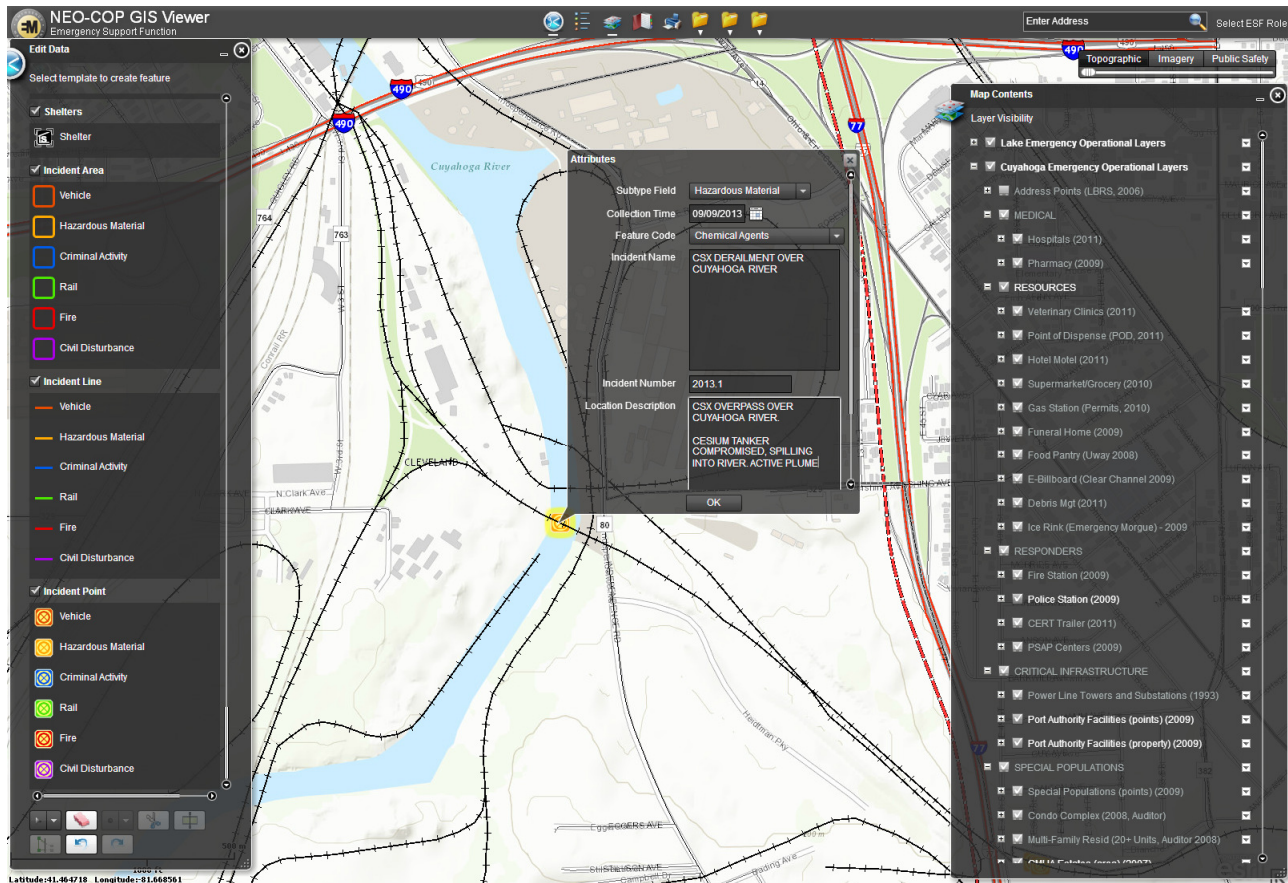# Northeast Ohio Common Operating Picture
NEO-COP

For Official Use Only

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June 24, 2014

Abstract

Public Safety leaders from across the region are committed to providing robust situation awareness through a Common Operating Picture for those who prepare for, respond to and recover from natural and man made disasters as well as emergencies, mass gatherings and other events that affect the public. This includes emergency managers, first responders such as fire, police, HAZMAT and EMS services, search and rescue, health professionals, the Red Cross, etc.

A regional team of Geographic Information System (GIS) professionals, the Working Group, is working towards the implementation of a regional, GIS-based Common Operating Picture (COP) website. The Lake County Emergency Management Agency, GIS and Information Technology Department are supporting the technology infrastructure, development and administration of NEO-COP. A secondary off-line resource capability is also planned for those who do not have access to the Internet or in the case of internet outages associated with a significant disaster event.

This resource is available for any northeast Ohio emergency responder entity that is interested in participating. Detailed critical infrastructure information is initially included for Cuyahoga, Lake and Geauga Counties; DHS national dataset Critical Infrastructure GIS layers provide a mapping extent throughout the State of Ohio, as disasters can affect multiple Counties. NEO-COP Beta 1.0 is currently available for use in the event of a significant emergency or disaster event.

Introduction

For many years now, GIS has provided an integration platform for supporting the mission of public safety. This includes providing data management, E911, planning and analysis, field enablement, and situational awareness. GIS has been a foundational technology linking data and workflows throughout the September 11th terrorist attack, Hurricane Katrina, the 2007 fires in California and the more recent Haiti earthquake, Japan earthquake/tsunami and the Gulf of Mexico oil spill.

In an environment that increasingly requires cooperation between local, state, and federal agencies in a crisis, the ability to provide comprehensive, real time situational awareness to multiple entities is critical. The integration of all available resources into a user-defined operating picture is essential to the success of crisis decision-making.
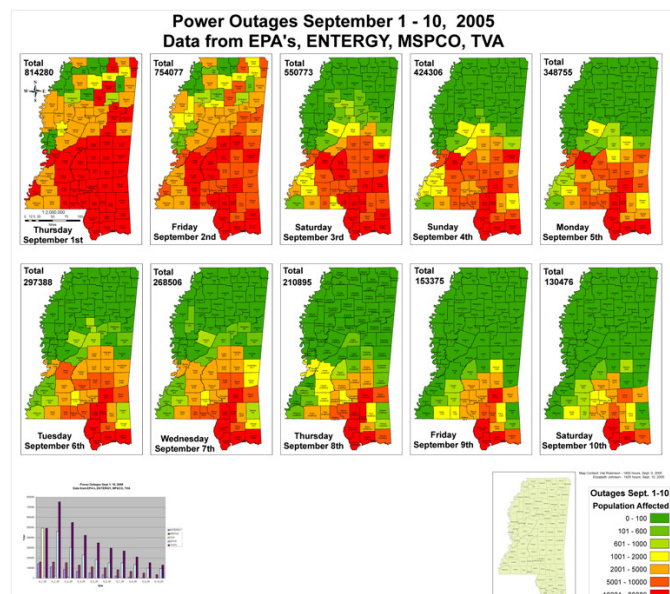
Purpose

This password protected, secure web site, is available to support authorized users such as emergency management officials, first responders, police, fire, and government officials and foster communication between these stakeholders and others such as State and Federal authorities. All can tap into a single information resource. People access the system to gain an accurate understanding of events on the ground, deploy the right personnel and equipment, and update data dynamically from the field or command center. This website

can overlay incident information such as damage assessments, plumes, staging areas, evacuation routes and detours, relief sites, landslide, bridge out or hazardous spill locations, evacuation areas, resource locations, boil water areas, likely flood zones, detailed terrain, satellite and aerial imagery for context and more, providing this information to all officials with logon credentials. Scores of critical infrastructure layers are included for the initial Counties that are providing detailed data layers, namely Cuyahoga and Lake Counties. Detailed lists of layers included, by County, are listed in Appendix "B" – Current Data Layers.

Also, many layers of at-risk populations are displayed, such as day care centers, nursing homes, schools and other gathering points. This will allow for officials to quickly make decisions regarding protective actions and resource allocation.

Description

The GIS COP platform provides a web-based real-time view of available resources and incident information that helps keep emergency response teams and decision-makers informed. The data-driven platform means the map can be quickly updated for greater situational awareness and coordination of efforts.

After submitting an authorized user name and password, the user of the COP website will have the ability to navigate around the map by both zooming and panning or by searching for a particular address. The base map layers will consist of aerial imagery, roads, building footprints and jurisdictions.

Tools (widgets) are provided which will provide various capabilities to enhance situational awareness and analyze information on the map. Examples include routing to the nearest hospital or creating a half mile buffer from a toxic spill point. External data feed integration or the integration of real time data feeds that are available from many external sources, for example traffic and road status information, weather information such as Nexrad Radar, or Census population information. A listing of these widgets is attached as Appendix "A" – Widgets.

Authorized users will also be able to create layers on the map, e.g. traffic control points, evacuation zones, staging areas, etc. as well as draw on the map to highlight information such as response areas or impact zones. Users will also add real time incident mapping, the ability to provide the immediate location of a currently occurring incident.

This all results in a data sharing capability and interoperability with partners at various levels of government, the private sector, and volunteer organizations – use of common data standards for transfer of information creates a means to exchange information from the managers of emergency response to a multitude of first responders.

The COP website will be developed in phases. The phases will build upon work already done, in order to provide a solution quickly, yet move towards higher levels of standardization, security and site redundancy and availability.

Phase 1 will provide detailed critical infrastructure and other data layers that are For Official Use Only (FOUO). In this phase, the COP will be password protected. The data layers will not be standardized between counties (categories, names, symbology, etc.). A large majority of the widgets and data layers in Appendix "A" and "B" will be implemented and the imagery and base map option will be from ESRI. **COMPLETE Dec. 2013.**

Phase 2 will provide a more standardized listing of data layers and their symbology. **- Complete May 2014.** Rigorous security testing and improved security protocols will then be applied which will allow for sensitive data and information to be included.

Phase 3 - High availability of will be achieved through a redundant server capacity maintained at Cuyahoga County were the Lake County servers to become inoperable.

Provision of a public access mirrored site without any sensitive or FOUO information that can be stood up to provide the public with information such as road closures, bridges compromised, shelter locations or FEMA loan assistance centers. Cross platform capability will be investigated to provide access on Windows, Android, and iOS (Mac) devices. At this time, additional widgets and functionality will be added as identified.

The group is also planning to develop support tools for use in the event that the Internet is down or unavailable in the field. The Scalable Field Analysis System will provide a mobile collaborative environment by using mobile devices to collect and share data in the field. This stand alone system also possesses analytical tools to expedite information collection, analysis and sharing. TerraGo Technologies' TerraGo Geospatial Collaboration Software using its Geo-PDF suite of solutions and Spot On Response are top contenders to meet the off-line and in-the-field data collection requirements and mobile device interoperability.

Administration/collaboration

Formal governance is currently being devised with regional stakeholders. Password and access management is currently handled through the Lake County GIS Department. A Memorandum of Understanding is currently circulating, formalizing coordination across jurisdictions. This MOU specifies administrative policies and procedures, funding commitments, liability concerns, staffing and user roles and responsibilities, security, access credentialing procedures, etc. The goal is to create an information infrastructure that is authoritative, resilient and lasting.

NEO-COP Project Team:

City of Cleveland (Office of Emergency Management, GIS Department , Dept. of Public Utilities,)
Cleveland Metroparks
Cuyahoga County (Office of Emergency Management, County Planning; GIS Department, Public Safety & Justice Services)
Lake County (Emergency Management Agency; GIS Department)
Northeast Ohio Regional Sewer District

Active Participants
Red Cross
Northeast Ohio Regional Fusion Center
Lake County: Sheriff's Office, Health District, Engineer's Office, Utilities Department, local Fire Departments, HAZMAT Team.
Interest shown: First Energy, Ashtabula County EMA, Lorain County EMA, Geauga County EMA
Summit County EMA, local Law Enforcement, Fire, Hazmat and other First Responders to be invited for inclusion.

Appendix A– Widgets

Name	Description
Edit Data	Create, modify, and delete incident points, lines or polygons (HAZMAT, Train derailment, Flood, Fire, etc.)
Legend	Displays the current legend for data layers
Map Contents	Lists currently loaded layers along with their symbology. Gives the user the ability to adjust layer group transparency and order. URL: http://www.arcgis.com/home/item.html?id=e2cb71d5c04d40d19e9f945ae0db7ce8
Bookmarks	Use, create, and delete geospatial bookmarks
Print	Basic print function
Emergency Response Guide	Plume modeling based upon the Emergency Response Guide.
US National Grid	Overlay grid, DHS/FEMA standard, used by US Military. Go to and identify coordinates for important incident locations.
Critical Infrastructure	Calculate the number and type of critical infrastructure facilities within a user-defined area (evacuation zone). The layers that are queried are configurable.
Chart	Chart stats (population, number of facilities, etc . . .) within a user-defined area (potential evacuation zone).
GeoRSS Report by Exception	Select local GeoRSS events by using a buffer around a user-specified incident.
Live Layer by Exception	Select local user-defined features by using a buffer around a user-specified incident.
Local Special Events (GeoRSS)	Display local events that are being served out as a GeoRSS feed
vUSA Library	Department of Homeland Security platform to access additional data layers from Federal, State and private sources with a valid username and password.
NEXRAD Radar	View 50 minute loop of current weather radar.
Ohio Traffic Cameras	View Ohio Department of Transportation's camera feeds. Uses ESRI's built-in Query Widget. Configured using Oregon RAPTOR 3.0 application as reference.
Bomb Threat	This widget draws the appropriate mandatory evacuation and preferred evacuation distances on the map based on the threat type. These distances come from the NCTC Bomb Threat Stand-Off Distances table.
Aloha Threat Zone	Ability to parse and plot an Aloha .pas file at a user specified point of origin. URL: http://www.arcgis.com/home/item.html?id=06e2c33649c34c478a15dace967d0cdd
Closest Hospital	Shortest, multiple routes to multiple Hospitals. Obstructions can be added (bridge out) and route re-calculates. URL: http://www.arcgis.com/home/item.html?id=ab815e974ccf4da98871d699a3bb8934
Drive Directions	Allows users to produce a route between stops while avoiding user-defined barriers. Routes along with directions can be printed and/or exported to PDF. URL: http://www.arcgis.com/home/item.html?id=992b1f691f44489aa4dcbafe

	2db66700
Draw and Measure	Enhanced Draw and Measure tool that allows for the saving of graphics, modifying symbology, area and length measurements, and graphic manipulation. URL: http://www.arcgis.com/home/item.html?id=91a0014160fc4a9caadc2c7fd7089c1b
Swipe Spotlight	Select an active layer to view an underlying image by either swiping the whole frame, or by using a spotlight to see what's underneath - useful for comparing before and after imagery. URL: http://www.arcgis.com/home/item.html?id=b9767b3f300142488c798953a94906fc
Load Shapefile	Gives a user the ability to load a zipped shapefile. URL: http://www.arcgis.com/home/item.html?id=2e9096c5d5044d39a264df759611686f
Load KML File	Gives a user the ability to add or remove a KML (.kml or .kmz) file to the viewer. URL: http://www.arcgis.com/home/item.html?id=d6b993ef803249f486e83edd3f94239b
Geoportal Find Data	Search for and load data from other publicly available data sources (ArcGIS.com, GeoData.gov, EPA, etc . . .).
Base map Switcher with Fader	Ability to use all ESRI provided base maps with the added capability of fading between the base maps using a slider. URL: http://www.arcgis.com/home/item.html?id=7156b0acf6574f848ddfd3d7e155746b
ESF Role Selector (Under requirements development)	Following the National Response Framework (NRF), this template provides map views that are based on the Emergency Support Functions (ESF). Each map view provides the default layers and tools that are suited to that ESF.
Layer Popups	Configurable popups for user selected layers. Allows users to click on features on the map and get information without having to use a special tool like Identify.
ESRI Address Search	Users can search for any address in the US as long as they provide the city and state with the street address. Uses the ESRI geocoding services.
Overview Map	Inset map that expands from the lower right corner to show users where they are in a larger context.
Navigation	Floating widget in the upper left corner with multiple functions, including: zoom in, zoom out, pan, incremental zoom, zoom to last extent, zoom to next extent, zoom to full extent, and incremental pan.

Appendix B- Data layers

Name	Type	Description
NOAA Storm Reports	Weather	National Oceanic and Atmospheric Administration (NOAA) storm reports for hail (24 hrs.), tornado (24 hrs.), wind (24 hrs.), and tornado (week) URL: http://tmservices1.esri.com/arcgis/rest/services/LiveFeeds/NOAA_storm_reports/MapServer
Hurricanes	Weather	NOAA Hurricane information: forecast positions, past positions, forecast track, observed track, forecast error cone, & watches and warnings. URL: http://tmservices1.esri.com/arcgis/rest/services/LiveFeeds/Hurricane_Active/MapServer
Natural Hazards	Natural Hazards	United States Geological Survey (USGS) service showing current natural hazards (hurricanes, earthquakes, floods, wildfires, and volcanoes). URL: http://rmgsc.cr.usgs.gov/ArcGIS/rest/services/nhss_haz/MapServer/
Earthquake Shakemaps	Natural Hazards	Map showing earthquake Shakemaps generated by the USGS's Earthquake Hazards Program. URL: http://rmgsc.cr.usgs.gov/ArcGIS/rest/services/nhss_shakemaps/MapServer
Flood Stream Gauges	Natural Hazards	Map showing stream gauges in areas where flooding is occurring. URL: http://rmgsc.cr.usgs.gov/ArcGIS/rest/services/nhss_haz/MapServer
Flood Warnings	Natural Hazards	NOAA Current Flood Warnings. URL: http://rmgsc.cr.usgs.gov/ArcGIS/rest/services/nhss_weat/MapServer
Wildfires	Natural Hazards	USGS's Natural Hazard Support System (NHSS) map of current wildfires and wildfire perimeters. URL: http://rmgsc.cr.usgs.gov/ArcGIS/rest/services/nhss_haz/MapServer
US Energy Information Layers	Critical Infrastructure	U.S. Energy Information Administration (EIA) dataset of power plants, petroleum terminals, and major US natural gas pipelines. URL: http://12.52.24.12/ArcGIS/rest/services/COP_EIA_Layers/MapServer
NOAA Warnings & Watches	Weather	NOAA National Weather Service (NWS) map of current areas under severe weather warnings, watches, or advisories. URL: http://tmservices1.esri.com/arcgis/rest/services/LiveFeeds/Weather_Warnings_Watches_Advisories_Statements/MapServer
NOAA Storm Based Warnings	Weather	NOAA NWS Storm based warnings: tornado, extreme wind, severe thunderstorm, flash flood, & special marine warnings. URL: https://arcgis.vdem.virginia.gov/ArcGIS/rest/services/Weather/StormBasedWarnings/MapServer
NDFD Wind Gusts	Weather	NOAA National Digital Forecast Database (NDFD) map of forecasted wind gusts for the next 3 hour period. URL: http://tmservices1.esri.com/ArcGIS/rest/services/LiveFeeds/NDFD_WindGust/MapServer
Rainfall Total next 72hrs.	Weather	NOAA NDFD map of the forecasted rainfall totals for the next 72 hour period. URL: http://tmservices1.esri.com/ArcGIS/rest/services/LiveFeeds/NDFD_Precipitation/MapServer
Snowfall Total next 72hrs.	Weather	NOAA NDFD map of the forecasted snowfall totals for the next 72 hour period. URL: http://tmservices1.esri.com/ArcGIS/rest/services/LiveFeeds/NDFD_Snowfall/MapServer
Radar Signatures	Weather	NOAA NEXRAD radar signatures relative to the following categories: tornado vortex, mesocyclone, severe hail, and storm motion. URL: https://arcgis.vdem.virginia.gov/ArcGIS/rest/services/Weather/WeatherRadarSignatures/MapServer
Storm Reports	Weather	NOAA Storm Reports including: local storm reports (NWS), wind gusts, and cold

		temperatures. URL: https://arcgis.vdem.virginia.gov/ArcGIS/rest/services/Weather/WeatherReports/MapServer
Current Wind Speed & Direction	Weather	NOAA METAR current wind speed and direction displayed as arrows. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer
Population Concentrations	Demographic	US Census Bureau data supplied by ESRI showing population categories by US Census Block Group. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer
Hispanic Population Concentration	Demographic	US Census Bureau data supplied by ESRI showing population categories by US Census Block Group. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer
Elderly Population Concentration	Demographic	US Census Bureau data supplied by ESRI showing population categories by US Census Block Group. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer
Young Population Concentration	Demographic	US Census Bureau data supplied by ESRI showing population categories by US Census Block Group. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer
Disaster Debris Recovery DB	Critical Infrastructure	Environmental Protection Agency (EPA) database of recyclers capable of managing disaster debris. URL: http://www.epa.gov/region05/waste/solidwaste/kmlgraphics/r5ddrd.kmz

State		
ODOT Video Cameras	Critical Infrastructure	Ohio Department of Transportation (ODOT) video feeds on major interstates. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer/13
Regional – Northeast Ohio		
Incident Point	Incident Command	Editable layer to display active incident points. URL: http://12.52.24.12/ArcGIS/rest/services/IncidentCommand/FeatureServer/0
Incident Line	Incident Command	Editable layer to display active incident lines. URL: http://12.52.24.12/ArcGIS/rest/services/IncidentCommand/FeatureServer/1
Incident Area	Incident Command	Editable layer to display active incident areas. URL: http://12.52.24.12/ArcGIS/rest/services/IncidentCommand/FeatureServer/2
US National Grid – 1Km	Incident Command	Shows the current operational status of 1Km US National Grid Areas: Not Scheduled, Scheduled, In Progress, and Completed. URL: http://12.52.24.12/ArcGIS/rest/services/IncidentCommand/FeatureServer/11
US National Grid – 10Km	Incident Command	Shows the current operational status of 10Km US National Grid Areas: Not Scheduled, Scheduled, In Progress, and Completed. URL: http://12.52.24.12/ArcGIS/rest/services/IncidentCommand/FeatureServer/10
Access Points	Incident Command	Editable layer to display access control points relative to the current incident. URL: http://12.52.24.12/ArcGIS/rest/services/IncidentCommand/FeatureServer/4
Road Blocks	Incident Command	Editable layer to display road blocks relative to the current incident. URL: http://12.52.24.12/ArcGIS/rest/services/IncidentCommand/FeatureServer/3
Resource Assignments	Incident Command	Editable layer to display resource assignments (Area Command Team, Firefighting, Incident Command Team, etc . . .) relative to the current incident URL: http://12.52.24.12/ArcGIS/rest/services/IncidentCommand/FeatureServer/3
Public Safety Resources	Incident Command	Editable layer to display public safety resources relative to the current incident URL: http://12.52.24.12/ArcGIS/rest/services/IncidentCommand/FeatureServer/8
Pet Collection Areas	Incident Command	Editable layer to display pet collection areas relative to the current incident URL: http://12.52.24.12/ArcGIS/rest/services/IncidentCommand/FeatureServer/7
Shelters	Incident Command	Editable layer to display shelters relative to the current incident URL: http://12.52.24.12/ArcGIS/rest/services/IncidentCommand/FeatureServer/6
Emergency Facilities	Incident Command	Editable layer to display emergency facilities (First Aid Station, Decontamination, Food Distribution Center, Kitchen, Staging Areas, Water Distribution, etc . . .) relative to the current incident URL: http://12.52.24.12/ArcGIS/rest/services/IncidentCommand/FeatureServer/3
ERG Facilities	Emergency Operations	Facilities that are considered with the Emergency Response Guide. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer
Evacuation Areas	Emergency Operations	Evacuation Areas for current incident. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer
Exclusion Hot Zones	Emergency Operations	Exclusion Hot Zones for current incident. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer
Plumes	Emergency Operations	Plums for current incident. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer
Damage to Public Facilities	Emergency Operations	Current assessment of damaged public facilities. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer
Damage to Residential Buildings	Emergency Operations	Current assessment of damaged residential buildings. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer
Flood Hazards	Emergency Operations	DFIRM Floodplain layer showing 100 year floodplain potential. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer
Damage to Commercial Buildings	Emergency Operations	Current assessment of damaged commercial buildings. URL: http://12.52.24.12/ArcGIS/rest/services/EmergencyOperations/MapServer

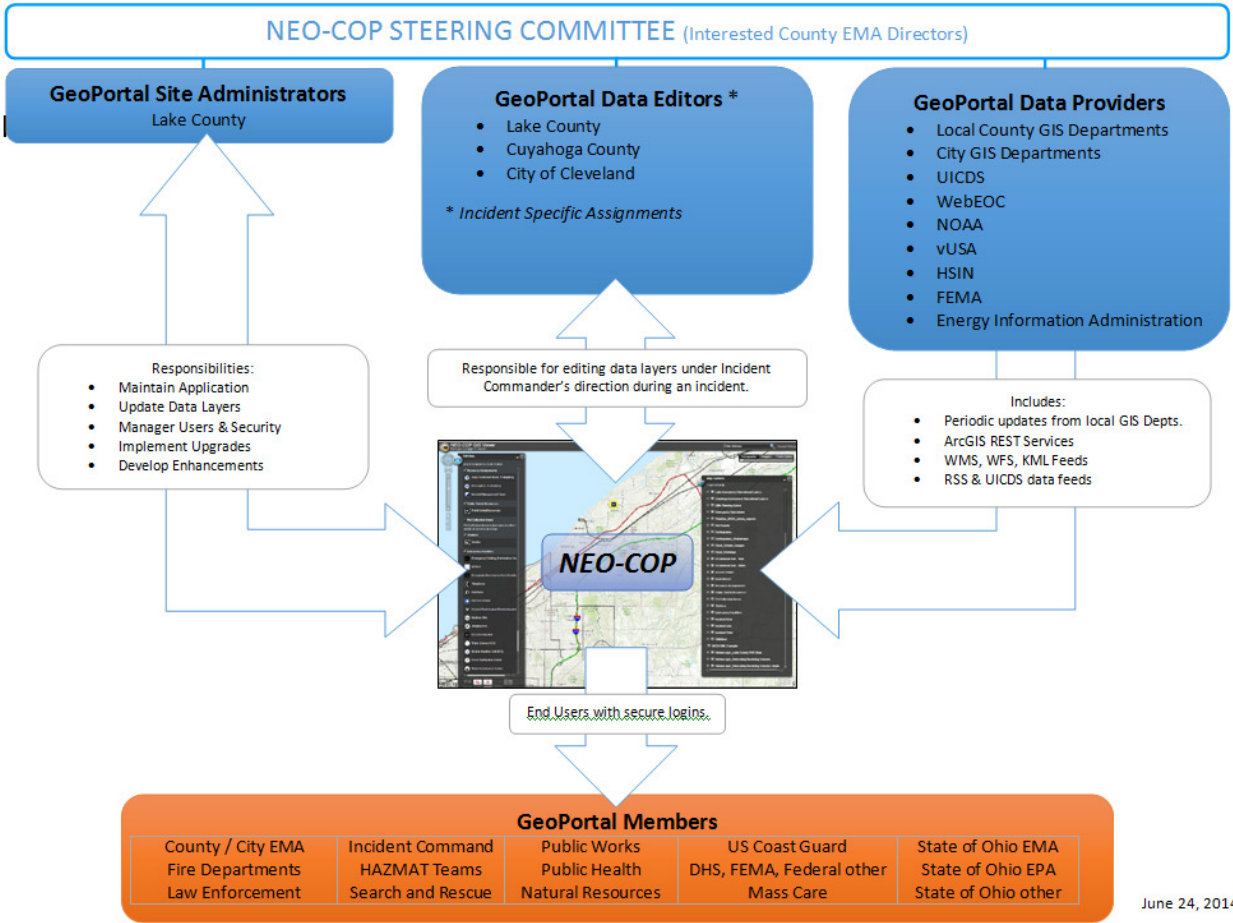| Local - County (DHS Geospatial Data Model)		
Lake County	Various See Appdx. C	A combination of reference layers (utilities, parks, roads, railroads, parcels, streams, etc . . .) and emergency management layers (access control points, critical infrastructure, decontamination sties, Perry Nuclear Plant emergency planning, etc . . .). An assessment needs to be made as to what layers can be incorporated into existing categories within the COP template, which layers need to be seamless across the region, and which ones can remain specific to a county entity. URL: http://12.52.24.12/ArcGIS/rest/services/COPLayers4/MapServer
Cuyahoga County	Various See Appdx. C	A combination of reference layers (utilities, parks, roads, railroads, parcels, streams, etc . . .) and emergency management layers (access control points, critical infrastructure, etc . . .). An assessment needs to be made as to what layers can be incorporated into existing categories within the COP template, which layers need to be seamless across the region, and which ones can remain specific to a county entity. URL: http://12.52.24.12/ArcGIS/rest/services/CuyahogaGeoPDF2012/MapServer

Technical summary:

Recommended Browsers: Chrome, Firefox, IE 9 and 10

Windows 2008 R2 Enterprise Virtual Server
IIS 7.0
ESRI Public Safety COP Flex Viewer 3.0
Modifications made with Adobe Flash Builder 4.5

NEO-COP STEERING COMMITTEE (Interested County EMA Directors)

GeoPortal Site Administrators
Lake County

GeoPortal Data Editors *
- Lake County
- Cuyahoga County
- City of Cleveland

* Incident Specific Assignments

GeoPortal Data Providers
- Local County GIS Departments
- City GIS Departments
- UICDS
- WebEOC
- NOAA
- vUSA
- HSIN
- FEMA
- Energy Information Administration

Responsibilities:
- Maintain Application
- Update Data Layers
- Manager Users & Security
- Implement Upgrades
- Develop Enhancements

Responsible for editing data layers under Incident Commander's direction during an incident.

Includes:
- Periodic updates from local GIS Depts.
- ArcGIS REST Services
- WMS, WFS, KML Feeds
- RSS & UICDS data feeds

NEO-COP

End Users with secure logins.

GeoPortal Members

County / City EMA	Incident Command	Public Works	US Coast Guard	State of Ohio EMA
Fire Departments	HAZMAT Teams	Public Health	DHS, FEMA, Federal other	State of Ohio EPA
Law Enforcement	Search and Rescue	Natural Resources	Mass Care	State of Ohio other

June 24, 2014

11

NEO-COP Working Group

Governance

The NEO-COP Working Group operates as a stakeholder user group rather than a decision-making body because:

Working Group representatives do not have the authority to make decisions on behalf of their organizations or locality.

NEO-COP Working Group members have no power over other localities, only coordination and administration duties as they relate to disaster mitigation, preparedness, response and recovery plans.

City of Cleveland	Office of Emergency Management, GIS Department , Dept. of Public Utilities
Cleveland Metroparks	GIS Department
Cuyahoga County	Office of Emergency Management, Planning Commission; Cuyahoga County IT
Lake County	Emergency Management Agency; GIS Department
Northeast Ohio Regional Sewer District	GIS Department

Working Group Participants

Roles and Responsibilities of Working Group Members

The NEO-COP Working Group members support the following roles and responsibilities:

- Make recommendations to decision makers from each organization as they apply to NEO-COP on:

  - Adopting standards
  - Sustainability and long term use of NEO-COP
  - Technological implementation
  - Sharing operational and technological best practices
  - Coordinating and leveraging region-wide architecture

- Share subject matter expertise and resources

- Identify funding opportunities

- Coordinate NEO-COP related activities to ensure information sharing is occurring

- Act as champions for this tool in the northeast Ohio region

- Help prioritize NEO-COP development

Project Management

NEO-COP brought together the right skill sets (e.g., operations, technology, GIS) to create this tool. Currently, all members of the NEO-COP Working Group are peers that report to different managers. This flat project management style allows involved parties to provide comments and contribute as they wish.