National Discovery Data Coordination Procedure

FINAL

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FEMA

Revision History

Version Number	Version Date	Summary of Changes	Team (Principal Authors)
1	9/14/2011	Document Creation: Final Work Product	PTS MLI Project Team: BakerAECOM, RAMPP, STARR
2	9/28/2012	Procedure and data updates for FY12: Final Work Product	RAMPP
3	9/30/2013	Procedure and data updates for FY13: Final Work Product	RAMPP
4	9/30/2015	Procedure and data updates for FY15: Final Work Product	Resilience Action Partners

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Acronyms and Abbreviations

AAL	Average Annualized Loss
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
B/W	Black and White
CAC	Community Assistance Contact
CAV	Community Assistance Visit
CBRS	Coastal Barrier Resources System
CCM	Compressed County Mosaic
CIR	Color Infrared
CIS	Community Information System
CLICK	Center for LiDAR Information Coordination and Knowledge
CNMS	Coordinated Needs Management Strategy
CRS	Community Rating System
CSC	Coastal Services Center
CTP	Cooperating Technical Partners
DEM	Digital Elevation Model
DHS	Department of Homeland Security
DOQ	Digital Orthophoto Quadrangle
DOQQ	Digital Orthophoto Quarter Quadrangle
EROS	Earth Resources Observation and Science
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FTP	File Transfer Protocol
GeoMAC	Geospatial Multi Agency Coordination
GeoTIFF	Georeferenced TIFF
GIS	Geographic Information System
HMGP	Hazard Mitigation Grant Program
HUC	Hydrologic Unit Code
IA	Individual Assistance
JALBTCX	Joint Airborne LiDAR Bathymetry Technical Center of Expertise

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KML	Keyhole Markup Language
LiDAR	Light Detection and Ranging
LOMA	Letter of Map Amendment
LOMC	Letter of Map Change
LOMR	Letter of Map Revision
MEOW	Maximum Envelope of Water
MIP	Mapping Information Platform
MLI	Mid-term Levee Inventory
MOM	Maximum of Maximum
MRLC	Multi-Resolution Land Characterization
MSC	Mapping Service Center
NAD27	North American Datum of 1927
NAD83	North American Datum of 1983
NAIP	National Agriculture Imagery Program
NAVD88	North American Vertical Datum of 1988
NBI	National Bridge Inventory
NDOP	National Digital Orthophoto Program
NED	National Elevation Dataset
NFHL	National Flood Hazard Layer
NFIP	National Flood Insurance Program
NGA	National Geospatial-Intelligence Agency
NGVD29	National Geodetic Vertical Datum of 1929
NHD	National Hydrography Dataset
NID	National Inventory of Dams
NLCD	National Land Cover Database
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
OFA	Other Federal Agency
PA	Public Assistance
PLSS	Public Land Survey System
PM	Procedure Memorandum
QQ	Full-Resolution Quarter-Quad Tiles

Risk MAP	Risk Mapping, Assessment, and Planning
RSC	Regional Service Center
SLOSH	Sea, Lake, and Overland Surges from Hurricanes
SOP	Standard Operating Procedure
TIGER	Topologically Integrated Geographic Encoding and Referencing
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator

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Purpose

The Department of Homeland Security's Federal Emergency Management Agency (FEMA) prepared the Geospatial Data Coordination Procedures to outline sources of geospatial data and contact information, preferences for base map data in Flood Insurance Studies, information for the project Discovery stage, and other useful information.

To implement the Geospatial Data Coordination Procedures, each Regional Service Center (RSC) maintains State Standard Operating Procedure (SOP) documents that detail how specific datasets within that State should be used for flood hazard mapping and Discovery projects. Some of the data to be used in those projects can be retrieved from national data suppliers, which are typically other Federal agencies (OFAs).

To supplement the Discovery element of the Geospatial Data Coordination Procedures, this document, the *National Discovery Data Coordination Procedure*, provides instruction on the most appropriate data to collect on a national scale for Discovery. This information, in conjunction with the State SOPs, is intended to help reduce the level of effort needed to find appropriate data.

Detailed information about the role of geospatial data coordination in studies is in the Geospatial Data Coordination portal, which is available at: https://riskmapportal.msc.fema.gov/riskmap_usergroups/GeoCoord/default.aspx (password required). A link to this portal and additional information relating to geospatial coordination can be found on FEMA's Mapping Information Platform (MIP) at http://www.hazards.fema.gov. Navigate to the "Tools & Links" page and then locate the "Additional Resources" section.

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National Discovery Data Resources

The table below lists sources of data that are suitable for Discovery from national data maintained by FEMA and OFAs. The FEMA Discovery Data Repository, which is to be used only for official FEMA purposes, such as Discovery, can be found on the MIP File Explorer at J:\DISCOVERY_DATA_REPOSITORY. The Discovery Data Repository is maintained by FEMA and contains up-to-date downloads for the below datasets that are continually revised. It also contains spatially converted datasets where the source data is text or non-spatial. Geospatial data available from FEMA and OFAs are often the preferred sources for performing Discovery activities and are referenced in the table below, as well as in the Federal Mapping Program Fact Sheets section of this document. Note that data that are used for Discovery may not be at a suitable scale for Flood Insurance Rate Map (FIRM) production. Note also that links in this document are continually changing and may not be live at the time it is used; therefore, please follow the links back to the source to find your datasets as needed.

Data	Agency	Location	In The Discovery Data Repository
Digital Orthophotography	Multi	Refer to the Federal Mapping Program Fact Sheets for National Digital Orthophoto Program (NDOP), National Agriculture Imagery Program (NAIP), and the Natural Resources Conservation Service / U.S. Department of Agriculture (NRCS/USDA) Geospatial Data Gateway provided in this document.	No
Elevation and Bathymetry	Multi	Refer to the Federal Mapping Program Fact Sheets for National Elevation Dataset (NED), Center for Light Detection And Ranging (LiDAR) Information Coordination and Knowledge (CLICK), National Geospatial-Intelligence Agency (NGA), and National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center (CSC) provided in this document. Additionally, the U.S. Geological Survey (USGS), in cooperation with NRCS, NOAA, and FEMA has created an inventory of elevation data for the country. The inventory can be used to identify the best available data for much of the U.S., it is current as of March 2015, and is available at http://coast.noaa.gov/inventory/ Lacking elevation data from other valid, more detailed sources, the USGS Digital Elevation Model (DEM) data can be used. USGS DEM resolution for an area can be determined using the Resolution Layer shapefiles (downloaded from the USGS National Map Viewer) in the Discovery Data Repository. USGS DEM data can be downloaded from the National Map Viewer at http://viewer.nationalmap.gov/viewer/.	Yes
Tribal Land Boundaries	BIA	The Bureau of Indian Affairs (BIA) maintains Tribal Land Boundary data nationally. Local data should be reviewed before beginning project work. The BIA does not distribute a geographic information system (GIS) layer for Tribal Land Boundaries through its Web site, but Tribal boundary data can be found in the Discovery Data Repository or through the National Atlas raw data download site at http://nationalmap.gov/small_scale/mld/indlanp.html. The layer was last updated in November 2014. The data are available at a scale of 1:2,000,000.	Yes

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Data	Agency	Location	In The Discovery Data Repository
Federal lands, County and State Boundaries	USGS	Federal, State, county, and jurisdictional boundary data should be verified locally and through the State SOPs. National data can be found in the Discovery Data Repository or through the National Atlas raw data download site at http://www.nationalatlas.gov/atlasftp.html. The data are available at a scale of 1:1,000,000.	Yes
PLSS	BLM	The Bureau of Land Management (BLM) maintains Public Land Survey System (PLSS) data nationally. The BLM does not distribute a GIS layer for PLSS. The USGS has compiled a PLSS map layer found at the National Atlas raw data download site at http://nationalmap.gov/small_scale/mld/plss00p.html.The PLSS data are dated November 2010 and the data scale ranges from 1:100,000 to 1:2,000,000.	Yes
Transportation	Census	Refer to the Federal Mapping Program Fact Sheets provided in this document for information about Topologically Integrated Geographic Encoding and Referencing (TIGER) data. Data are current as of August 2015.	Yes
Stream Lines and Watershed Boundaries	USGS	The USGS maintains stream line and watershed boundary data in the National Hydrography Dataset (NHD), which can be downloaded from http://nhd.usgs.gov/index.html. The National Atlas raw data download (http://nationalmap.gov/small_scale/atlasftp.html) also contains USGS water bodies and is included in the FEMA Discovery Data Repository with the USGS streams and watershed boundaries for Hydrologic Unit Code (HUC) 8. The national coverages in the Discovery Data Repository are at a scale of 1:1,000,000. Streams may also be downloaded at a medium resolution (1:100,000), high resolution (1:24,000), and in limited areas, local resolution (1:5,000).	Yes
CBRS	USFWS	Coastal Barrier Resources System (CBRS) data are maintained by the U.S. Fish and Wildlife Service (USFWS) and an approximate boundary for general reference can be downloaded from http://www.fws.gov/CBRA/Maps/Data_Disclaimer_Shapefiles.html. The data are available at a scale of 1:24,000. The approximate boundary is acceptable for Discovery.	Yes
Levees	FEMA, USACE	FEMA's National Flood Hazard Layer (NFHL) depicts levees shown on FIRMs and is available at http://www.fema.gov/national-flood-hazard-layer-nfhl. FEMA also maintains a Mid-term Levee Inventory (MLI), which can be accessed through FEMA's RSCs. RSC contact information is listed under access requests on https://hazards.fema.gov/femaportal/wps/portal/usercare_access The U.S. Army Corps of Engineers (USACE) National Levee Database (NLD) is available to the public through a Web viewer at http://nld.usace.army.mil/egis/f?p=471:1. USACE is developing a download feature for Mapping Partners to be able to download NLD spatial data for use on Risk MAP projects. While that is in development, Mapping Partners may obtain NLD data for flood hazard mapping and Discovery by collaborating with the RSC. RSC contact information is listed under access requests on https://hazards.fema.gov/femaportal/wps/portal/usercare_access.	No

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Data	Agency	Location	In The Discovery Data Repository
Dams	USACE, USGS	The National Inventory of Dams (NID) database is available for viewing and querying from the NID Web site at http://nid.usace.army.mil. The NID includes the locations of dams, notes on their structure, and inspection information for 87,000 dams in the United States. The NID is maintained by the USACE. The USGS provides dam locations as a subset of the NID from this File Transfer Protocol (FTP) Web site: ftp://nhdftp.usgs.gov/DataSets/National//. Data are based on 1:24,000 scale.	Yes
Bridges	FHWA	National Bridge Inventory (NBI) data are maintained and distributed by the Federal Highway Administration (FHWA) at the Web site: http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_atlas_database/2015/index.html. FHWA updates ASCII files on a more frequent basis at http://www.fhwa.dot.gov/bridge/nbi/ascii.cfm. FEMA has downloaded the latest available ASCII file (the 2014 release) and it is available in the Discovery Data Repository.	Yes
Stream Gages	USGS	USGS maintains stream gages across the Nation as well as a variety of information at each gage station. Search for gages and download information from http://waterdata.usgs.gov/nwis/inventory. Data are also available as a Keyhole Markup Language (KML) file from USGS at http://waterwatch.usgs.gov/new/?m=real&w=kml, and FTP download of the data are available at ftp://nhdftp.usgs.gov/DataSets/National//.	Yes
Wave Gages	NOAA	NOAA's buoy datasets can be helpful for wave gages, wind, and other measurements and can be found at http://www.ndbc.noaa.gov/. Click a buoy on the NOAA map to be taken to that buoy's data download section for specific information.	No
Tide Gages	NOAA	Tide gage station data can be downloaded by State from NOAA at http://tidesandcurrents.noaa.gov/stations.html?type=Water+Levels or from http://tidesandcurrents.noaa.gov/googleearth.shtml.	No
Coastal Wind Stations	NOAA	NOAA meteorological station observations can be located at http://tidesandcurrents.noaa.gov/stations.html?type=Meteorological%20Observations or the National Climatic Data Center at http://www.ncdc.noaa.gov/cdo-web/datasets.	No
Historic Flood Events	Multi	FEMA maintains a shapefile containing historical disaster declaration areas that may be useful for Discovery. This file can be found on FEMA's Web site at http://gis.fema.gov/DataFeeds.html. The NOAA severe weather events database includes floods and can be downloaded at ftp://ftp.ncdc.noaa.gov/pub/data/swdi/stormevents/.	Yes
Historic Earthquakes	NOAA	NOAA manages and distributes historic non-geospatial earthquake data at http://www.ngdc.noaa.gov/hazard/earthqk.shtml. FEMA has converted this dataset to geospatial points for the Discovery Data Repository.	Yes
Landslides	USGS	Landslide data are maintained by USGS and are available from the USGS raw data download site at http://pubs.usgs.gov/of/1997/ofr-97-0289/. See also: http://landslides.usgs.gov/hazards/nationalmap/. Data are available at a scale of 1:4,000,000.	Yes

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Data	Agency	Location	In The Discovery Data Repository
Soils	NRCS	The USDA NRCS maintains national soil data in a GIS format. Data can be downloaded from the NRCS Data Mart at http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm or from the NRCS Data Gateway listed in the Other Resources section of this document. Data ranges in scale from 1:12,000 to 1:63,360.	No
Volcanic Eruptions	NOAA	NOAA maintains and distributes historical non-geospatial volcanic eruption data on its Web site at http://www.ngdc.noaa.gov/nndc/struts/form?t=102557&s=50&d=50. FEMA has converted these data to a geospatial point file. An interactive viewer is available at http://maps.ngdc.noaa.gov/viewers/hazards/?layers=3.	Yes
Storm Surge Inundation Zones	NOAA	Most storm surge data must be obtained from local flood hazard management authorities. For more information about storm surge, see NOAA's Web site at http://www.nhc.noaa.gov/ssurge/ssurge.shtml.	No
SLOSH Zones	NOAA	NOAA produces composite storm surge products, by basin, by modeling thousands of potential storms through the basins. This produces maximum possible surge elevations for a variety of storm categories, trajectories, and speeds. These data also include information on land inundation, but the land elevation data are generally very coarse. You can download all the most current Maximum of Maximum (MOM) and Maximum Envelope of Water (MEOW) data here (registration required): http://slosh.nws.noaa.gov/sloshPub/ Additionally, many State and local emergency management Web sites post the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) storm tide inundation limit maps (using MOM data) in various formats, including shapefiles. The National Hurricane Program, National Weather Service, NOAA, U.S. Department of Transportation, and the USACE fund hurricane evacuation studies. These studies use the SLOSH Basins surge outputs to more accurately map potential inundation areas (SLOSH Zones) for different storm characteristics and then define evacuation zones based on the potential inundation. Some studies can be obtained through the FEMA Hurricane Program contacts in each Region, especially in Regions III, IV, and VI. Nonetheless, the older studies, generally those prepared before 2000, may no longer be available from any source. For more information about hurricane evacuation studies, see NOAA's Web site at http://www.csc.noaa.gov/hes/hes.html.	No
Wildfire Hazard Areas	GeoMAC	The Geospatial Multi Agency Coordination (GeoMAC) Group comprises 11 Agencies coordinating wildfire data and displaying it in an online GIS map, which can be found at http://www.geomac.gov/index.shtml. GeoMAC also maintains an Esri layer file containing its data. USGS maintains an FTP site to download historic fire perimeters from 2002 to 2014 at http://rmgsc.cr.usgs.gov/outgoing/Geomac/historic_fire_data/.	Yes
Wildland-Urban Interfaces	GeoMAC	Wildland-Urban interfaces are most commonly created in conjunction with local wildfire susceptibility analyses. A national dataset from the GeoMAC exists, but has not been acquired by FEMA. The State SOPs should be consulted.	No

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Data	Agency	Location	In The Discovery Data Repository
Campgrounds	USGS	USGS and the U.S. Board on Geographic Names maintain and distribute the Geographic Names Information System (GNIS) data, which can be downloaded as text files from http://geonames.usgs.gov/domestic/download_data.htm. FEMA has extracted the GNIS features for campgrounds and converted these data to a GIS shapefile for the Discovery Data Repository. The GNIS file can also be downloaded from The National Map Viewer at http://viewer.nationalmap.gov/viewer/. The data are available at a scale of 1:250,000	Yes
Evacuation Routes	FEMA	FEMA maintains evacuation routes, which are included in the Discovery Data Repository and can be retrieved from FEMA's Web site at http://gis.fema.gov/DataFeeds.html. The routes were last updated in 2007. Many States maintain geospatial data for emergency evacuation routes and the State SOPs should also be consulted.	Yes
Tsunami Events & Runups	NOAA	NOAA maintains and distributes tsunami events and runup data through the National Geophysical Data Center (NGDC) / World Data Center Historical Tsunami Database, Boulder, CO, which can be found at http://www.ngdc.noaa.gov/hazard/tsu_db.shtml. FEMA has converted this data to a spatial format for the Discovery Data Repository.	Yes
CNMS	FEMA	The Coordinated Needs Management Strategy (CNMS) is a FEMA-maintained system comprising the processes and data used to track New, Validated, Updated Engineering study reaches with identified change characteristics, as well as Requests for FEMA's flood mapping program. The CNMS Database is made up of the CNMS Study Inventory and CNMS Requests. A CNMS Study record represents the most current knowledge of a mapped Special Flood Hazard Area in FEMA's Inventory. A CNMS Request record is a record describing a desire to address mapping needs based on lack of existing engineering studies, cartographic concerns, or labeling issues. CNMS data are available for viewing through FEMA's interactive map at https://hazards.fema.gov/cnms/. Additionally, CNMS data are available from each of FEMA's RSCs. RSC contact information is listed under access requests on https://hazards.fema.gov/femaportal/wps/portal/usercare_access. The latest version of the *CNMS Technical Reference* can be found at http://www.fema.gov/media-library/assets/documents/34519. The *CNMS Technical Reference* details the FEMA CNMS Data Model and its uses, providing an overview of its purpose and structure.	No
AAL	FEMA	FEMA maintains a Nationwide Average Annualized Loss (AAL) dataset that was created using Hazus-MH (Hazards United States – Multi Hazard) data. Flood loss estimate information is available for the continental United States at the county level and at the HUC8 watershed level. The analysis was performed using the USGS 30-meter DEM. The current Hazus Flood AAL data are found in the Discovery Data Repository. The 2009 HAZUS Flood AAL study and the flood loss estimate summary data can also be found at the Discovery Data Repository. Data are also available for viewing through GeoPlatform at http://fema.maps.arcgis.com/home/webmap/viewer.html?webmap=cb8228309e9d405ca6b4db6027df36d9	Yes

Data	Agency	Location	In The Discovery Data Repository
Flood Claims and Repetitive Loss Properties	FEMA	A Discovery report has been developed in the Community Information System (CIS), which is available to registered CIS users. Additionally, FEMA maintains information on the number of flood insurance policies, the number of single claims, and repetitive losses at the HUC8 watershed level. The FEMA Risk Mapping, Assessment, and Planning (Risk MAP) National Flood Risk Analysis Version 2.0 report is available in Excel format and can be found in the Discovery Data Repository. Mapping Partners may obtain repetitive loss and severe repetitive loss data for use in their Discovery project, but must take appropriate privacy precautions. The following are the guidelines for obtaining the data and maintaining privacy: 1. Contact the Regional Insurance Specialist and request Bureaunet access. Include requestor's name and contact information, organization, reason access is needed, and how long access is needed. 2. Do not release maps or data to the public at large in a format that would enable identification of specific addresses of repetitive loss properties and its respective payments. Use a more general color coding method for areas with repetitive loss properties. This way, a community can see in a detailed manner where severe repetitive loss properties are located without disclosing specific addresses and information linked to those addresses. 3. If a State or municipality wants repetitive loss information with address specificity, it may make a Privacy Act routine use request. More detailed information can then be placed on a map and disclosed to the State/municipality. In this situation, though, the State/municipality would not be allowed to further disclose the information to the public.	Yes
CRS	FEMA	The Community Rating System (CRS) is a voluntary program for national Flood Insurance Program (NFIP)-participating communities. A link to the pages from the most recent Flood Insurance Agent's Manual containing current and historical listings of all CRS communities, their class, and insurance discount is available at the following Web site: http://www.fema.gov/library/viewRecord.do?id=3629. CRS data can also be pulled from CIS.	Yes

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Data	Agency	Location	In The Discovery Data Repository
LOMC	FEMA	FEMA maintains and distributes Letters of Map Change (LOMCs), collectively Letters of Map Amendment (LOMAs), and Letters of Map Revision (LOMRs). A spatial file of point locations of LOMAs is stored in the Discovery Data Repository, updated September 9, 2015. LOMAs are frequently processed and the spatial data will not include older LOMAs or LOMAs that go effective after the update of the spatial file. Spatial data for LOMRs and LOMAs are updated monthly in the NFHL and can be accessed from the FEMA Map Service Center (MSC) Web site: http://www.fema.gov/national-flood-hazard-layer-nfhl. These spatial data will not include LOMR data where FIRM data are not digital and may not include older LOMRs. To supplement the LOMA and LOMR spatial data, users can obtain a current, comprehensive list of LOMCs from the MIP. If LOMCs in the generated list do not have latitudes and longitudes, the LOMC locations can be determined by consulting the final determination documents, which can be obtained through FEMA's MSC http://msc.fema.gov/.	Yes (LOMAs only)
NFHL (FEMA Effective Data)	FEMA	The NFHL dataset is a compilation of effective FIRM Databases (a collection of the digital data that are used in GIS systems for creating new FIRMs) and LOMCs (LOMAs and LOMRs only) that create a seamless GIS data layer for a state or territory. This dataset is maintained and distributed by FEMA and can be accessed through FEMA's MSC at the following Web site: http://www.fema.gov/national-flood-hazard-layer-nfhl. An Open Geospatial Standards Web Mapping Service of the NFHL is also available and can be viewed in Google Earth or in your own mapping software. Instructions for accessing FEMA's GeoPlatform are located here: https://hazards.fema.gov/femaportal/wps/portal/NFHLWMS. Data are available at a scale of 1:12,000.	No
Q3 Flood Data (FEMA Effective Data)	FEMA	Q3 Flood Data were developed by scanning the paper FIRMs and digitizing the flood hazard zone boundaries into a GIS. The datasets are available from FEMA and can be accessed through FEMA's MSC at the following Web site: https://msc.fema.gov/. Data are available at a scale of 1: 24,000. The NFHL data should be used where possible. Q3 Flood Data are mostly obsolete, may not be an accurate representation of the effective floodplain, and are only relevant where no NFHL data exist.	No
Mitigation Plan Status	FEMA	FEMA maintains and distributes a monthly report of mitigation plan approval status. The report is not available to the general public. The monthly report of mitigation plan approval status is maintained and distributed by FEMA and is available to Mapping Partners for Risk MAP projects, via email, by signing up at the following Web site: http://www.fema.gov/multi-hazard-mitigation-plan-status. Mapping Partners may also contact the appropriate State Hazard Mitigation Office (SHMO).	No

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Data	Agency	Location	In The Discovery Data Repository
CIS Data (including CACs and CAVs)	FEMA	FEMA's CIS is available, via authorized user account, at the following Web site: https://portal.fema.gov/famsVuWeb/home. The CIS provides information about floodplain management, mapping, and insurance for NFIP communities. The CIS includes demographic, engineering, insurance, and community-specific information for jurisdictions in the U.S. that are identified as flood prone. The specific datasets that can come from CIS include CRS Status, Population, Disaster Assistance Claims, Flood Insurance Claim Info, Floodplain Management Ordinance Level, Last Community Assistance Visit (CAV) (FEMA CAV – does not include State CAVs necessarily), NFIP Participation, and of course, a start on Contact info (however, it's frequently out of date). Community Assistance Contacts (CACs) and CAVs are two key methods FEMA uses to identify community floodplain management program deficiencies and violations and to provide technical assistance to resolve these issues. To obtain the CAC/CAV-related information, run a Discovery Report from the Web site above. Most FEMA, Cooperating Technical Partners (CTP), and Production and Technical Services contractor offices have staff with access to the CIS. New user CIS access can be requested through the Web site above. Additionally, some policy information is available through GeoPlatform. A 1-km raster dataset of policy concentrations is available for viewing through GeoPlatform at http://fema.maps.arcgis.com/home/webmap/viewer.html?webmap=a5607f57a52a4c569e2f3e9838b969d2 Subsidized policyholders by State and county are available through GeoPlatform at http://fema.maps.arcgis.com/home/webmap/viewer.html?webmap=e0208985e8e64d44bca999325254ff5b	No
HMGP	FEMA	The Hazard Mitigation Grant Program (HMGP) provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. A spreadsheet with HMGP information by community can be found at http://catalog.data.gov/dataset/fema-hazard-mitigation-grant-program-summary. For HMGP grant datasets with spatial detail at a higher resolution than the community level, contact (openfema@fema.dhs.gov) for further assistance.	No
IA	n/a	The Individual Assistance (IA) program provides grants and assistance for individuals. IA data are currently unavailable. Procedures for accessing these data will be determined by FEMA in the future.	No

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Data	Agency	Location	In The Discovery Data Repository
PA	FEMA	Through the Public Assistance (PA) Program, FEMA provides supplemental Federal disaster grant assistance for debris removal; emergency protective measures; and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit organizations. FEMA maintains a spreadsheet listing all PA recipients, designated as Applicants in the data. The dataset also features project worksheets that list every funded project. The dataset can be found at http://catalog.data.gov/dataset/public-assistance-funded-projects-detail.	No
FloodSmart	FEMA	The NFIP launched the FloodSmart campaign to educate the public about the dangers of flooding and to help them protect their property. It is the premier resource for flood insurance and flood risk information. More information can be found on the following Web site http://www.floodsmart.gov/floodsmart/. Datasets from FloodSmart are available from (FloodSmart@dhs.gov).	No
Information on active disasters	FEMA	A list of Federal Disaster Declarations since 1953 can be obtained from the FEMA Web site at: https://www.fema.gov/media-library/assets/documents/28318#. Another source for declared disasters is from data.gov; the FEMA Disaster Declarations Summary provides tabular data for all disasters by county. Dataset is called data.gov.FEMADeclarations.	No
CTP	FEMA	Information about FEMA's CTP Program, including active partners can be found at this Web site: https://www.fema.gov/cooperating-technical-partners-program. A list of CTPs can be found at: http://www.floodmaps.fema.gov/fhm/scripts/ctp_list.asp.	No

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Data	Agency	Location	In The Discovery Data Repository
Areas of land use change datasets	USGS, NOAA	The Multi-Resolution Land Characterization (MRLC) consortium is a group of Federal agencies that coordinate and generate consistent and relevant land cover information at the national scale for a wide variety of environmental, land management, and modeling applications. The creation of this consortium has resulted in the mapping of the lower 48 States, Hawaii, Alaska, and Puerto Rico into a comprehensive land cover product termed the National Land Cover Database (NLCD), from decadal Landsat satellite imagery and other supplementary datasets. All MRLC NLCD data products are available at http://www.mrlc.gov/finddata.php. The data has a 30-meter resolution. The National Urban Change Indicator dataset provides vector and raster data to show annual persistent change in urban areas of the U.S. over the past 25 years. Urbanization of areas due to events such as land development and construction can be key indicators of where Risk MAP Discovery is planned. GIS data are available for use on Discovery projects by contacting the RSC. RSC contact information is listed under access requests on https://hazards.fema.gov/femaportal/wps/portal/usercare_access. The NOAA Coastal Change Analysis Program (C-CAP) Regional Land Cover Data are developing a standardized database on habitat and land cover change in coastal regions of the United States. C-CAP notes changes in habitats (from one class to another) on 1 to 5 year cycles depending on the rate and magnitude of change in a geographic region. Data are currently available from 1996 to 2006, but 2011 data are being added (30-meter resolution raster converted to polygon shapefile). Data can be downloaded by county at http://www.csc.noaa.gov/ccapatlas/.	No

Additional Resources

The following are additional non-specific sources for national data that can be researched for Discovery or flood hazard mapping data. If a dataset cannot be found from the National Discovery Data Resources and cannot be found in the State SOPs through the FEMA RSC, the following list is useful to review.

Service	Internet Location
OpenFEMA	http://www.fema.gov/openfema
Geospatial One-Stop	http://geo.data.gov/geoportal/
The National Map	http://viewer.nationalmap.gov/viewer/
USDA NRCS Data Gateway	http://datagateway.nrcs.usda.gov/
Bureau of Land Management GeoCommunicator	http://www.geocommunicator.gov/GeoComm/
FEMA Map Service Center	http://www.msc.fema.gov
FEMA Mapping Information Platform	http://www.hazards.fema.gov

State Contacts

FEMA maintains contact information for State geospatial representatives and their Federal counterparts on the MIP at https://hazards.fema.gov/contacts/statecontacts/contacts.asp.

State Standard Operating Procedures

FEMA also maintains State SOPs that detail the best practices for obtaining and using State and community data for Discovery and flood hazard mapping. The State SOPs are available through the MIP through the link under the "Additional Resources" Section of "Tools and Links." For additional assistance, contact the respective RSC representative. RSC contact information is listed under access requests on https://hazards.fema.gov/femaportal/wps/portal/usercare_access.

Federal Mapping Program Factsheets

Additionally, the following Federal Mapping Program Fact Sheets provide summary information on the primary national mapping programs that are tracking, developing, and/or sharing geospatial data. This information is available to support the Regions, RSCs, and FEMA's Mapping Partners as they conduct Discovery.

National Elevation Dataset
Bare Earth Elevation Data
http://nationalmap.gov/elevation.html

Program Highlights

Data Product
- 2-arc-second (60-meter) posting Digital Elevation Model (DEM).

- 1-arc-second (30-meter) posting DEM.

- 1/3rd-arc-second (10-meter) posting DEM.

- 1/9th-arc-second (3-meter) posting DEM.

Advantages
- Most edge matching / seam issues from quad-based DEMs have been fixed.

- 1/3rd-arc-second National Elevation Dataset (NED) provides very close fidelity to quad contours. Suitable for non-regulatory flood risk products.

- Avoids many of the problems in original 30-meter DEMs.

- 1/9th-arc-second data are generally good enough for regulatory mapping.

- Newer 1/3rd- and 1/9th-arc-second data increasingly are from Light Detection and Ranging (LiDAR) and other high-resolution data sources.

Disadvantages
- 2- and 1-arc-second NED based on many sources with variable quality. Generally not suitable for hydraulics or floodplain mapping.

- 1/9th-arc-second data are not available everywhere.

- 1/3rd-arc-second quality varies based on original quad contour interval and NED production methods.

- Small areas of 1/3rd-arc-second data are resampled 1-arc-second data and are low quality.

Program Overview

The U.S. Geological Survey (USGS) NED has been developed by merging the highest resolution, best quality elevation data available across the U.S. into a seamless raster format. The NED has a consistent projection (Geographic) and elevation units (meters). Nationwide coverage is available for data at a 1-arc-second (30-meter) post spacing, with portions of Alaska at a 2-arc-second (60-meter) post spacing; and 1/3rd-arc-second (10-meter) post spacing (although small areas are resampled 1 arc second). The horizontal datum is the North American Datum of 1983 (NAD83), except for Alaska, which uses the North American Datum of 1927 (NAD27). The vertical datum is the North American Vertical Datum of 1988 (NAVD88), except for Alaska, which uses the National Geodetic Vertical Datum of 1929 (NGVD29). NED is a living dataset that is updated bi-monthly to incorporate the "best available" DEM data. As more 1/9th-arc-second (3-meter) post-spacing data covering the U.S. become available, they will be added to the seamless dataset.

Data Details

NED is designed to provide national elevation data in a seamless form with a consistent datum, elevation unit, and projection. NED has a resolution of 1 arc second (approximately 30 meters) for the conterminous U.S., Hawaii, Puerto Rico, and the island territories, and a resolution of 2 arc seconds (approximately 60 meters) for Alaska. NED data sources have a variety of elevation units, horizontal datums, and map projections. In the NED assembly process, the elevation values are converted to decimal meters as a consistent unit of measure, NAD83 is consistently used as the horizontal datum, and all the data are recast in a geographic projection. Older DEMs produced by methods that are now obsolete have been filtered during the NED assembly process to minimize artifacts that are commonly found in data produced by these methods. Artifact removal greatly improves the quality of the slope, shaded-relief, and synthetic drainage information that can be derived from the elevation data. NED processing also includes steps to adjust values where adjacent DEMs do not match well, and to fill sliver areas of missing data between DEMs. These processing steps ensure that NED has no void areas and artificial discontinuities have been minimized. The artifact removal filtering process does not eliminate all of the artifacts. In areas where the only available DEM is produced by older methods "striping" may still occur.

(The following information about the accuracy of the NED is from Maune, D., (ed.), 2007, Digital elevation model technologies and applications: the DEM user's manual (2nd edition), Chapter 4. Courtesy of Dean Gesch, USGS.)

The accuracy of the NED varies spatially because of the variable quality of the source DEMs. As such, the NED inherits the accuracy of the source DEMs. In an effort to provide more information to users on the vertical accuracy of the NED, the dataset has been tested by comparing it with an independent reference source of very high accuracy. The reference data are the geodetic control points that the National Geodetic Survey uses for gravity and geoid modeling. The overall absolute vertical accuracy expressed as the root mean square error is 2.44 meters. As better sources of data are incorporated, the accuracy improves.

For some applications of elevation data, the relative, or point-to-point, vertical accuracy is more important than the absolute vertical accuracy. Whereas absolute accuracy accounts for the combined effects of systematic and random errors, relative accuracy is a measure of just random errors. Averaged over all 9,187 point pairs, the relative vertical accuracy is 1.64 meters.

One caveat to note about the accuracy assessment presented here is that even though the reference control point dataset is large, the number of quadrangle-based USGS DEMs on which the points are located is relatively small. Thus, if users have a need for very specific accuracy information for the NED for a local area, a separate assessment should be done with suitable reference data just for that area.

Data Applicability to Flood Mapping Program

- 1/3rd-arc-second data provide very close fidelity to quad contours and may be acceptable for flood risk products.

- 1/9th-arc-second data are generally good enough for most regulatory flood map updates.

Data Availability

The data dictionary, release notes, and update information can be found at http://ned.usgs.gov/Ned/downloads.asp.

Information about the best resolution available and methods of production are available through the USGS GISDATA Map Studio Interactive Viewer at http://nationalmap.gov/elevation.html. The following figure illustrates the resolution of data available on September 9, 2013:
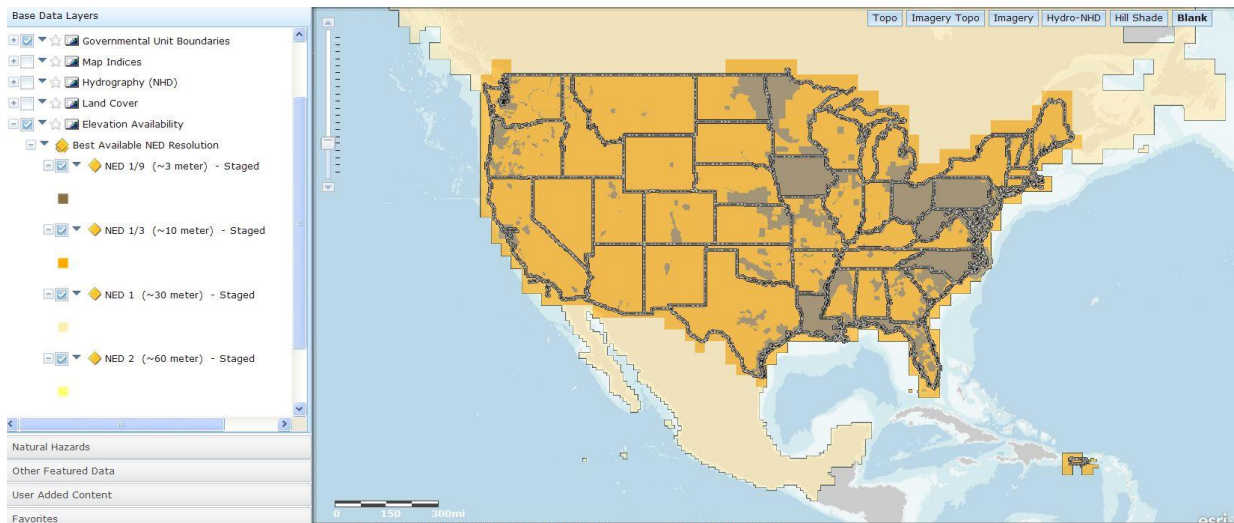
Data Ordering

In the Seamless Data Distribution System at http://viewer.nationalmap.gov/viewer/, users specify the footprint of the data they require. Large downloads may be broken into chunks.

For very large datasets, users may provide the Earth Resources Observation and Science (EROS) data center a hard drive to ship the data. Requests for bulk data may take several weeks to process (http://cumulus.cr.usgs.gov/bulk.php).

Center for LiDAR Information Coordination and Knowledge (CLICK)

LiDAR Point Cloud Data

http://lidar.cr.usgs.gov/index.php

Program Highlights

Data Highlights

- Provides information about discrete-return Light Detection and Ranging (LiDAR), including information and download capability for publicly available LiDAR (https://lta.cr.usgs.gov/LIDAR) and the ability to look for articles (http://lidar.cr.usgs.gov/knowledge.php) and other Web sites about LiDAR.

Advantages

- LiDAR data available from the Center for LiDAR Information Coordination and Knowledge (CLICK) are in native format.

- Point cloud data maintain the most detail and precision.

Disadvantages

- Datasets are large.

- Not as easy to work with as gridded data available through the NED.

Program Overview

The goal of CLICK is to facilitate data access, user coordination, and education of LiDAR remote sensing for scientific needs. The program responds to the increasing demand for research utilizing all information generated from LiDAR remote sensing data and not just bare earth Digital Elevation Models (DEMs).

CLICK focuses on managing point cloud data, not necessarily bare earth data. However, many of the point clouds may be classified to indicate bare earth points.

Data Details

LiDAR point cloud data available through the site are provided "As Is," with varying processing and accuracy. The U.S. Geological Survey (USGS) is not responsible for bare earth processing, populating fields other than xyz, or validating reported vertical and horizontal accuracies.

Data Applicability to Flood Mapping Program

The Federal Emergency Management Agency's *Guidelines and Standards for Flood Risk Analysis and Mapping* provide the specifications for elevation data for Risk Mapping Assessment, and Planning (Risk MAP) projects. Most LiDAR data will satisfy these data standards, and thus can be used on most Risk MAP projects. Some older datasets were provided without, or with very limited, metadata. These may or may not provide reliable accuracy statements. Most newer and current datasets include documentation of the tested accuracy of the dataset.

Data Availability and Ordering

See viewer at http://earthexplorer.usgs.gov/.

<p align="center">

National Geospatial-Intelligence Agency
LiDAR Data over Core Areas of Major Cities
www1.nga.mil

</p>

Program Highlights

Data Product
- High resolution Light Detection and Ranging (LiDAR) data for select urban areas.

Advantages
- Very high accuracy, density.

Disadvantages
- Coverage is generally small areas in urban cores.
- Some processing is required to ensure proper bare earth model for flood study.

Program Overview

The National Geospatial-Intelligence Agency (NGA) has a goal to collect LiDAR over major urban areas in the U.S. However, funding is not consistent, so future collections are unpredictable.

Data Details and Availability

There are limitations for the use of the data. NGA will make the data available to FEMA and FEMA contractors working on a flood study. However, the data can be used for flood studies only and not distributed to anyone else or used for other purposes.

Data Applicability to Flood Mapping Program

These data meet FEMA's terrain mapping requirements for all risk classes.

Data Ordering

Contact Paul Rooney for information on availability at (617) 832-4719 or paul.rooney@fema.dhs.gov.

NOAA Office For Coastal Management
Coastal LiDAR, bathymetry, shoreline data, and inventories of terrestrial elevation data and bathymetry
http://coast.noaa.gov/

Program Highlights

Data Products

- NOAA Digital Coast: Light Detection and Ranging (LiDAR) data collected by the National Oceanic and Atmospheric Administration (NOAA) and other agencies, such as the U.S. Army Corps of Engineers (USACE) Joint Airborne LiDAR Bathymetry Technical Center of Expertise (JALBTCX) over the U.S. coast is available at http://coast.noaa.gov/digitalcoast/

- NOAA Shoreline Website: Historical shoreline data with the average accuracy of measured benchmarks at 3.06 meters (10 feet), which meets the NOAA guidelines for fixed aids to navigation and objects charted as landmarks, is available at http://shoreline.noaa.gov/.

- U.S. Interagency Elevation Inventory: Inventories of coastal LiDAR and bathymetric data are available at

  http://coast.noaa.gov/dataregistry/search/collection/info/coastallidar.

Advantages

- LiDAR data covering most of the coast generally have sub-meter vertical and horizontal root mean square error.

- Data can be downloaded for free in the user's choice of vertical datum and projection.

- Variety of shoreline data.

- Topography and bathymetry inventories survey a wide variety of sources to identify the best available information.

Disadvantages

- USACE JALBTCX elevation data in narrow strip along coast only.

- Not all of the U.S. coastline has been mapped.

- Shoreline data are dated with no update schedule provided.

Program Overview

This organization was established in 2014 when NOAA combined two offices: the Coastal Services Center and the Office of Ocean and Coastal Resource Management. The basic missions of the two programs remain intact, but the new organizational structure is bringing value-added services to taxpayers.

In addition to implementing specific initiatives, a top priority for NOAA's Office for Coastal Management is to unify efforts to make communities more resilient. Many organizations are involved, including the private sector, nonprofits, the scientific community, and all levels of government. The Office for Coastal

Management works to be a unifying force in these efforts, providing unbiased NOAA data and tools and providing opportunities for the community to come together to define common goals and find ways to work smarter by working together. Issues run the gamut from protecting endangered species to erosion to generating better building codes for storm-resistant buildings.

Data Details and Availability

These data are generated through both private sector contracts and government-owned systems. The USACE-collected LiDAR data are typically targeted at a narrow strip of coastline and are usually a kilometer or less in width. Wide-area topographic LiDAR are also available for coastal areas. The vectorized shoreline data were created from scanned historical shoreline maps in raster format and are in decimal degrees, referenced to the NAD83 datum. The accuracy of the shoreline datasets is stricter than national standards and four times the accuracy of current U.S. Geological Survey 1:24,000 scale topographic maps. This means that the original topographic sheets can be assumed to also meet NOAA guidelines and to be very accurate in their depiction of the shoreline that existed at the time of the surveys. The topographic and bathymetric inventories are compiled regionally and are not updated on a regular schedule. They integrate inventory information from a wide variety of sources to provide a reasonably comprehensive summary of what bathymetric data and topographic data are available for a particular area.

The NOAA Digital Coast site at http://coast.noaa.gov/digitalcoast/ also provides access to a wide variety of other data sets for coastal resource managers.

Data Applicability to Flood Mapping Program

Federal Emergency Management Agency (FEMA) Procedure Memorandum (PM) 61, *Standards for Lidar and Other High Quality Digital Topography,* provides the specifications for elevation data for regulatory flood mapping projects. Most LiDAR data will satisfy the data standards in PM 61, and thus can be used on most Risk Mapping, Assessment, and Planning (Risk MAP) projects. The metadata records for each LiDAR dataset should be reviewed prior to use on a FEMA project to ensure sufficient accuracy for the project. Some LiDAR datasets also include precise near shore bathymetry. Because of the historical nature of the shoreline data, each dataset should be examined for its potential use for FEMA projects.

Data Ordering

These data are available for download directly through the NOAA Web sites listed in the Data Products section above.

National Digital Orthophoto Program
Leaf-Off Orthophotography Base Maps
www.ndop.gov

Program Highlights

Data Product

- 1-meter-resolution, black and white (B/W) orthophotography nationwide.

- High-resolution (usually 1-foot) natural color (some B/W) orthophotography in selected urban areas.

- High-resolution (finer than 1-meter) orthophotography for some States.

Advantages

- 1-meter-resolution data are available nationally.

- All these data meet Federal Emergency Management (FEMA) accuracy specifications.

- Uncompressed imagery provides the maximum visual quality.

- Urban area orthophotographs are very recent.

- Accessible through the Seamless Data Distribution System at http://viewer.nationalmap.gov/viewer/.

Disadvantages

- High-resolution data in urban areas are more difficult to manipulate because of file size.

- Much of the 1-meter-resolution data are several years old.

- Full-resolution quarter quad tiles are difficult to manage compared to compressed mosaics of the same imagery available from the U.S. Department of Agriculture.

- Source of orthophotographs if local or State data are not available.

- Limited areas are fairly poor quality or Color-Infrared (CIR) photography, which is not as visually pleasing.

Program Overview

The National Digital Orthophoto Program (NDOP) was chartered in 1993 as a consortium of Federal agencies with the purpose of developing and maintaining national orthoimagery coverage in the public domain by establishing partnerships with Federal, State, local, tribal, and private organizations.
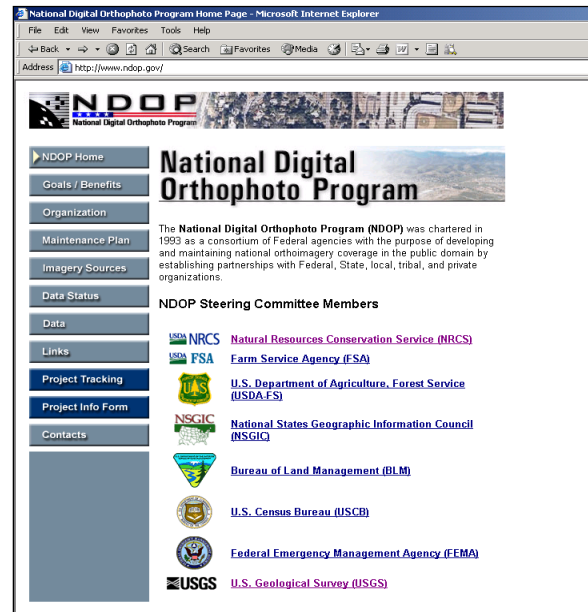
Data Details

Nationwide Digital Orthophoto Quadrangles (DOQs) are B/W, natural color, or CIR images with 1-meter ground resolution.

High-resolution (usually 1-foot) imagery is available for the Nation's largest urban areas and State capitals. The imagery usually is natural color.

The U.S. Geological Survey (USGS) also has agreements in which it distributes statewide high-resolution imagery for some States.

Data Applicability to Flood Mapping Program

All these data meet FEMA's accuracy specifications and could be used as base maps for Flood Insurance Rate Maps if the image quality is acceptable.

Data Availability

Data status for high-resolution imagery can be found at http://viewer.nationalmap.gov/viewer/.

Data Ordering

In the Seamless Data Distribution System at http://viewer.nationalmap.gov/viewer/, users specify the footprint of the data they require. The data are then made available for download. The data are in Georeferenced TIFF (GeoTIFF) format, Universal Transverse Mercator (UTM) coordinate system, North American Datum of 1983 (NAD83). Large requests may be broken into smaller sections. For very large datasets, users may provide the Earth Resources Observation and Science (EROS) data center a hard drive to ship the data. Requests for bulk data may take several weeks to process at http://cumulus.cr.usgs.gov/bulk.php .

In the past, USGS produced three types of tiled DOQs, which may also be used:

1. **3.75-minute (quarter-quad) DOQs** are available in both Native and GeoTIFF formats. DOQs in native format are cast to the UTM projection and referenced to either North American Datum of 1927 (NAD27) or NAD83. DOQs in GeoTIFF format are cast to the UTM projection and referenced to NAD83. The average file size of a B/W quarter quad is 40–45 megabytes, and a color file is generally 140–150 megabytes. Quarter-quad DOQs are distributed on CD-ROM, DVD, and File Transfer Protocol (FTP) as uncompressed files.

2. **7.5-minute (full-quad) DOQs** cover an area measuring 7.5-minutes longitude by 7.5-minutes latitude. Full-quad DOQs are mostly available for Oregon, Washington, and Alaska. Limited coverage may also be available for other States.

3. **County DOQs** consist of collections of individual DOQs that have been compiled on a county-by-county basis. Coverage for counties in Kansas, Georgia, Minnesota, North Carolina, and Pennsylvania is fairly good. Other States may have limited counties available. The files are cast to the UTM projection and referenced to either NAD27 or NAD83. County DOQs are packaged as individual JPEG-compressed 8-bit binary files on CD-ROM.

National Agriculture Imagery Program
Leaf-On Orthophotography Base Maps
http://www.fsa.usda.gov/programs-and-services/aerial-photography/imagery-programs/naip-imagery/index

## Program Highlights

Data Product

- County-level and quarter-quad orthophotography.

- 0.5-meter, 1-meter, or 2-meter resolution available (more detail below).

- Many areas captured using digital sensor.

Advantages

- Generally more recent than National Digital Orthophoto Program (NDOP) Digital Orthophoto Quadrangles (DOQs).

- Four-band or natural color.

Disadvantages

- Imagery is acquired during peak growing season; may not be suitable for areas with heavy "leaf on" conditions.

- 2-meter data not acceptable for Flood Insurance Rate Map (FIRM) base map.

- County mosaics use varying degrees of compression. Some may degrade visual quality substantially.

- Occasional clouds in images.
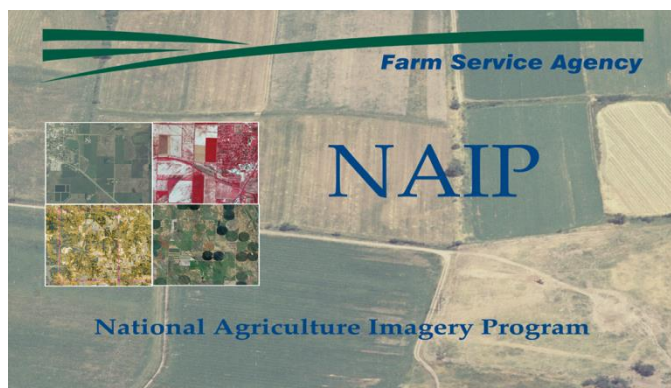
Program Overview

In 2002, the U.S. Department of Agriculture (USDA) started the National Agriculture Imagery Program (NAIP) to support the continued development of their own geographic information system (GIS) program through the acquisition of digital orthophotography. This imagery, when used in conjunction with other land and customer information already available, provides the ability to effectively administer farm programs, and
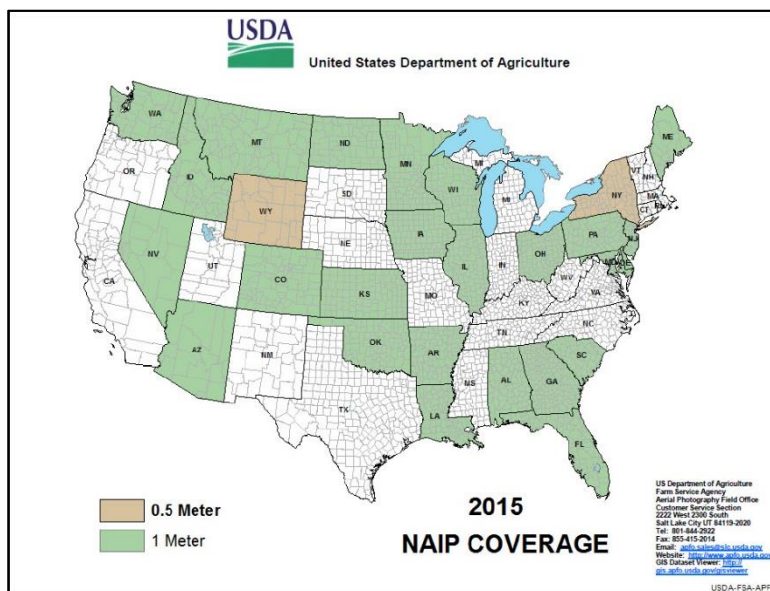
georeference natural disasters and animal or plant disease outbreaks to support better decision-making.

The program's goal is to acquire 1-meter-resolution imagery on a 3-year cycle over the contiguous 48 States, and deliver it to users within a few months. In order to support agriculture analysis, imagery is captured during the peak growing seasons (June–August).
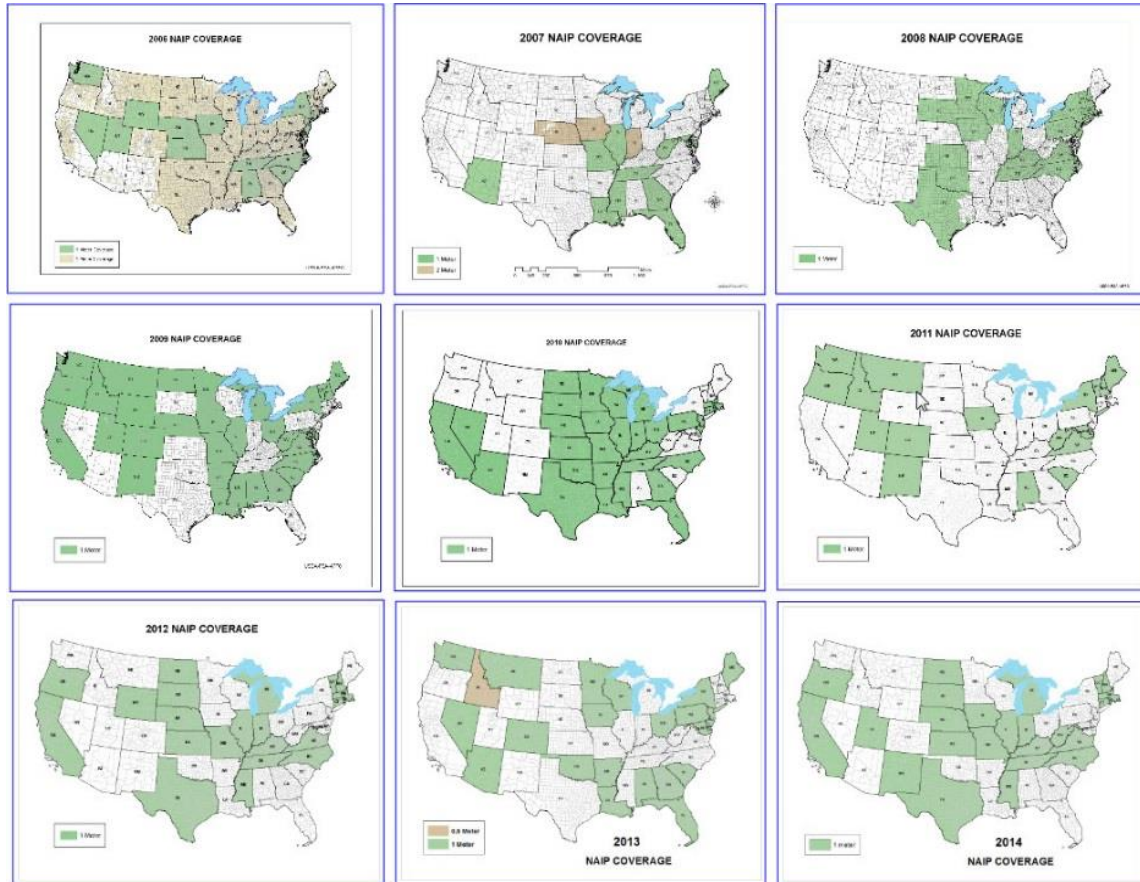
Data Details

Two primary data products are developed and available through NAIP. These include the Compressed County Mosaic (CCM) and the Full-Resolution Quarter-Quad Tiles (QQ). Historically some states were acquired at 2-meter resolution, but more recently all data are acquired at 1-meter resolution. The data are natural color (red/green/blue bands) and many recent datasets include a near infrared band that is often used for vegetation identification and other image analysis techniques.

Because the imagery is captured during peak growing season, this "leaf on" status is likely to obscure some ground level features, especially in heavily treed areas. This issue should be considered based on the geography of the region under consideration. All data come with a full suite of Federal Geographic Data Committee compliant metadata for documentation.

Compressed County Mosaic

The CCMs are developed for the convenience of full county coverage. In many contexts, manipulating a single, full county file is easier than multiple, smaller Digital Orthophoto Quarter

Quadrangles (DOQQs). It can reduce the costs for management of data and increase production efficiency. CCMs are useful when larger geographic coverage is required. CCMs use varying degrees of compression. Some may degrade visual quality substantially.

Full-Resolution Quarter-Quad Tiles

The QQ is the full-resolution standard delivery product. The QQ can be a better format when smaller geographic areas are concerned as the tiles cover an area measuring 3.75-minutes longitude by 3.75-minutes latitude, or approximately 2.5 miles on each side. The DOQQ format is Georeferenced TIFF (GeoTIFF).

Digital Sensors

In some cases, vendors use digital cameras for an entire State. In a fully digital workflow retrieving the raw imagery for other uses can be very efficient for vendors. Negotiating with the vendors to produce high-quality elevation data for targeted areas may be possible using these data. Because the data are already acquired, this procedure may be a practical way to obtain small areas of quality elevation data for high-risk areas.

Data Applicability to Flood Mapping Program

The 1-meter-resolution data are acceptable for FIRM base maps provided vegetation does not obscure roads or other important ground features. This imagery is more recent than NDOP DOQs, but 2-meter-resolution data and highly compressed county mosaics are not acceptable for FIRM base maps.

Data Availability

The program has been meeting or exceeding a 3-year refresh cycle, so all States have new 1-meter-resolution data within the past 3 years.

Data Ordering

For more information call (801) 975-3500. To order full-resolution NAIP imagery, visit the main Web page.

U.S. Census Bureau TIGER Files
Accurate Detailed Vector Street Base Maps
http://www.census.gov/geo/www/tiger/index.html

Program Highlights

Data Product
- Street centerline files with road names and address ranges for geocoding.

Advantages
- Realigned files accurate enough to use as Flood Insurance Rate Map (FIRM) base map and are now considered the default source for FIRM Database transportation features.

- Smaller, often easier to work with than orthophotographs.

- Vector-based maps can be easier to read.

- Topologically Integrated Geographic Encoding and Referencing (TIGER) spatial data are available in shapefile format.

Disadvantages
- Some communities may prefer orthophotographs.

- Local planimetric data could be more current or contain better attributes (i.e., local road names).

- TIGER/Line files may still contain features that have not been realigned to more accurate source data.

Program Overview

The U.S. Census Bureau realigned the street features for all counties in the U.S. in preparation for the 2010 Census.

Data Details and Availability

The U.S. Census Bureau has continued to release updated TIGER/Line files on a regular basis. The newest files incorporate updates discovered during the field activities for the 2010 Census and information reported by cooperators.

Data Applicability to Flood Mapping Program

Realigned files are accurate enough to use as FIRM base maps and are now considered the default source for FIRM Database transportation features.
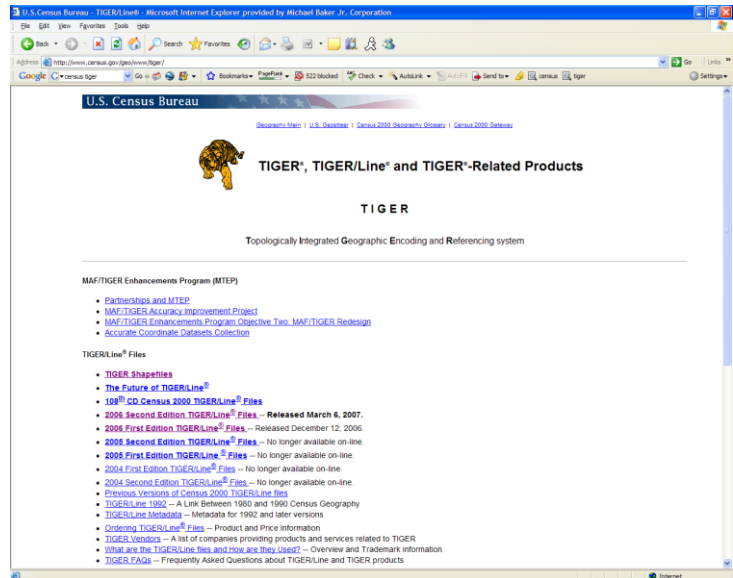
<u>Data Ordering</u>

Files containing nationwide primary roads and State-by-State primary and secondary roads are available directly from the U.S. Census Web site at ftp://ftp2.census.gov/geo/tiger/TIGER2015/. Files containing all roads by county are available at ftp://ftp2.census.gov/geo/tiger/TIGER2015/ROADS/.

In addition, you can purchase the files on CD-ROM or DVD from the Customer Services Center at (800) 923-8282 or (301) 763-INFO (4636).

NRCS/USDA Geospatial Data Gateway
Distribution of a Variety of Base Maps and Other GIS Data
http://datagateway.nrcs.usda.gov/

Program Highlights

Data Product

- The Geospatial Data Gateway provides one-stop shopping for natural resources or environmental data.

- Source for Natural Resources Conservation Service (NRCS) U.S. Department of Agriculture (USDA) Countywide Compressed Orthophoto Mosaics.

Advantages

- Data downloads are free and near-real time.

- Compressed, mosaicked counties are easier to work with, color/tone balanced, and potentially more accurate than individual quarter quad National Digital Orthophoto Program (NDOP) Digital Orthophoto Quadrangles (DOQs).

Disadvantages

- Compression of imagery may degrade visual quality.

- County mosaics generally use first generation NDOP imagery so they are fairly old.

- USDA is not the authoritative source for all data on the site, so some data may be out of date.

Program Overview

The Geospatial Data Gateway is intended to provide a single access point for resource data. It provides a way to easily locate data that exist for selected geographic areas, find the types of data for that area, and deliver the data packaged in formats compatible with commercial and USDA Service Center application formats.

One major purpose of the Gateway is to support the development, presentation, and dissemination of information by Service Center field staff working in the field with customers away from the office. However, the public has access to the Gateway to find and retrieve resource data.
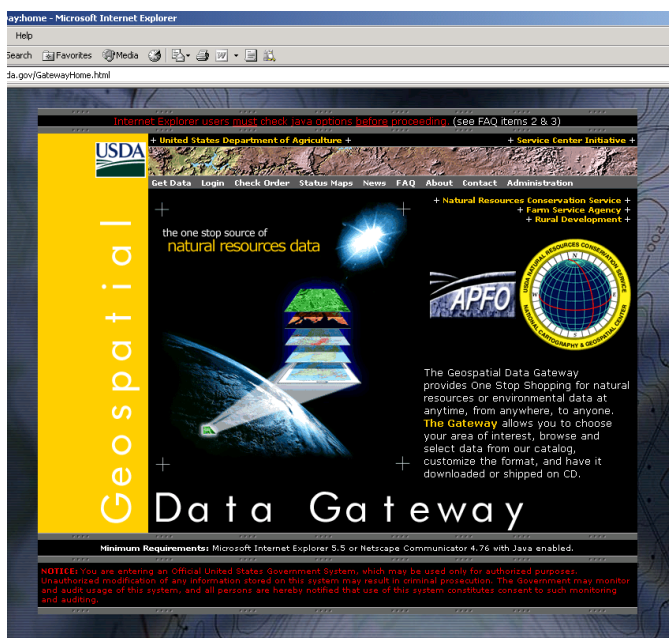
Data Details

The datasets served by the Gateway are primarily determined by the USDA Service Center Geographic Information System (GIS) Strategy. The data themes are listed on the Gateway Data Management page at http://datagateway.nrcs.usda.gov/GDGHome_StatusMaps.aspx. This page also identifies non-geospatial data that may be available through the Gateway.

The Gateway provides metadata that comply with the Federal Geographic Data Committee metadata standards for all data available through the Gateway. Metadata enable users to assess the applicability of a dataset to their needs before downloading or ordering it.

Data Applicability to Flood Mapping Program

County orthophotograph mosaics can be used as Flood Insurance Rate Map base maps provided the compression does not reduce the usability of the image. These mosaics are much easier to work with, have more consistent image brightness, contrast, and sometimes improved positional accuracy compared to the first-generation tiled DOQs.

Data Availability

The Geospatial Data Gateway provides access to many different data layers, which may be updated as frequently as once per week. The most critical themes are generally available nationwide.

Critical Themes

- Orthoimagery
- Soils
- Common Land Unit

Data Ordering

Users can download the data from the Web site directly, retrieve it from a File Transfer Protocol (FTP) site, or order it on CD or DVD.