

What inputs were used?

Symbol Sets Reviewed
ANSI 415 and the FGDC HSWG Symbol Set
United Nations Office for the Coordination of Humanitarian Affairs Symbol Set
Canadian Emergency Mapping Symbology
Australasian All Hazards Map Symbology
National Wildfire Coordinating Group Symbol Set
Other Public Safety Symbol Offered by Esri
Noun Project
NFPA Standards
DOT Hazardous Materials Placard Standards

What is this?

Wagon

Unit

Aid Car

Truck

Rescue

Transport Unit

Ambulance

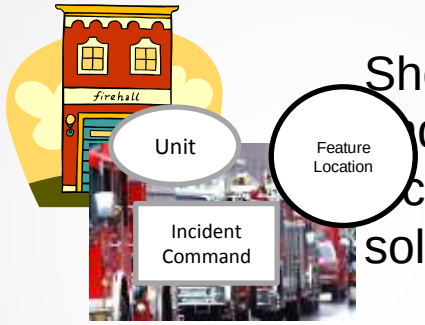
Medic

Squad

Rescue
Ambulance

Emergency Responders Need Maps To:

Find the problem they are going to



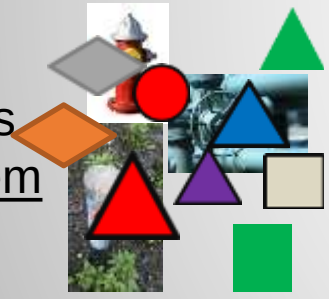
Show where people and equipment are located that help solve the problem

Incident Symbols

Inform the Public

Pre-Incident Identify features to fix the problem

Symbols



Hazards Identify hazards that can cause harm

Incident Symbols

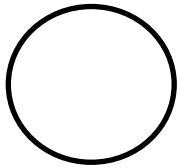
- These symbols have a transparent (no fill) background
- Most commonly used to manage information during an active incident
- Also applicable for pre-scripted mission planning and other preparedness activities

Exposures

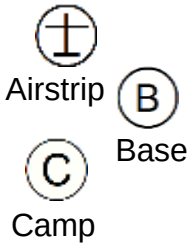
"A", "B", "C", "D"

The side visible in an incident. Define the section of the incident

Incident Resources and Command Features



Features with a semi fixed position that supports the management of the incident.



Unit Symbols

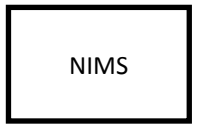
Symbols representing the semi-static to active location of a unit. Based on FEMA Resource Typing. Also based on the location of where the unit is "working"

Infrastructure

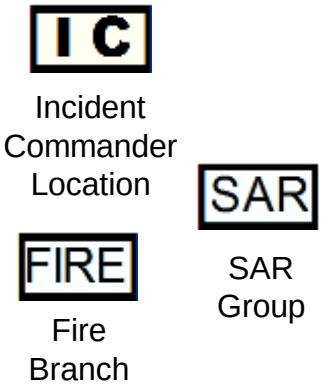
Represents critical fixed features or Critical Infrastructure Protection. Noted by a rectangle with rounded corners

Hospital

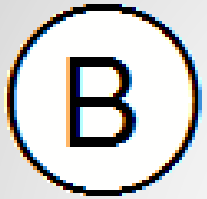
NIMS Command Structure Locations



Location of features that relate to the National Incident Management System Command Structure. Can be used for semi static mapping or if possible, active mapping of supervisors at an incident



Examples



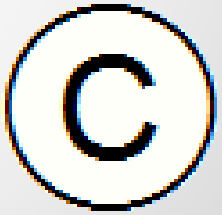
Base

Evacuation Feature

Staging

Fire Hydrant

Civilian Staging



Camp

Symbol Modifiers

Dashed line if feature is “in the future”, “not in use”, or “planned”

- Clear text on the bottom
- Arrow on symbol to note direction

Preplanned Features

- Pre-incident symbols have a color background
- Derived from NFPA Standards

Access Point

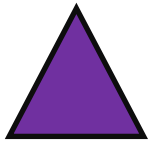
Access point and ways to access a building or incident area

"Iconic" look stairway

Knox or Key Box

Attic Access

Ventilation



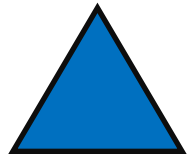
Place to manage the exhaust of gases

HVAC System

Smoke Vent

Vent Opening

Utility Shutoffs



Location of where you shutoff utilities

Compressed Natural Gas Shutoff. "M" indicated "Main" and line through feature indicating product line

Gas Shutoff

Fuel Shutoff

Location of features

Equipment Rooms.

Child Care (Standard icon)

Electrical Room

Fire Pump

Assessment Features

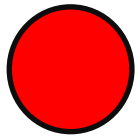
Alarms and other

Control Panel with Burglar Alarm Modifier

Fire Alarm Reset Panel

Public Alert alarm symbol with red triangle with blue circle

Water Flow Control Valves and Water Sources



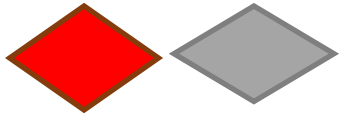
Water flow devices

Post Indicator Valve with NFPA Icon

Fire Department Connection with NFPA Icon

Dry Chemical Reel station with NFPA Icon

Detectors And Building Extinguishment Systems



Dry Chemical

Duct Detector

CO2 System

Hazards

- The most important symbols
- Derived from several hazard features

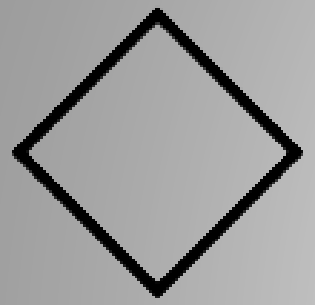
General Hazard

DHS “Incident” Symbology

DOT HazMat Placarding

NFPA 704

Hazards



- DIAMOND is the reserved shape for any emergency hazard
- Symbols are variable other than shape

Natural Hazards

Indicates natural hazards events

Fire

Flood

Earthquake

Access Hazards

Narrow Access

Restricted Weight Access

Features that indicate restricted or limited access of people or vehicles

Human-Caused Threats / Hazards

Indicates events that happens a locations related to man-made features, intentional or accidental.

Radioactive Hazard

Child Abduction

HazMat Hazard

NFPA 704 symbols and DOT HazMat Placarding

Acids Corrosives

NFPA 704

Explosives

Specific Hazard

Ad-Hoc symbols used for indicating a local specific hazard

Fall Hazard

Building Collapse

What is New in 2015?

Natural and Human Caused

Standardized Treatment:

- Diamond shape with black border
- Black icons
- Denotes specific hazards that occurred or that present a risk

Natural Hazards

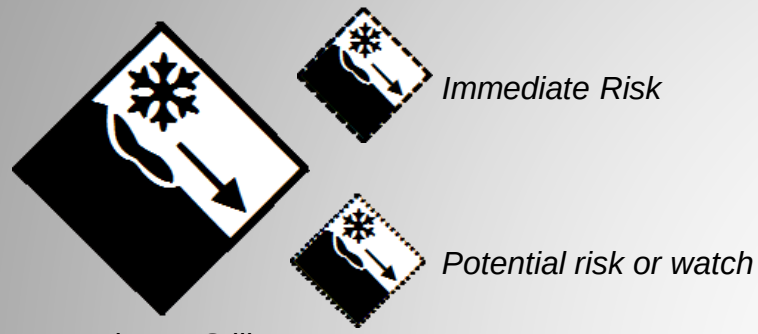
Natural Event that is predicted of happening, is occurring, or is still impacting

Human Caused Threats/Hazards

An event that has some human related interaction that is either accidental or intentional

Natural Hazards

Avalanche



Immediate Risk

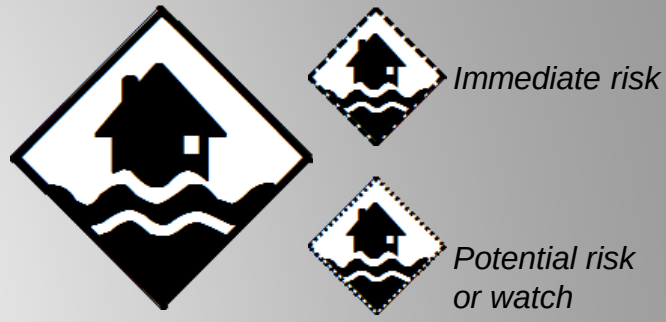
Potential risk or watch

Active or Still Impacting

Earthquake

Active or Still Impacting

Flood

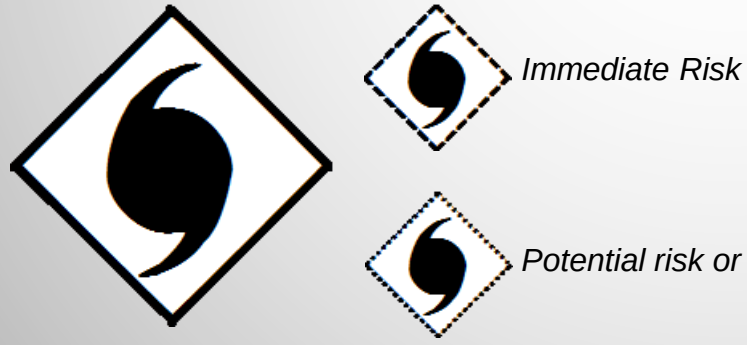


Immediate risk

Potential risk or watch

Active or Still Impacting

Hurricane



Immediate Risk

Potential risk or watch

Active or Still Impacting

Landslide

Immediate Risk

Potential risk or watch

Active or Still Impacting

Natural Hazards (cont.)

Volcano

Active or Still
Impacting

Snow Event (Blizzard)

Tornado

Immediate Risk

Potential risk or watch

Active or Still
Impacting

Wind Storm

Dust

Sand

Active or Still
Impacting

Human Caused Threats / Hazards

Explosion

Structural Collapse

HazMat Release

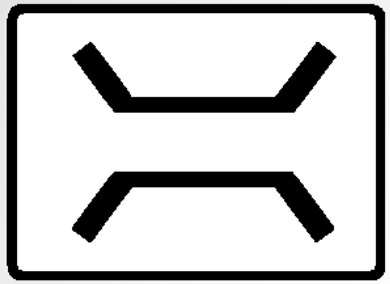
Child Abduction

Radiological

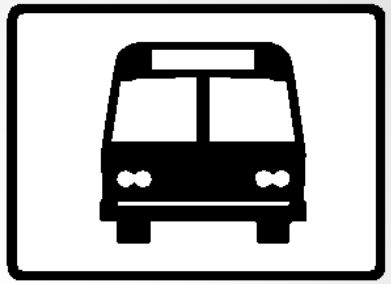
Nuclear Power Plant

Infrastructure

Airport

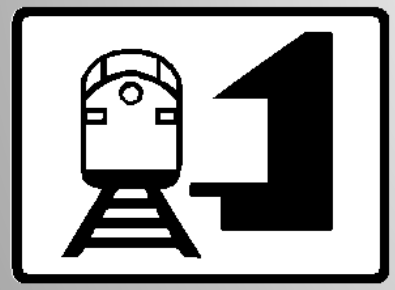


Bridge

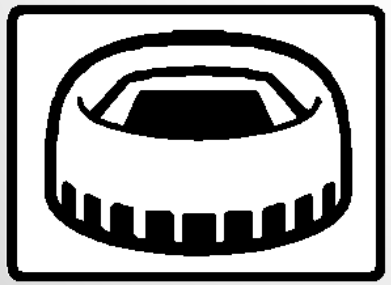


Bus Station

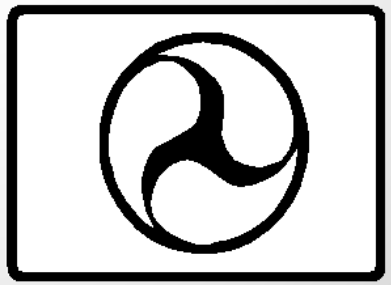
Ferry



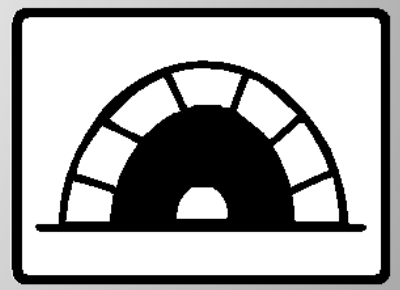
Rail Station



Stadium/
Arena

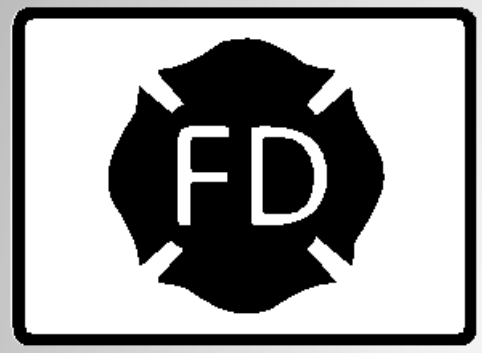


Transportation
Hub

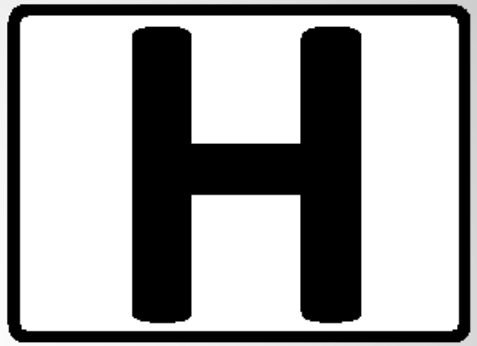


Tunnel

Public Safety Infrastructure



Fire Station



Hospital

Police Station

EMS Station

Public Alerts and Warnings

Avalanche Warning

Blizzard Warning

Child Abduction Emergency

Civil Emergency Message

Dust Storm Warning

Earthquake Warning

Fire Warning

Public Alerts and Warnings (cont.)

Hurricane Warning

Law Enforcement Warning

Nuclear Power Plant Warning

Presidential Emergency Alert Notification

Shelter in Place Warning

Radiological Hazard Warning

Tornado Warning

Flash Flood Warning / Flood Warning

Public Alert Area

- Area Feature showing the impact area
- Feature label with the point symbol for flood

Point Only

How do Alerts and Warnings Relate?

Public Alerts and Warning

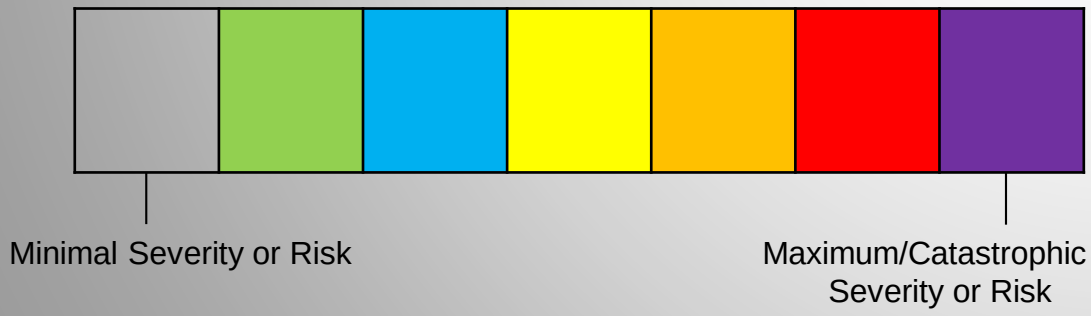
- May or may not have a specific location
- May be used to alert or warn the public
- May be used on public information maps
- May be used on situational awareness maps to track where alerts and warnings were issued.

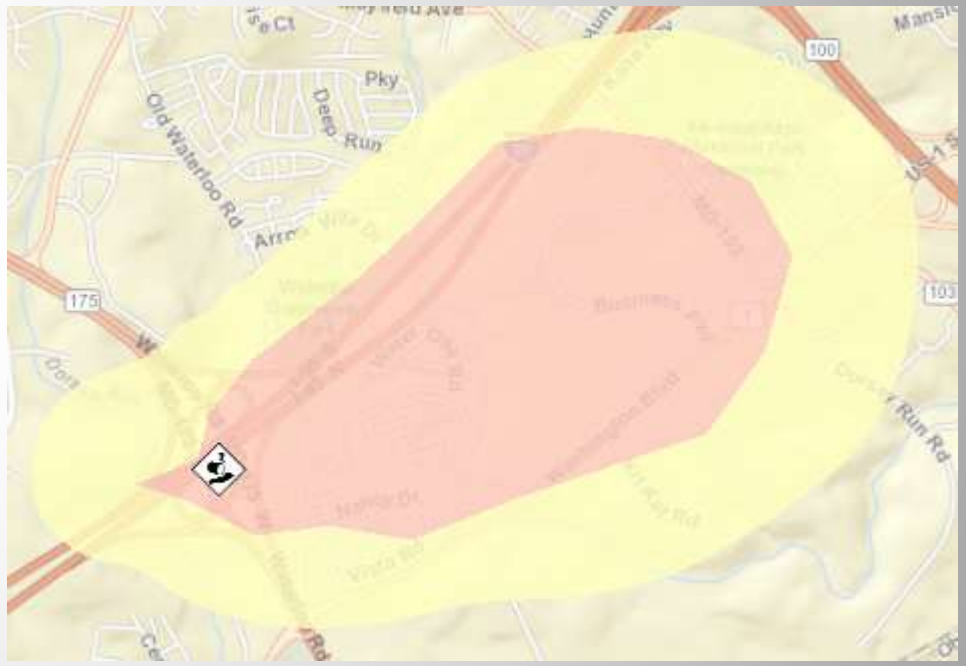
Hazards

- Most often has a specific location
- Depicts a hazard or threat with either near term measurable risk of occurring or recently occurred with the impact skill present
- May be used on a broad spectrum of public safety maps

Modifier: Color Ramp

- Used to indicate:
  - Severity of an event
  - Risk level predicted
- Can apply to both points and polygons
- Apply consistently to hazard-specific standard

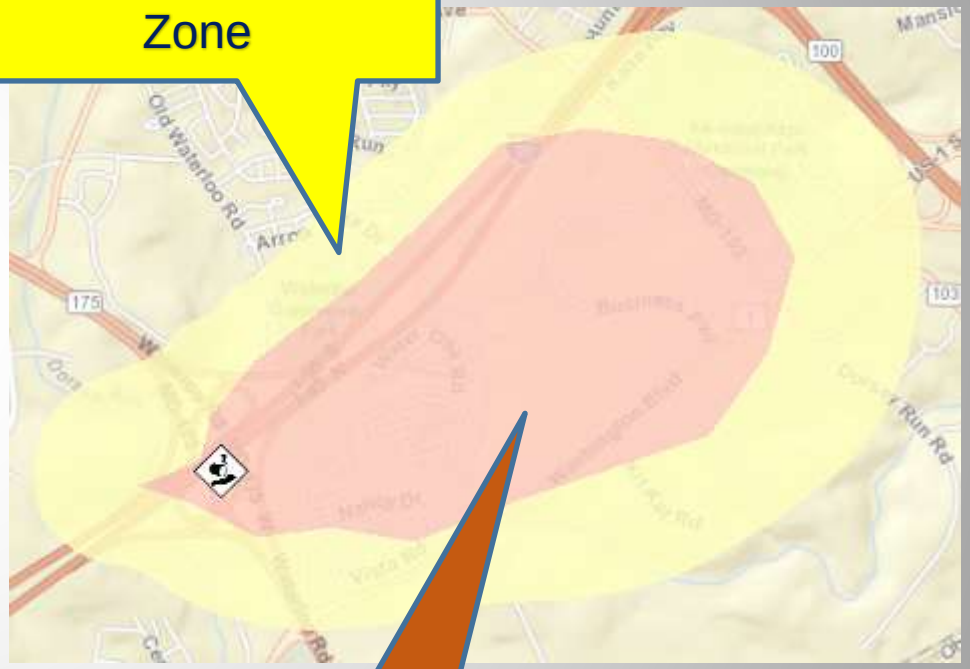




Color Ramp Example

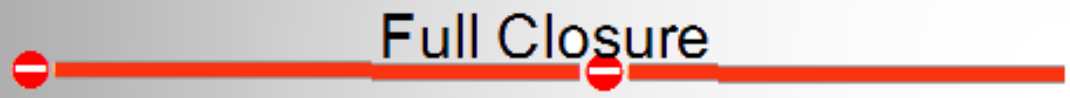
Image	Scale	Wind Speed	Damage
	EF0	65 to 80	Minor Damage
	EF1	86 to 110	Moderate Damage
	EF2	110 to 135	Considerable Damage
	EF3	135 to 165	Severe Damage
	EF4	166 to 200	Extreme Damage
	EF5	>200	Total Destruction

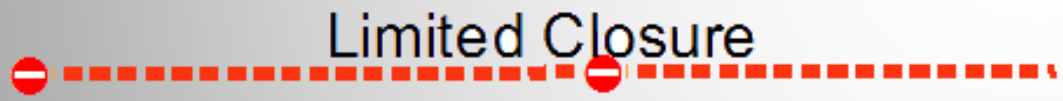
Warm Zone, Outer Perimeter, Transition Zone



Hot Zone, Inner Perimeter, Fire Perimeter

Road Closure

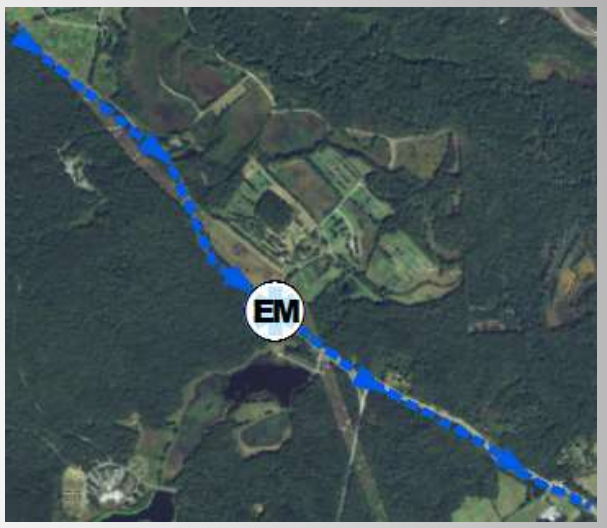


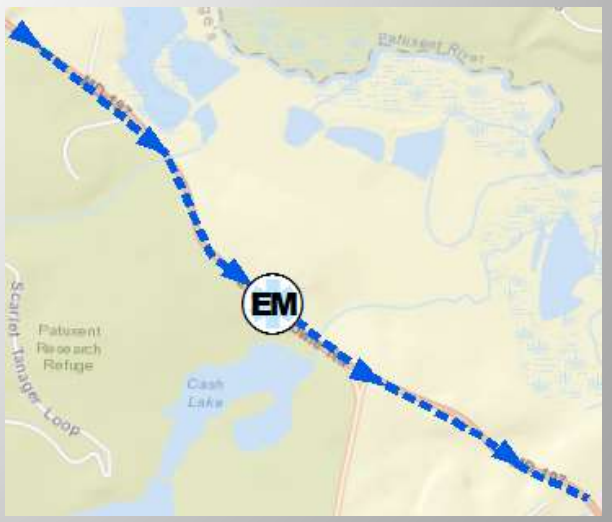


Roads: Restricted Access/Routes

Emergency Route (Ingress/Egress)
(color/web)

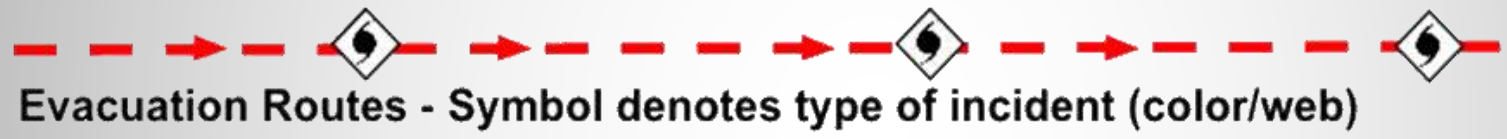
Emergency Vehicle Access Only
(color/web)





Evacuation

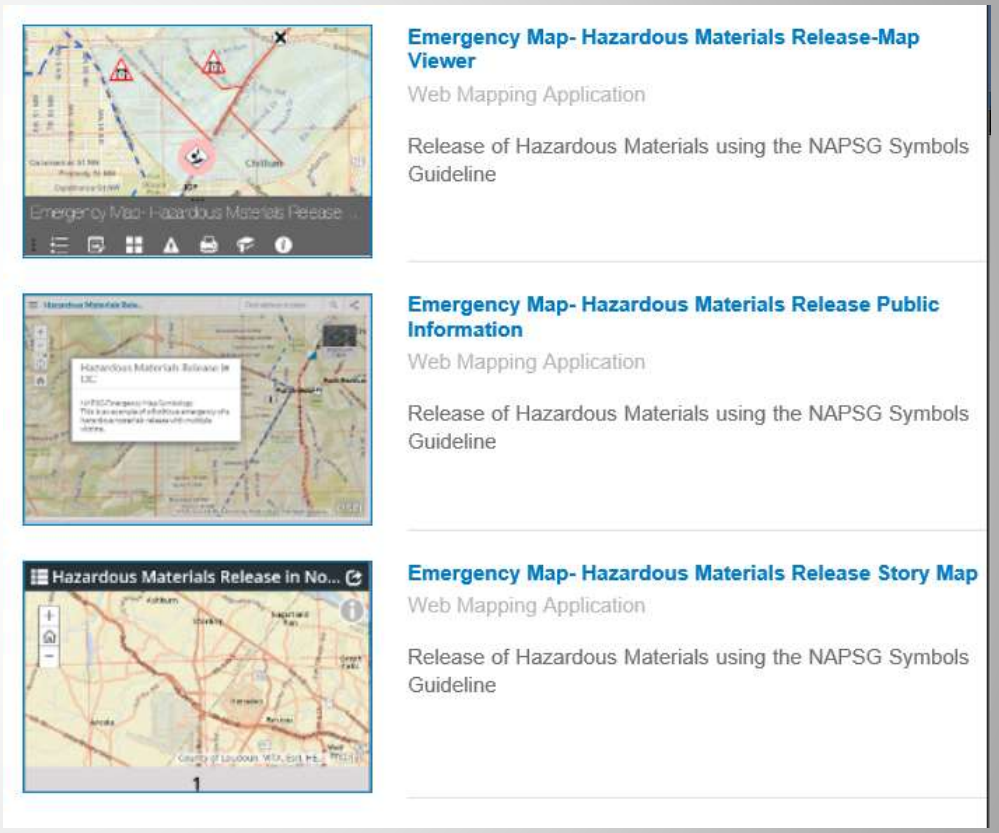
Steady-state: line style green and symbols have operational treatment



Active state: line style red and symbols have “incident” treatment (diamond shape)

Resources

- PNG - for use on web maps
- True Type Fonts - for use with GIS software
- ESRI
  - Style sheets
  - Map Packages
  - Layer Files
- Sample Map Templates



Add a point to a map and change symbol

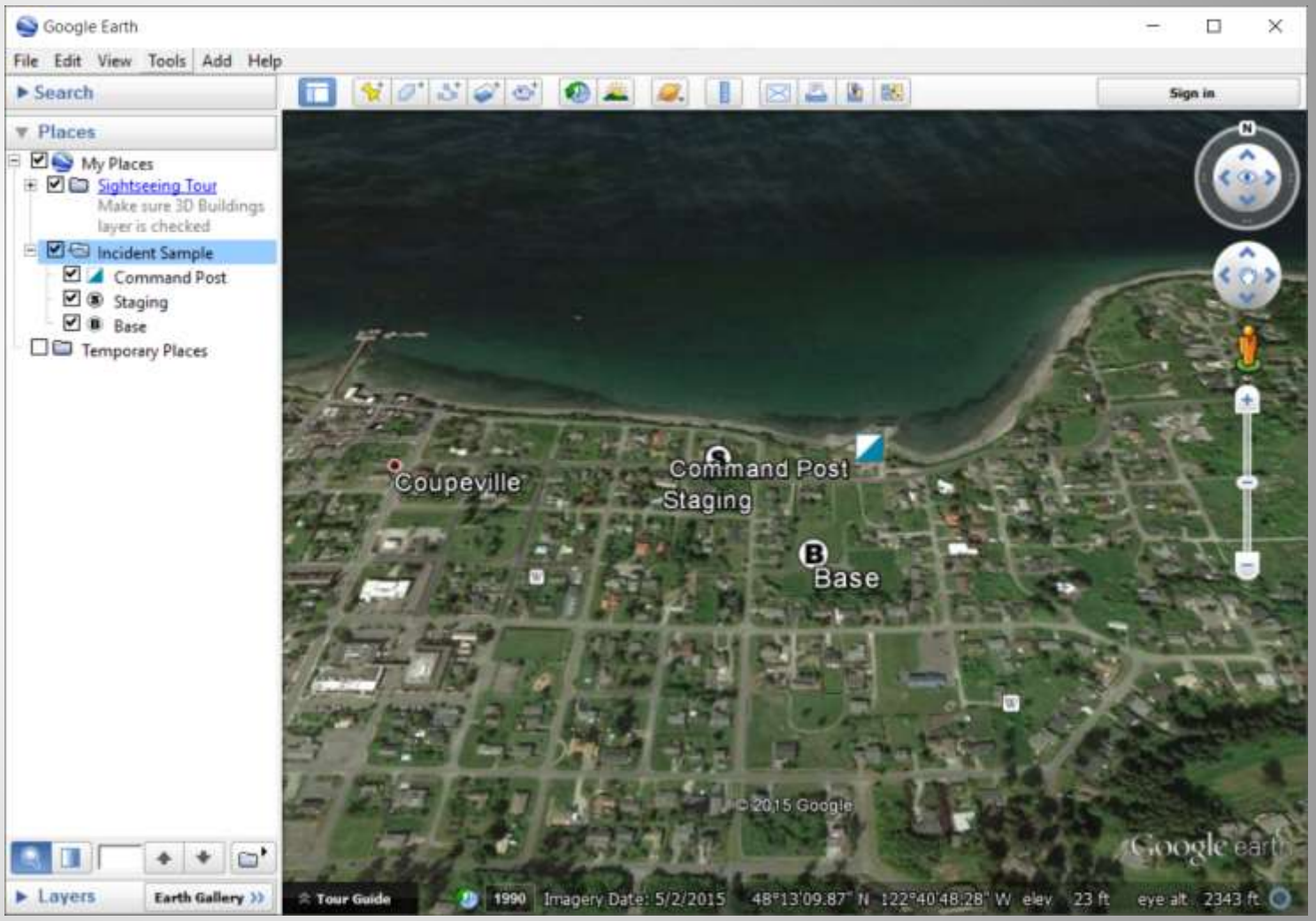
Demonstration Using Google Earth

Demonstration

- Simple map for Google Earth (Everyone)
- Create a simple map in AGOL
- Create a paper map with sample
- Use a web maps to edit and view data

Google Earth Map

- Easy and free to use
- Good for sharing small amount of data



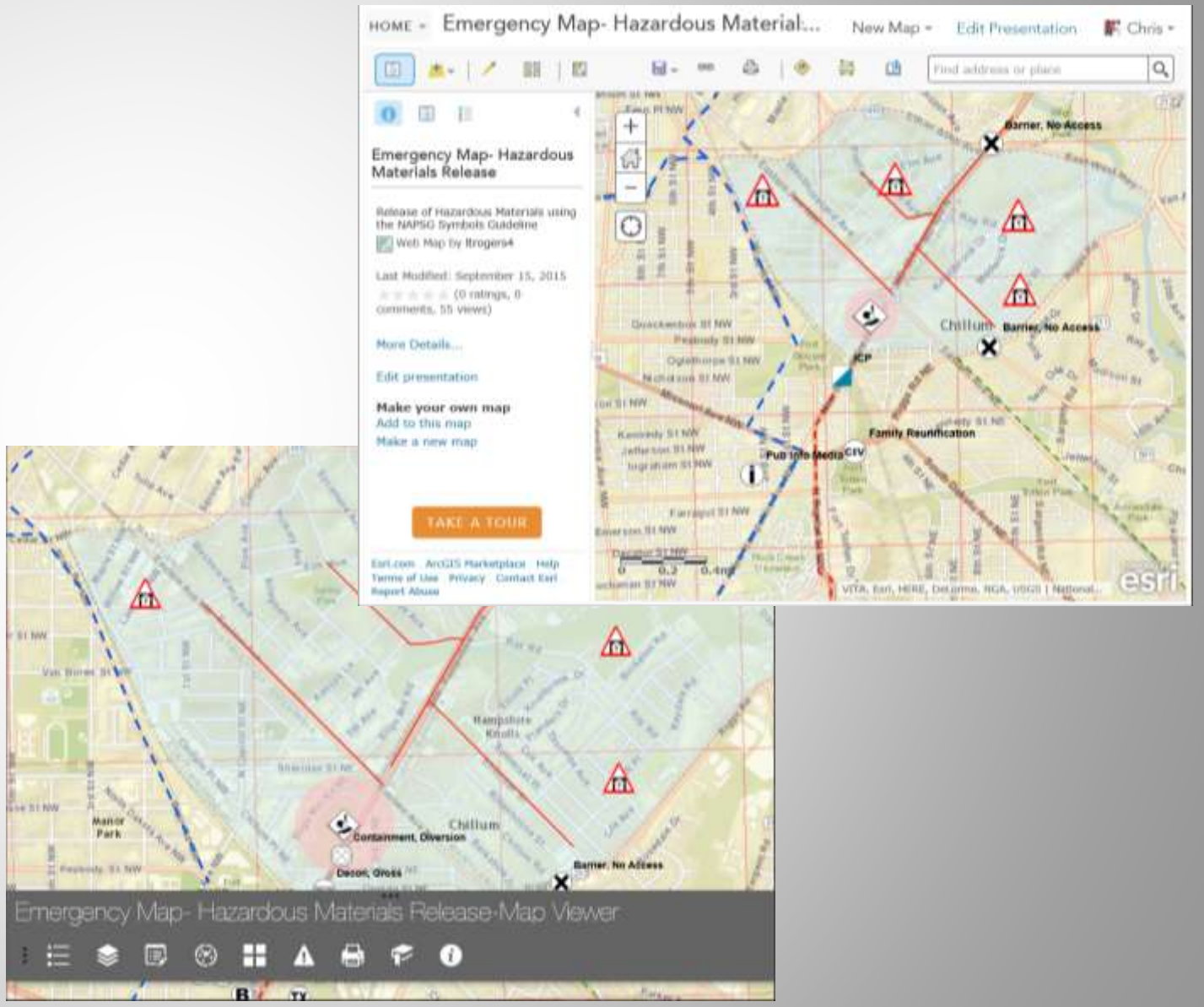
Using ArcGIS Online for Rapid Incident Decision Support

Link to Web App Example and Template:

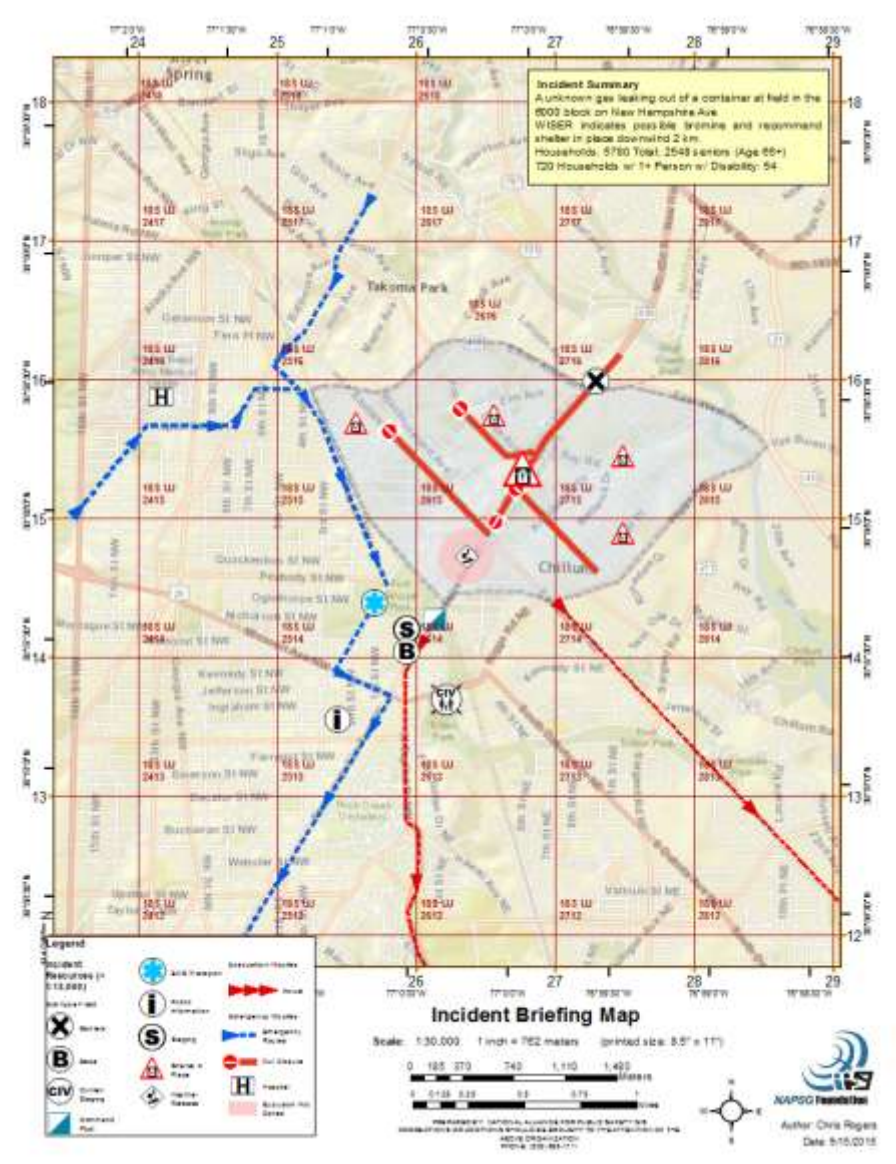
http://napsg.maps.arcgis.com/apps/webappviewer/index.html?id=c1278d5be10642c096007c2246d8989f

AGOL Map/ Web Map

- ESRI built platform
- Benefits
  - Maintain GIS Data
  - Create various web based applications
  - Can do analysis and simple map production



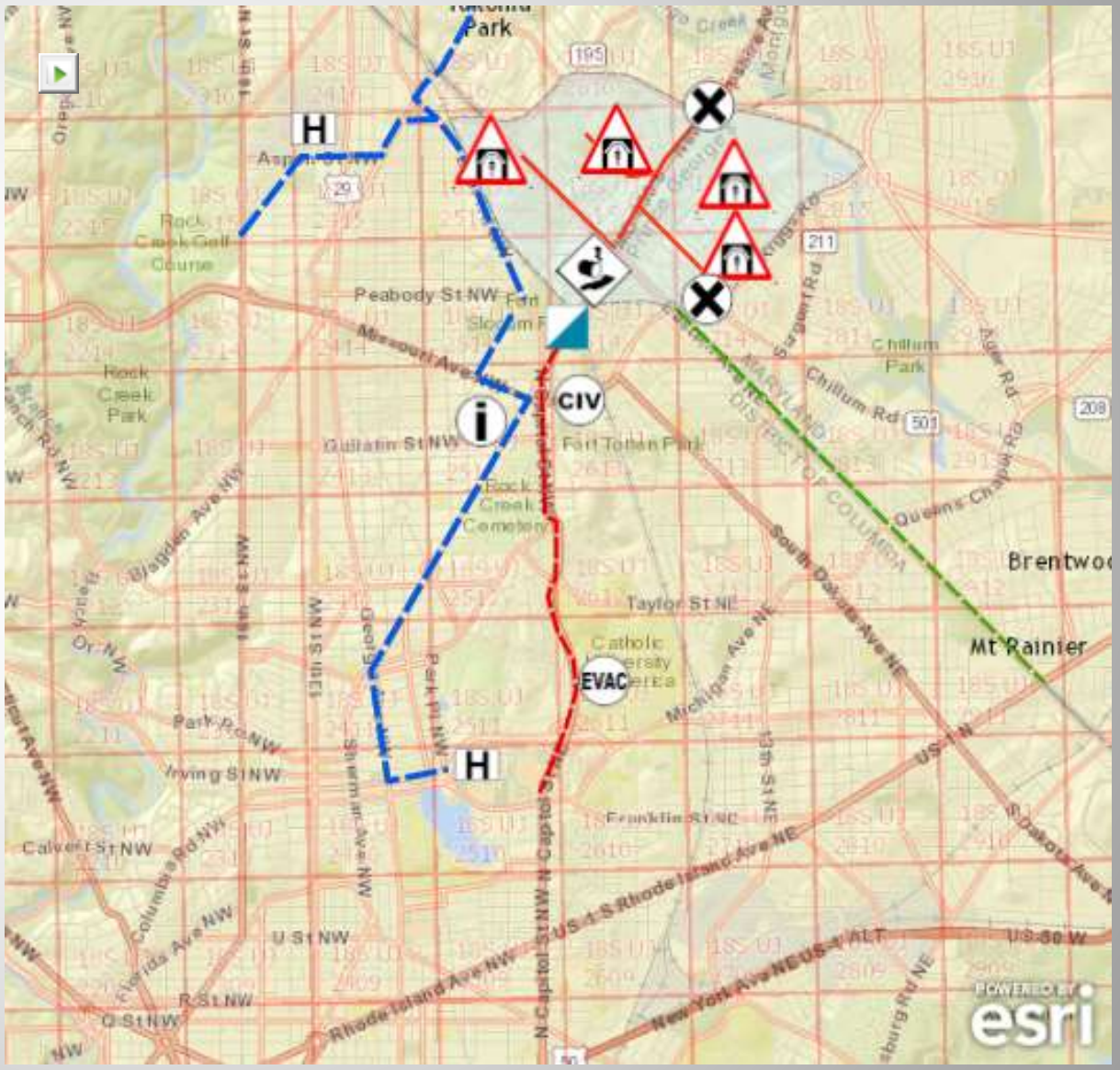
Paper or GeoPDF Map Template



- Sample on AGOL
- Do need GIS user to modify
- Consider
  - Audience
  - Detail
  - Task
- Use US National Grid

HazMat Release Example

- Fire and police units are dispatched to a suspicious container in the field on the 6000 block of New Hampshire
- First arriving units note container in a field with brownish gas emanating from it



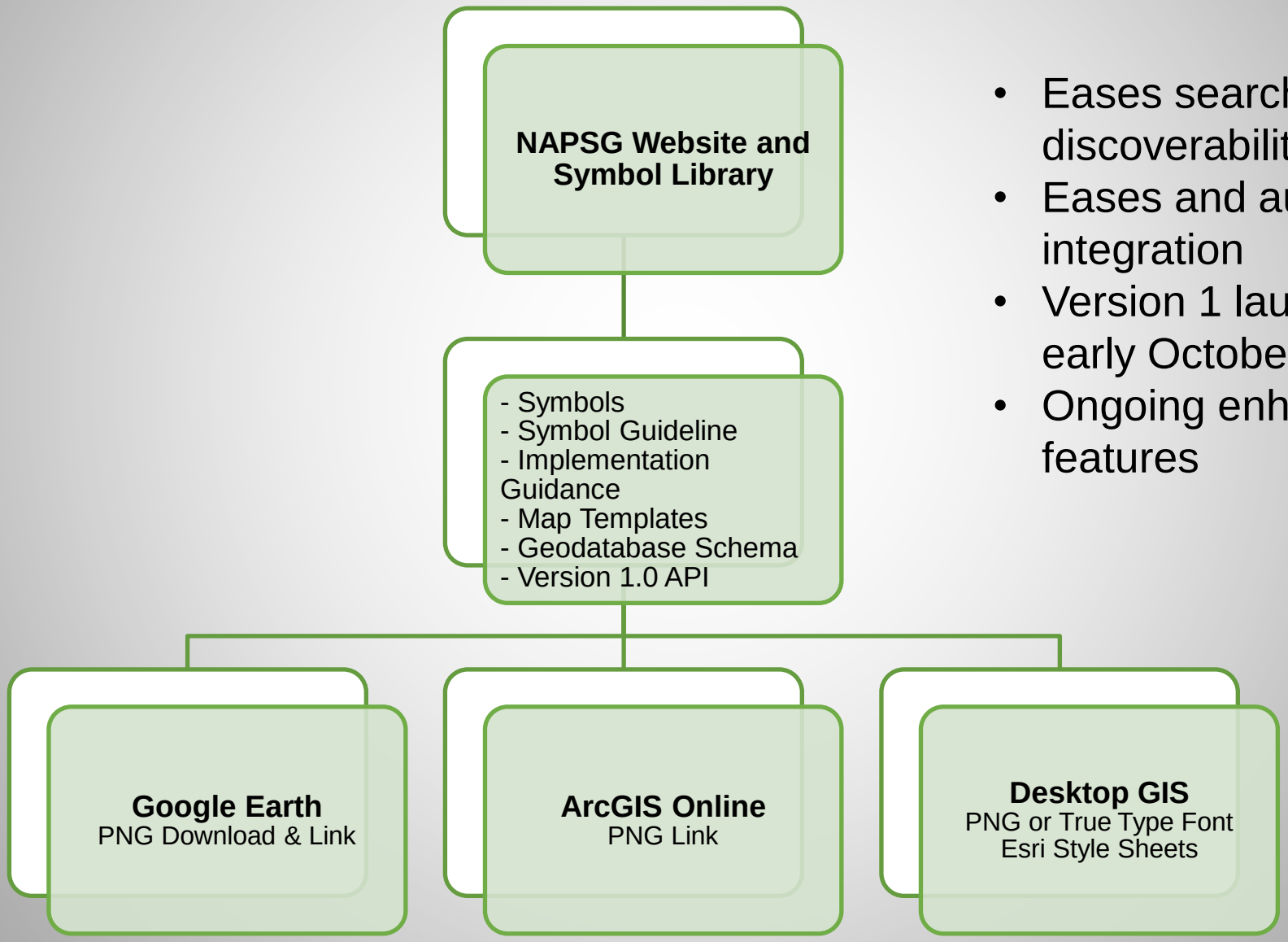
Common Questions

- How do I use the hazard feature for the public alert feature?
- When is the web site available for the symbols?
- How do I create my own symbols?
  - Font Based
  - PNG

Implementation Guidance and Tools

- Technical Implementation Guidance (version 1.0)
- Implementation Guidance for Operators (beta version)
- Map Templates and Example Workflows (version 1.0)
- Geodatabase Schema (version 1.0)

Coming Soon: Symbol Library & Tools



- Eases search and discoverability
- Eases and automates use and integration
- Version 1 launch planned for early October
- Ongoing enhancements and features

What is next?

- Additional Symbols to Fill Gaps
  - Symbols for key HSIP data layers
  - Remaining public alert & warning event codes
  - Remaining critical infrastructure
  - Law enforcement event types
- Integration of symbol guideline and symbols into ANSI standards process
- Coordination with Esri and other solution provides
- Symbol Library and Tools

Your Ideas?

- We want to know….What other priority symbol needs do you have?

- Send an email to: rharned@publicsafetygis.org with your needs and/or if you would like to get involved with NAPSG's Symbology Working Group

Thank You to the SWG

Name	Agency	State
Brian Crumpler	Virginia Information Technologies Agency	VA
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Eric Fisher	Fairfax County Fire Rescue	VA
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Mike Domingue	New Hampshire National Guard	NH
John McKenna	New York City Police Department	NY
Rusty Russell	Huntsville Madison County Emergency Management	AL
Larry Fox	Mount Laurel Fire Department	NJ
Pablo Lee	Seattle Police Department	WA
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Thank You!