



Ohio Valley Regional Development Commission

9329 SR 220 East, Suite A, Waverly, Ohio 45690-9012 USA

(740) 947-2853; (800) 223-7491 (Ohio only); (740) 947-3468 (Fax)

www.ovrdc.org

OVRDC GIS User Group

November 8, 2011, 1:00 p.m. to 3 p.m.

Ohio Valley Regional Development Commission

Waverly, Ohio

Agenda

1. Welcome and Introductions
2. Topics & Announcements from the Floor
3. OVRDC GIS User Group - Review of last meeting notes
4. State Program Initiatives and Updates: OGRIP, OSIP, LBRS, Highlights of 2011 Ohio GIS Conference & Others
5. Federal Initiatives Highlights: USDA NAIP, USGS, Etc
6. Brief on US Census Bureau – 2010 Census, American FactFinder, American Community Survey – Jason Gillow, OVRDC
7. Presentation: *“Regional Uses of ArcGIS Server Past, Present and Future”*
Speakers:
 - **Bret Allphin**, GIS Manager, Buckeye Hills-Hocking Valley Regional Development District
 - **David Simon**, GIS Manager, Ohio University - Voinovich School of Leadership and Public Affairs
8. Appalachian Ohio Geospatial Data Partnership – Bret Allphin & Dave Simon
9. Next Meeting: Tuesday, February 14, 2012, 1 PM to 3 PM at Ohio Valley Regional Development Commission - Tentative
10. Group Discussion & Other Business
11. Adjourn

Serving the counties of:

Adams Brown Clermont Fayette Gallia Highland Jackson Lawrence Pike Ross Scioto Vinton



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OVRDC GIS User Group

August 9, 2011, 1:00 p.m. to 3 p.m.

Ohio Valley Regional Development Commission

Waverly, Ohio

Minutes

Call to Order

The first OVRDC GIS User Group meeting was called to order by Jason Gillow, OVRDC Research/Planning Specialist at 1:00 p.m. Mr. Gillow welcomed everyone.

We had a six people from the region in attendance.

Program Initiatives and Updates– Jason Gillow, discussed the OVRDC New Website, 2011 Ohio GIS Conference, LBRS, OGRIP, ODOD 2011 Ohio County Profiles, 2010 Census, Factsheets on National Map and NSGIC, and other programs

Presentations: Speakers:

- **David Simon**, GIS Manager, Ohio University - Voinovich School of Leadership and Public Affairs and
- **Seth Montgomery**, Draftsman, Gallia County Engineer's Office
"Gallia County Parcel Mapping Project"

Next Meeting: Tuesday, November 8, 2011, 1 PM to 3 PM at Ohio Valley Regional Development Commission - Tentative

Group Discussion & Other Business

Mr. Gillow asked if there were any other business or any questions, being none the first OVRDC GIS User Group was adjourned.

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News on Federal GIS initiatives for Ohio and our Region

Charles Hickman - Geographer - U.S. Geological Survey
National Map Liaison to Ohio [and Michigan]
6480 Doubletree Avenue
Columbus, Ohio 43229 USA
Email: chickman@usgs.gov
Phone: (614) 430-7768
Website: <http://www.usgs.gov/ngpo>

There is some **USGS geodata news online** at: See Attachment http://nationalmap.gov/tnm_news.html including an item about an iPhone - iPad application for all the new and historic USGS maps

There's A (M)app For That: Topographic maps from the USGS are now available as an app for Apple iOS devices including the iPhone, iPad and iPod Touch. The new app, called [PDF Maps](#), has been released though the iTunes App Store and allows free download of any available [US Topo](#) or [USGS Historical](#) maps from the [USGS Store](#) or [Map Locator tool](#).

Additional National Map news items are at <http://twitter.com/#!/USGSTNM>

For Ohio, we now have complete US Topo coverage just this past week when the last five quads along the Michigan border became available < <http://nationalmap.gov/ustopo/> Most of Ohio became available back in late 2010. I need to do an updated highlight about completion for Ohio.

There are two webinars, November 14 and December 1 related to the current NSDI CAP grant opportunities > [2012 NSDI CAP Webinars Scheduled](#) FGDC staff will host two webinars (Monday, November 14 and Thursday, December 1) to provide background information on the FGDC Cooperative Agreement Program (CAP) submission process. Pre-registration for the webinar session is required, links available from the [information page](#).

< <http://news.nsgic.org/2011/10/2012-nsdi-cap-webinars-scheduled.html> >
< <http://www.fgdc.gov/grants/2012CAP/Webinar-2012NSDICAP> >.

More info about the CAP grants for 2012 is online at <http://www.fgdc.gov/grants>
< <http://www.fgdc.gov/grants/2012CAP/2012CAPDescriptions> >.

News items for National Hydrography Dataset (NHD) are at <http://twitter.com/#!/USGSNHD> and <http://nhd.usgs.gov/>

- A new NHD Feature Catalog is available- Want to know more about NHD Events? See the ESRI Hydro Blog ... to see how Events are used to add value <http://blogs.esri.com/Dev/blogs/hydro/>
- A new release is available for NHD HEM version 2.3 for ArcGIS 9.3 and version 2.5 for ArcGIS 10. - New NHD User guide now live! Two tutorials have been published ... and more to come ...

We have a new fact sheet: **Volunteer map data collection at the USGS** online at <http://pubs.usgs.gov/fs/2011/3103/> and <http://pubs.usgs.gov/fs/2011/3103/FS11-3103.pdf> with some info about recent pilot projects related to OpenStreetMap tools.

Conferences –

Geography Awareness Week - November 13-19, 2011

Theme is, "Geography: The Adventure in Your Community."

< <http://geography.about.com/od/teachgeography/a/gaw.htm> >.

GIS Day - November 16, 2011 < <http://www.gisday.com/> >.

ASPRS 2011 Fall Pecora Conference - November 14-17 in Herndon, Virginia

< <http://www.asprs.org/meetings/calendar.html> >.

WMAO - Water Management Association of Ohio - November 16-17 in Columbus

< <http://www.wmao.org/meetings.shtml> >.

OGRIP Forum - November 28 in Columbus - Ohio Geographically Referenced Information Program

< <http://ogrip.oit.ohio.gov/Events/ForumMeetings.aspx> >

How the National Weather Service uses GIS for issues like flooding and tornados and how GIS plays a role in their business operations. Presenter: Sarah Jamison, Warning Coordination Meteorologist from the National Oceanic and Atmospheric Administration, National Weather Service, Cleveland.

Great Lakes Flood Hazard Mapping Project - Annual Stakeholders Meeting - November 29 to December 1 in

Detroit - < <http://www.greatlakescoast.org/> >

2012

NSGIC - September 9-13, 2012 in Orlando < <http://www.nsgic.org/events/future.cfm> >.

Hilton Hotel - Lake Buena Vista, Florida

AutoCarto 2012 Research Symposium - September 16-18, 2012 in Columbus

< <http://www.cartogis.org/autocarto.php> >

GIScience 2012, 7th International Conference on Geographic Information Science

September 18-21 in Columbus

< <http://www.giscience.org> >.

USDA NAIP imagery for 2011 for Ohio - USDA NAIP coverage for 2011 for Ohio flown between August 3 – Aug 30, 2011 product 1-m, 4-band, leaf-on, color NAIP imagery flown by Northwest, Inc. This information will be available for download for free by the end of November to first part of December 2011 through USDA NRCS “Geospatial Data Gateway (GDG) at <http://datagateway.nrcs.usda.gov/>

Next Ohio NAIP in 2014 -

We received news this week from USDA Farm Services Agency (FSA) about the new three-year cycle for the National Agricultural Imagery Program (NAIP). Ohio is now scheduled for new one-meter, leaf-on, color NAIP imagery in the summer of 2014. FSA hopes to include CIR as the fourth band. They also hope to continue this program on a three year cycle.

< http://en.wikipedia.org/wiki/National_Agriculture_Imagery_Program >

< <http://www.fsa.usda.gov/FSA/apfoapp?area=home&subject=prog&topic=nai> >

Historic Topo Quads Online Soon -

We expect to have all the historic USGS topographic maps online soon. The February two-page fact sheet on the scanning of historic USGS topographic maps is online at

< <http://pubs.usgs.gov/fs/2011/3009/> >

< http://pubs.usgs.gov/fs/2011/3009/fs20113009_013111.pdf >

A new technical announcement about USGS Historical Quadrangle Scanning Project (HQSP) is at

< <http://www.usgs.gov/newsroom/article.asp?ID=2845> >

< http://www.usgs.gov/newsroom/article_pf.asp?ID=2845 >

A 25-minute video on HQSP from the May National Map conference is at

< <http://gallery.usgs.gov/videos/413> >



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Census Bureau Releases 2010 Summary File 1 Information for Ohio

The U.S. Census Bureau released new, detailed demographic information from the 2010 Census for Ohio on July 28, 2011.

These Summary File 1 tables provide the most detailed counts available so far from the 2010 Census, including cross-tabulations of age, sex, households, families, relationship to householder, housing units, detailed race and Hispanic or Latino origin groups, and group quarters. The statistical tables are available for states, counties, county subdivisions, places, census tracts, ZIP code tabulation areas, and congressional districts for the 111th Congress. For most subjects, statistics for census block groups and blocks are also shown.

Accessing the Information

The Summary File 1 tables can be found on the Census Bureau's new American FactFinder website at <http://factfinder2.census.gov>. For additional information on 2010 Census go to the website at <http://2010.census.gov/news/press-kits/summary-file-1.html>.

A summary file version of the information is also available for users who want to download the set of detailed tables for all of the geographies within a state and run their own analysis and rankings. The summary file is available for download at http://www2.census.gov/census_2010/04-Summary_File_1/.

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U.S. CENSUS BUREAU

AMERICAN COMMUNITY SURVEY

2010 RELEASE SCHEDULE

Planned Release	Data Products ¹	Lowest Level Geography ²
September, 2011	1-Year Data Release on American FactFinder: Data Profiles Comparison Profiles Selected Population Profiles Ranking Tables Subject Tables Detailed Tables Geographic Comparison Tables 1-Year Summary File	Places, County Subdivisions Geographies of 65,000+ population Exception: Ranking Tables the lowest level is States
October, 2011	3-Year Data Release on American FactFinder: Data Profiles Selected Population Profiles Subject Tables Detailed Tables Geographic Comparison Tables 3-Year Summary File	Places, Minor Civil Divisions ³ Geographies of 20,000+ population
December, 2011	5-Year Data Release on American FactFinder: Data Profiles Subject Tables Detailed Tables Geographic Comparison Tables 5-Year Summary File	Census Tracts Exceptions: Geographic Comparison Tables the lowest level is Places/County Subdivisions Census Block Groups
January, 2012	1-Year, 3-Year, & 5-Year Spanish Version of Puerto Rico Community Survey Data Release on American FactFinder	Puerto Rico geographies only

Public Use Microdata Sample (PUMS) files for each of the three datasets will be released one to two months after each public release.

FOOTNOTES

¹For information on the types of data products available, see the [Compass Series PowerPoint Presentation](#)

²The lowest level of geography refers to the Census geographic hierarchy. For more information on census geography, see the [Geographic Terms and Concepts document](#)

³For definitions of the types of geographic areas listed, see the [Glossary of Basic Geographic and Related Terms](#)



Location Based Response System

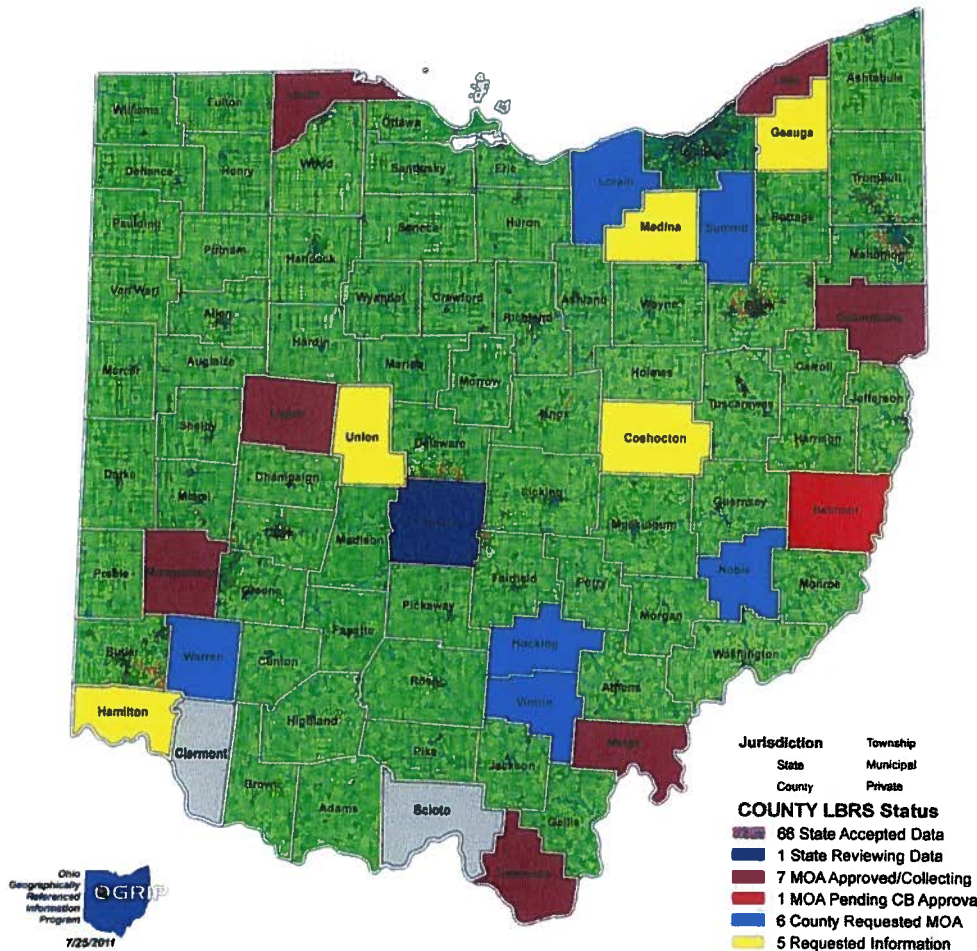
The Ohio Location Based Response System (LBRS) is a component of the e-SecureOhio initiative intended to address needs for coordinated data access between state agencies. The LBRS will provide a statewide, current, accurate, and accessible street centerline and addressing system that will be collaboratively maintained as an Ohio Asset by local and state resources.

Supporting Transportation Infrastructure - Planning, Safety and Emergency Response

The LBRS program establishes partnerships between State and County government for the creation of spatially accurate street centerlines with address ranges and field verified site-specific address locations. Once established, maintenance of the data is performed by the county using local knowledge and expertise to ensure accuracy and completeness of the data.

Funding to support the development of LBRS compliant systems is available to counties through a Memorandum of Agreement (MOA) that establishes roles and responsibilities for program participation. Seventy-five counties are participating in the LBRS program; of those, sixty-six have completed development and are providing LBRS compliant data to the state.

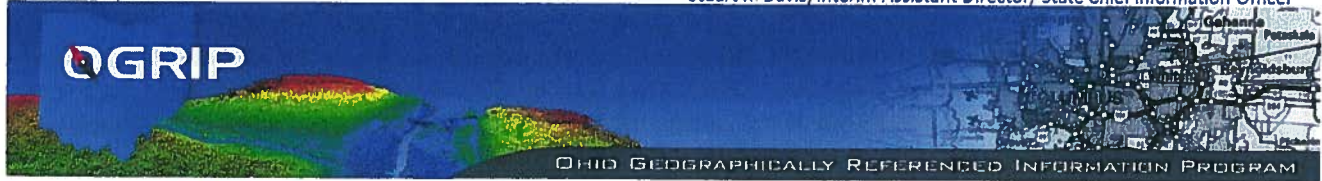
Participating counties provide project management and QA/QC on road names, addresses, etc to develop data that is compatible with the state's legacy roadway inventory. Data developed through this system supports the needs of emergency responders at both the local and state level and provides digital mapping information required for 9-1-1 Phase II compliance within the counties.



The Ohio Department of Transportation is the LBRS Program Sponsor, providing technical guidance, support, and data validation services. The LBRS program is administered by the Ohio Geographically Referenced Information Program office.

Through the collaborative efforts of State and Local government the LBRS program is producing highly accurate field verified data that is current, complete, consistent, and accessible. LBRS data is maintained as an Ohio asset by local resources and is provided to the state as part of a coordinated long-term effort by OGRIP to reduce redundant data collection by developing data that meets the needs of several levels of government. The LBRS supports a multi-jurisdictional approach to protecting the health, safety and welfare of the state's constituents.





The Ohio Statewide Imagery Program

The Department of Administrative Services Office of Information Technology Ohio Geographically Referenced Information Program has awarded a contract for the Ohio Statewide Imagery Acquisition Project—RFP #0A1078 for the acquisition of orthophotography for the Ohio Statewide Imagery Program (OSIP) beginning in the Spring of 2011.

OSIP is a partnership between State, Local and Federal government agencies to develop high-resolution imagery and elevation data for the State of Ohio to benefit Geographic Information System users at all levels of government. Accurate imagery and elevation data serve as the backbone for the development of additional data sets that are currently maintained and accessed by government decision makers and the public.

OSIP will obtain 1-foot pixel resolution 4-band (RGBN) stacked imagery to support state agency applications. The imagery is used by numerous state agencies to improve application and service delivery to their customers, supporting a wide variety of applications including economic development, the management of properties, utilities, and the environment, and will be used by emergency response agencies for planning and modeling, response, and recovery.

All standard products developed through OSIP are public domain data. As with the previous OSIP project, a copy of the 1"=200' scale 1-foot pixel resolution color orthophotography will be provided to each county and will be freely distributed through GIServOhio, OGRIP's spatial data delivery platform.

Standard imagery products will be captured and delivered in four (4) phases. The northeast portion of the state will be acquired in the spring of 2011; the western portion of the state will be acquired in the spring of 2012, the central portion of the state will be acquired in the spring of 2013, and the southeast portion of the project will be acquired in the spring of 2014.

The state has reserved the right to modify the acquisition footprints depending on available funding in any given acquisition year. The current acquisition areas are as follows:

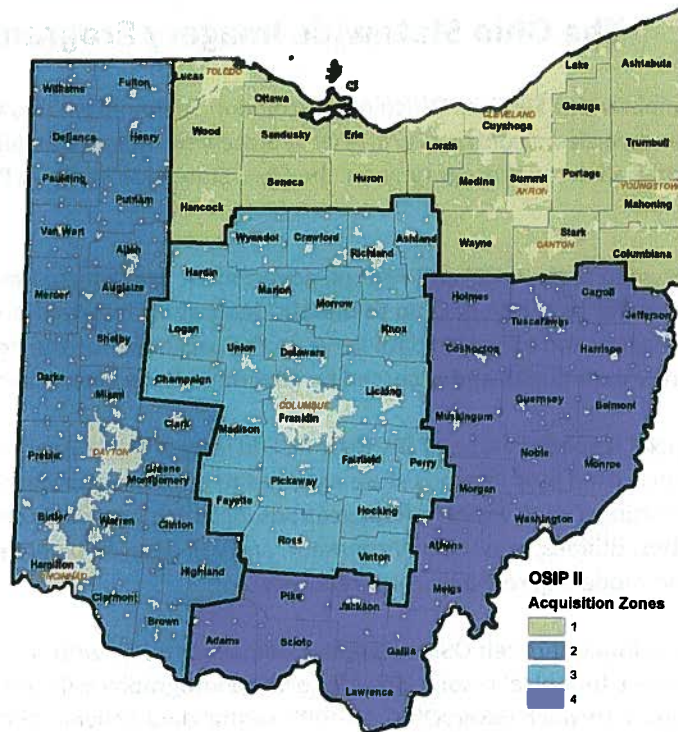
Twenty-one (21) counties comprise the Northeastern Acquisition Area (~9,879.2 sq.mi.) include: ASHTABULA, COLUMBIANA, CUYAHOGA, ERIE, GEauga, HANCOCK, HURON, LAKE, LORAIN, LUCAS, MAHONING, MEDINA, OTTAWA, PORTAGE, SANDUSKY, SENECA, STARK, SUMMIT, TRUMBULL, WAYNE, WOOD.

Twenty-four (24) counties comprise the Western Acquisition Area (~10,604.4 sq.mi.) include: ALLEN, AUGLAIZE, BROWN, BUTLER, CLARK, CLERMONT, CLINTON, DARKE, DEFIANCE, FULTON, GREENE, HAMILTON, HENRY, HIGHLAND, MERCER, MIAMI, MONTGOMERY, PAULDING, PREBLE, PUTNAM, SHELBY, VAN WERT, WARREN, WILLIAMS.

Twenty-two (22) counties comprise the 2013 Central Acquisition Area (~10,405.9 sq.mi.) include: ASHLAND, CHAMPAIGN, CRAWFORD, DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, HARDIN, HOCKING, KNOX, LICKING, LOGAN, MADISON, MARION, MORROW, PERRY, PICKAWAY, RICHLAND, ROSS, UNION, VINTON, WYANDOT.



Twenty-one (21) counties comprise the 2014 Southeastern Acquisition Area (~10,385.9 sq.mi.) include: ADAMS, ATHENS, BELMONT, CARROLL, COSHOCTON, GALLIA, GUERNSEY, HARRISON, HOLMES, JACKSON, JEFFERSON, LAWRENCE, MEIGS, MONROE, MORGAN, MUSKINGUM, NOBLE, PIKE, SCIOTO, TUSCARAWAS, WASHINGTON.



OSIP provides state and county agencies with an opportunity to obtain enhanced products through the State's Cooperative Purchase Agreement (CPA) program. The CPA allows participating local government entities to obtain product enhancements through a direct contract with the vendor:

- 61N pixel resolution 4-band (RGBN) color imagery
- 1FT or better pixel resolution Oblique Imagery (Pictometry or SmartView)
- 1M LiDAR
- 5-foot contours
- 2-foot contours
- Landuse/Landcover development

Acquisition of enhanced products through the CPA is not dependant on the State's acquisition cycle. Costs for enhanced OSIP products are listed below by County.

Ohio Statewide Imagery Acquisition Project—RFP #0A1078

State of Ohio, Office of Information Technology, Enterprise Shared Services

OSIP II - Optional Product Deliverables - 2011 Cost by County

Optional Product	GIN ORTHO		B	C	D	E	F1	F2	S2
	SQ.MI.	4-BAND	GIN ORTHO	IMPOSTING	5FT	2FT	SMARTVIEW	PICTOMETRY	LANDUSE
COUNTY	AREA	FULL-RES TILES	MOSAIC	& DEM	CONTOURS	CONTOURS	OBLIQUES	OBLIQUES**	LANDCOVER
ADAMS	586.3	\$80,202	\$1,170	\$68,476	\$51,473	\$212,705	\$94,395	\$49,836	\$63,199
ALLEN	406.9	\$57,956	\$901	\$49,818	\$38,018	\$149,915	\$65,511	\$34,587	\$48,156
ASHLAND	426.9	\$60,436	\$931	\$51,898	\$39,518	\$156,915	\$68,731	\$36,287	\$48,056
ASHTABULA	710.8	\$95,640	\$1,357	\$81,424	\$60,810	\$256,280	\$114,439	\$60,418	\$75,026
ATHENS	508.4	\$70,542	\$1,054	\$80,374	\$45,830	\$185,440	\$81,853	\$43,214	\$55,798
AUGLAIZE	402.1	\$57,361	\$894	\$49,319	\$37,858	\$148,235	\$64,739	\$34,179	\$45,700
BELMONT	541.7	\$74,671	\$1,104	\$63,837	\$48,128	\$197,095	\$87,214	\$46,045	\$58,962
BROWN	493.5	\$68,694	\$1,031	\$58,824	\$44,513	\$180,225	\$79,454	\$41,948	\$54,383
BUTLER	489.9	\$65,768	\$996	\$56,370	\$42,743	\$171,965	\$75,654	\$38,942	\$52,141
CARROLL	399.1	\$56,989	\$890	\$49,007	\$37,433	\$147,185	\$64,256	\$33,924	\$45,415
CHAMPAIGN	430.2	\$60,845	\$936	\$52,241	\$39,765	\$158,070	\$69,263	\$36,567	\$48,369
CLARK	401.4	\$57,274	\$893	\$49,246	\$37,605	\$147,990	\$64,626	\$34,119	\$45,633
CLERMONT	459.7	\$64,503	\$981	\$55,309	\$41,978	\$168,395	\$74,012	\$39,075	\$51,172
CLINTON	412.4	\$58,638	\$910	\$50,390	\$38,430	\$151,840	\$66,397	\$35,054	\$46,678
COLUMBIANA	535.1	\$73,853	\$1,094	\$63,151	\$47,833	\$194,785	\$86,152	\$45,484	\$58,335
COSHOCTON	567.4	\$77,858	\$1,142	\$66,510	\$50,055	\$206,090	\$91,352	\$48,229	\$61,403
CRAWFORD	402.8	\$57,448	\$895	\$49,392	\$37,710	\$148,480	\$64,851	\$34,238	\$45,766
CUYAHOGA	459.6	\$64,491	\$980	\$55,299	\$41,970	\$168,360	\$73,996	\$39,088	\$51,162
DARKE	599.6	\$81,851	\$1,190	\$69,859	\$52,470	\$217,360	\$96,536	\$50,966	\$64,462
DEFIANCE	414.6	\$58,911	\$913	\$50,619	\$38,595	\$152,610	\$66,751	\$35,241	\$46,887
DELAWARE	457.4	\$64,218	\$977	\$55,070	\$41,805	\$167,590	\$73,642	\$38,879	\$50,953
ERIE	259.2	\$39,641	\$680	\$36,012	\$26,940	\$98,220	\$41,732	\$22,032	\$32,124
FAIRFIELD	508.5	\$70,554	\$1,054	\$60,384	\$45,638	\$185,475	\$81,869	\$43,223	\$55,808
FAYETTE	407.1	\$57,981	\$902	\$49,839	\$38,033	\$149,985	\$65,544	\$34,804	\$46,175
FRANKLIN	544	\$74,956	\$1,107	\$64,076	\$48,300	\$197,900	\$87,584	\$46,240	\$59,180
FULTON	407.8	\$58,068	\$903	\$49,912	\$38,085	\$150,230	\$65,656	\$34,663	\$46,241
GALLIA	471.4	\$65,954	\$998	\$56,526	\$42,855	\$172,490	\$75,896	\$40,069	\$52,283
GEAUGA	408.9	\$58,204	\$904	\$50,026	\$38,168	\$150,815	\$65,833	\$34,757	\$46,346
GREENE	416	\$59,084	\$915	\$50,764	\$38,700	\$153,100	\$66,976	\$35,360	\$47,020
GUERNSEY	528.4	\$73,022	\$1,084	\$62,454	\$47,130	\$192,440	\$85,073	\$44,914	\$57,698
HAMILTON	412.5	\$58,650	\$910	\$50,400	\$38,438	\$151,875	\$66,413	\$35,063	\$46,688
HANCOCK	534	\$73,716	\$1,092	\$63,036	\$47,550	\$194,400	\$85,974	\$45,390	\$58,230
HARDIN	471	\$65,904	\$998	\$56,484	\$42,825	\$172,350	\$75,831	\$40,035	\$52,245
HARRISON	410.6	\$58,415	\$907	\$50,203	\$38,295	\$151,210	\$66,107	\$34,901	\$46,507
HENRY	420	\$59,580	\$921	\$51,180	\$39,000	\$154,500	\$67,620	\$35,700	\$47,400
HIGHLAND	557.7	\$76,655	\$1,128	\$65,501	\$49,328	\$202,695	\$89,790	\$47,405	\$60,482
HOCKING	423.5	\$60,014	\$926	\$51,544	\$39,263	\$155,725	\$68,184	\$35,998	\$47,733
HOLMES	424.1	\$60,089	\$927	\$51,807	\$39,308	\$155,935	\$68,281	\$36,049	\$47,790
HURON	496.4	\$69,054	\$1,036	\$59,126	\$44,730	\$181,240	\$79,921	\$42,194	\$54,658
JACKSON	421.5	\$59,766	\$923	\$51,336	\$39,113	\$155,025	\$67,862	\$35,828	\$47,543
JEFFERSON	410	\$58,340	\$906	\$50,140	\$38,250	\$151,000	\$66,010	\$34,850	\$46,450
KNOX	529.6	\$73,171	\$1,085	\$62,579	\$47,220	\$192,860	\$85,266	\$45,016	\$57,812
LAKE	231.8	\$36,244	\$639	\$31,839	\$24,885	\$88,630	\$37,320	\$19,703	\$29,521
LAWRENCE	457	\$64,168	\$977	\$55,028	\$41,775	\$167,450	\$73,577	\$38,845	\$50,915
LICKING	687.4	\$92,738	\$1,322	\$78,990	\$59,055	\$248,090	\$110,672	\$58,429	\$72,803
LOGAN	466.7	\$65,371	\$991	\$56,037	\$42,503	\$170,845	\$75,139	\$39,670	\$51,837
LORAIN	494.5	\$68,818	\$1,033	\$58,928	\$44,588	\$180,575	\$79,615	\$42,033	\$54,478
LUCAS	347.1	\$50,541	\$812	\$43,946	\$33,533	\$128,985	\$55,884	\$29,504	\$40,475
MADISON	467.4	\$65,458	\$992	\$56,110	\$42,555	\$171,090	\$75,252	\$39,729	\$51,903
MAHONING	425.3	\$60,238	\$929	\$51,732	\$39,398	\$156,355	\$68,474	\$36,151	\$47,904
MARION	404.2	\$57,621	\$897	\$49,537	\$37,815	\$148,970	\$65,077	\$34,357	\$45,899
MEDINA	423.1	\$59,965	\$926	\$51,503	\$39,233	\$155,585	\$68,120	\$35,964	\$47,695
MEIGS	432.4	\$61,118	\$940	\$52,470	\$39,930	\$158,840	\$69,617	\$36,754	\$48,578
MERCER	473.4	\$66,202	\$1,001	\$56,734	\$43,005	\$173,190	\$76,218	\$40,239	\$52,473
MIAMI	409.8	\$58,316	\$906	\$50,120	\$38,235	\$150,930	\$65,978	\$34,833	\$46,431
MONROE	457.2	\$64,193	\$977	\$55,049	\$41,790	\$167,520	\$73,610	\$38,862	\$50,934
MONTGOMERY	464.4	\$65,086	\$988	\$55,798	\$42,330	\$170,040	\$74,769	\$39,474	\$51,618
MORGAN	421.6	\$59,779	\$923	\$51,347	\$39,120	\$155,060	\$67,878	\$35,836	\$47,552
MORROW	407.3	\$58,006	\$902	\$49,860	\$38,048	\$150,055	\$65,576	\$34,621	\$46,194
MUSKINGUM	672.6	\$90,903	\$1,300	\$77,451	\$57,945	\$242,910	\$108,289	\$57,171	\$71,397
NOBLE	404.7	\$57,683	\$898	\$49,589	\$37,853	\$149,145	\$65,157	\$34,400	\$45,947
OTTAWA	265.8	\$40,460	\$690	\$39,396	\$27,435	\$100,530	\$42,794	\$22,593	\$32,751
PAULDING	419.2	\$59,481	\$920	\$51,097	\$38,940	\$154,220	\$67,492	\$35,632	\$47,324
PERRY	412.5	\$58,650	\$910	\$50,400	\$38,438	\$151,875	\$66,413	\$35,063	\$46,688
PICKAWAY	506.4	\$70,294	\$1,051	\$60,166	\$45,480	\$184,740	\$81,531	\$43,044	\$55,608
PIKE	444	\$62,556	\$957	\$53,676	\$40,800	\$162,900	\$71,484	\$37,740	\$49,680
PORTAGE	504.5	\$70,058	\$1,048	\$59,968	\$45,338	\$184,075	\$81,225	\$42,883	\$55,428
PREBLE	426.5	\$60,386	\$931	\$51,856	\$39,488	\$156,775	\$68,667	\$36,253	\$48,018
PUTNAM	484.7	\$67,603	\$1,018	\$57,909	\$43,853	\$177,145	\$78,037	\$41,200	\$53,547
RICHLAND	500.5	\$69,562	\$1,042	\$59,552	\$45,038	\$182,675	\$80,581	\$42,543	\$55,048
ROSS	692.8	\$93,408	\$1,330	\$79,552	\$59,460	\$249,980	\$111,541	\$58,888	\$73,316
SANDUSKY	413.6	\$58,787	\$911	\$50,515	\$38,520	\$152,260	\$66,590	\$35,156	\$46,792
SCIOTO	616.1	\$83,897	\$1,215	\$71,575	\$53,708	\$223,135	\$99,193	\$52,369	\$66,030
SENECA	553.3	\$76,110	\$1,121	\$65,044	\$48,998	\$201,155	\$89,082	\$47,031	\$60,064
SHELBY	410.8	\$58,440	\$907	\$50,224	\$38,310	\$151,280	\$66,139	\$34,918	\$46,528
STARK	580.6	\$79,495	\$1,162	\$67,883	\$51,045	\$210,710	\$93,477	\$49,351	\$62,657



Optional Product	A	B	C	D	E	F1	F2	S2	
	6IN ORTHO 4-BAND FULL_RES.TILES	6IN ORTHO COMPRESSED MOSAIC	1M POSTING LIDAR & DEM	5FT CONTOURS	2FT CONTOURS	SMARTVIEW OBLIQUES	PICTOMETRY OBLIQUES **	LANDUSE LANDCOVER	
COUNTY	SQ.MI AREA								
SUMMIT	420.4	\$59,630	\$922	\$51,222	\$39,030	\$154,840	\$87,685	\$35,734	\$47,438
TRUMBULL	636.5	\$86,426	\$1,248	\$73,686	\$55,238	\$230,275	\$102,477	\$54,103	\$67,968
TUSCARAWAS	571.5	\$78,366	\$1,148	\$66,936	\$50,363	\$207,525	\$92,012	\$48,578	\$61,793
UNION	437	\$61,688	\$947	\$52,948	\$40,275	\$160,450	\$70,357	\$37,145	\$49,015
VAN WERT	410.7	\$58,427	\$907	\$50,213	\$38,303	\$151,245	\$66,123	\$34,910	\$48,517
VINTON	414.9	\$58,948	\$913	\$50,650	\$38,618	\$152,715	\$66,799	\$35,267	\$48,916
WARREN	407.2	\$57,993	\$902	\$49,849	\$38,040	\$150,020	\$65,560	\$34,612	\$48,184
WASHINGTON	639.9	\$86,848	\$1,251	\$74,050	\$55,493	\$231,465	\$103,024	\$54,392	\$68,291
WAYNE	557.3	\$76,606	\$1,127	\$65,460	\$49,298	\$202,555	\$89,726	\$47,371	\$60,444
WILLIAMS	423.6	\$60,027	\$926	\$51,555	\$39,270	\$155,780	\$68,200	\$36,006	\$47,742
WOOD	621.4	\$84,554	\$1,223	\$72,126	\$54,105	\$224,990	\$100,046	\$52,819	\$68,533
WYANDOT	407.8	\$58,068	\$903	\$49,912	\$38,085	\$150,230	\$65,656	\$34,663	\$46,241

Optional Product A.

Stacked four-band (RGBN), 8-bit digital orthoimagery with a 6-inch pixel resolution, delivered in 2,500 x 2,500 foot grid tiles, with no "No-Data" areas; delivered as complete county coverages with a minimum of one full tile overlap with surrounding counties; in uncompressed GeoTIFF file format with world files; in the appropriate Ohio State Plane North or South NAD83/HARN, US Survey Feet (ESPG Codes 3401 or 3402) coordinate system.

Optional Product B

Stacked four-band (RGBN), 8-bit digital orthoimagery with a 6-inch pixel resolution with no "No-Data" areas; delivered as complete county mosaics in ECW or MrSID format with world files; in the appropriate Ohio State Plane North or South NAD83/HARN, US Survey Feet (ESPG Codes 3401 or 3402) coordinate system for each of the State's 88 counties.

Optional Product C

LiDAR and DEM update including a 1-meter post spacing LiDAR acquisition including, at least first and last returns, intensity and classification (ground/non-ground) point cloud. LiDAR deliverables will be in LAS format in the grid tiles corresponding to the State's 6-inch 2,500 x 2,500 foot tiling scheme. In areas of new LiDAR collection the existing 2.5 FT DEM will be updated suitable for 2-foot contour generation. DEM updates will be provided in ArcInfo GRID and USGS DEM format in the appropriate Ohio State Plane North or South NAD83/HARN, US Survey Feet (ESPG Codes 3401 or 3402) coordinate system.

Optional Product D

Five (5)-foot contours, including pricing for processing DEM to bare-earth digital terrain model (DTM), adding breaklines and the generation of contours.

Optional Product E

Two (2)-foot contours, including pricing for statewide 2-foot processing DEM to bare-earth contours, digital terrain model (DTM), adding breaklines and the generation of contours.

Oblique Imagery

Optional Product F1 (SmartView Open Source Solution)

1FT pixel resolution or better Oblique imagery.

The oblique imagery will be delivered in TIFF or JPEG format with software capable of providing efficient display and manipulation of imagery as well as horizontal and vertical measurement tools.

Optional Product F2 (Pictometry Licensed Solution)

1FT pixel resolution or better Oblique imagery.

The oblique imagery will be delivered in TIFF or JPEG format with software capable of providing efficient display and manipulation of imagery as well as horizontal and vertical measurement tools.

**** Price does not include storage device. Add \$199.00 to cost for delivery by vendor on 1TB hard drive.**

Optional Services S2

Land Use/Land Cover inventory using the Anderson Land Cover Schema (USGS 1976) for the generation of the five land-cover categories shown below:

1. Urban Land
2. Agricultural Land
3. Forest Land
4. Water
5. Wasteland



Ohio Statewide Imagery Program

Operations for the 2011 Ohio Statewide Imagery Program concluded on Monday, May 9th, 2011. Adverse weather and ground conditions limited collection to 16 of the 21 counties in the northeast acquisition area scheduled for 2011. Below is a listing of product collection status by county. Processing of the imagery is underway with standard 1FT product delivery scheduled for the Fall of 2011.

OSIP II

REQUIRED OSIP DELIVERABLE PRODUCT COLLECTION STATUS - Northeast Acquisition Area

1FT 4-Band Orthophotography

- Imagery was collected for Cuyahoga, Erie, Geauga, Hancock, Huron, Lake, Lorain, Medina, Ottawa, Portage, Sandusky, Seneca, Summit, Wayne, Wood, and along the Lake Erie shoreline in Ashtabula County
- Imagery collection for Ashtabula, Columbiana, Mahoning, Trumbull and Stark has been rescheduled for the spring of 2012

OPTIONAL OSIP DELIVERABLE PRODUCT COLLECTION STATUS - Statewide

6IN 4-Band Orthophotography

- 6IN imagery was collected for Auglaize, Clinton, Shelby, Greene, Lucas, Miami and Huron County
- 6IN imagery collection for Sandusky has been rescheduled for the spring of 2012

3IN 4-Band Orthophotography

- The cities of Columbus and Dublin captured 3IN imagery for a service area of approximately 700 sq.mi. including all of Franklin County and portions of Delaware, Fairfield, Licking, Madison, Pickaway and Union

Oblique Imagery

- Oblique imagery was collected for Lake, Tuscarawas, Coshocton
- Oblique imagery was collected for the northern half of Ashtabula
- Oblique imagery collection for Ottawa, Trumbull and the remainder of Ashtabula has been rescheduled for the fall of 2011

LiDAR Densification

- 1M average spacing LiDAR was collected for Greene, Ottawa and Shelby County and the length of the Lake Erie Shoreline
- 1M maximum spacing LiDAR was collected for the City of Columbus service area of approximately 700 sq.mi. including all of Franklin and portions of Delaware, Fairfield, Licking, Madison, Pickaway and Union

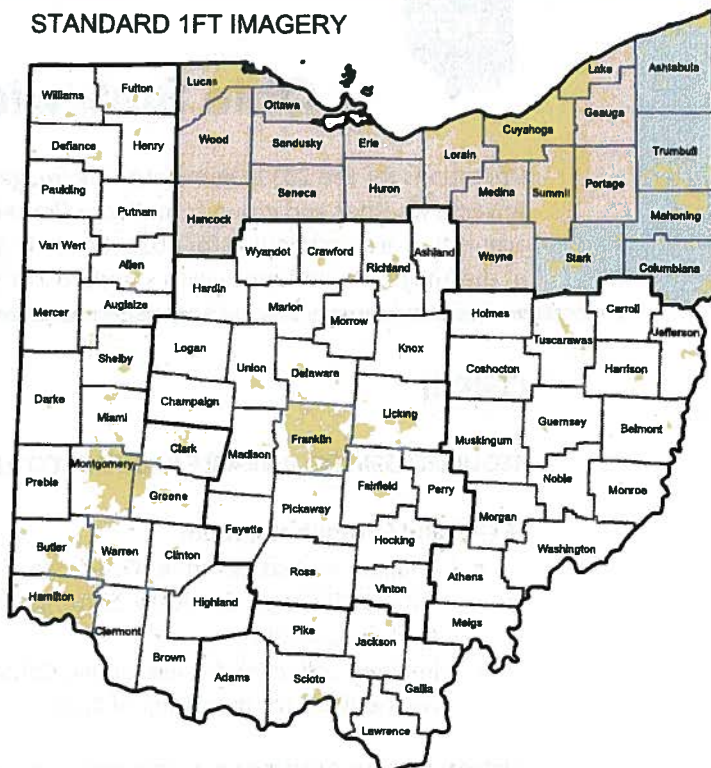


OHIO STATEWIDE IMAGERY PROGRAM

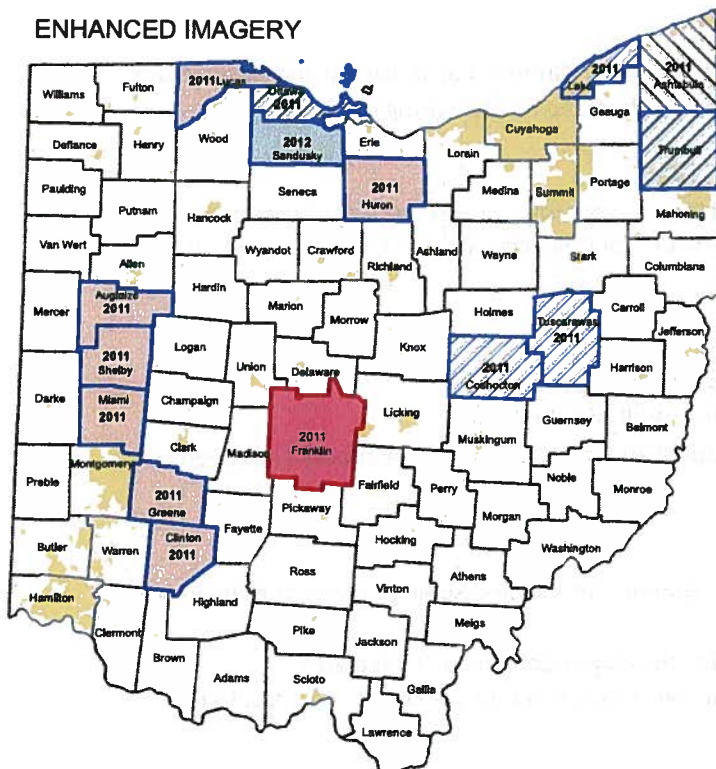
ACQUISITION TIERS



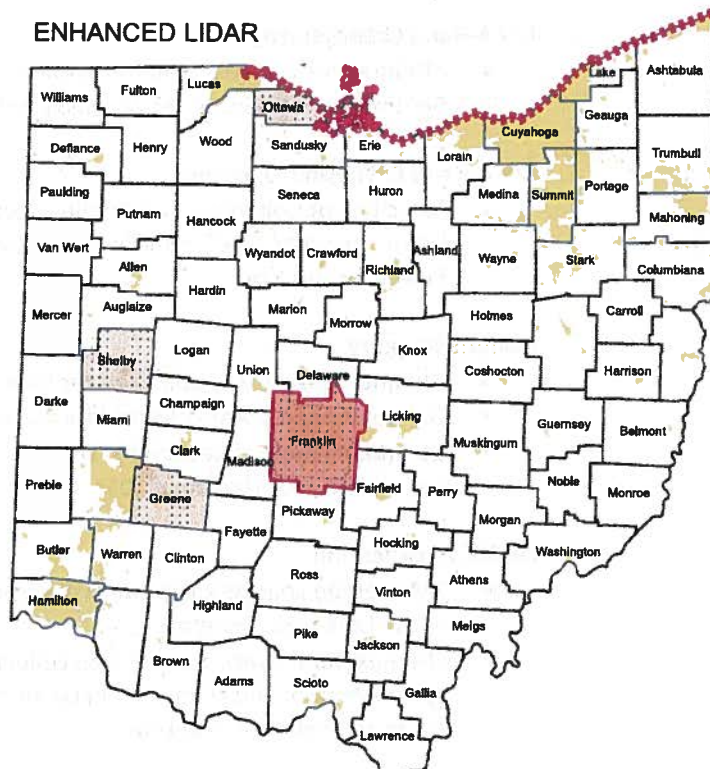
STANDARD 1FT IMAGERY



ENHANCED IMAGERY



ENHANCED LIDAR



OSIP II STATUS
6/1/2011

ACQUISITION TIERS STANDARD 1FT IMAGERY

YEAR



1FT 4-Band



ENHANCED IMAGERY

6IN 4-Band



ENHANCED IMAGERY

Obliques



3IN 4-Band

ENHANCED LIDAR

1M Average Post Spacing



The Ohio Statewide Imagery Program (OSIP)

<http://ogrip.oit.ohio.gov/ProjectsInitiatives/StatewideImagery.aspx>

The Ohio Statewide Imagery Program (OSIP) is a partnership between State, Local and Federal government agencies to develop high-resolution imagery and elevation data for the State of Ohio to benefit Geographic Information System users at all levels of government. Accurate imagery and elevation data serve as the backbone for the development of additional data sets maintained and accessed by government decision makers and the public.

On Tuesday Feb. 4, 2011 the State of Ohio awarded the contract for the continuation of the Ohio Statewide Imagery Program. The OSIP imagery will be acquired beginning in the spring of 2011 and continuing through 2014.

The core imagery product that will be produced through OSIP II will be 1-foot pixel resolution 4-band (RGBN) natural color and color infrared digital aerial imagery that will be made available to local government and the public at no cost.

In addition to the core imagery product, OSIP provides state and local government agencies with the opportunity to obtain additional product enhancements at significant savings through a Cooperative Purchase Agreement (CPA) with the State. As a result of this program OSIP has negotiated fixed costs for counties to obtain enhanced products. The enhanced products available for purchase through the Cooperative Purchase Agreement program include:

6IN pixel resolution 4-band (RGBN) color imagery

1FT or better pixel resolution Oblique Imagery (Pictometry or SmartView)

1M LiDAR

5-foot contours

2-foot contours*

Landuse/Landcover development

The acquisition of enhanced products through the CPA is not dependant on the State's acquisition cycle.

* Requires the acquisition of 6IN resolution imagery.

OSIP I - This section is specific to the previously completed 2006-2008 OSIP project.

Products

Standard OSIP I products included 1FT Color Orthophotography in GeoTIFF and MrSID format, 2.5FT DEM in ArcInfo GRID and ASCII grid format, and 2M LiDAR postings in LAS format. Optional OSIP I products included 6IN Color Orthophotography, 2FT and 5FT contours, and 1M Color Infrared photography.

Project Status

Standard OSIP imagery and elevation products were collected from 2006 - 2008. The state took delivery of 51 northern tier counties in June 2007. The remaining counties were delivered in 2008 & 2009.

To date 36 of the state's 88 counties have taken advantage of the OSIP program to obtain enhanced imagery and elevation data through a Cooperative Purchase Agreement (CPA) with the State of Ohio. The CPA benefits the state by providing enhanced resolution products **OSIP while saving**

participating counties an estimated 4.5 million in taxpayer dollars over the cost of obtaining these imagery, LiDAR and elevation products individually. The savings are due in large part to the economy of scale realized through a statewide program and the fact that the state is responsible for the cost of project administration.

An on-line **Status Map** viewer displays the status of the various OSIP I products and provides access to view the imagery .

Data Distribution

OSIP data is available through several delivery mechanisms. The primary method of delivery is through on-line Map Services, both ArcIMS and WMS. Map Service connection information is available through the metadata for the services and is available from the **Ohio Metadata Server** by searching for “Live Data and Maps” using the keyword “OSIP”. GIS client applications can connect directly to these services to access terabytes of imagery without the need to download and store the data locally.

Compressed MrSID imagery, LiDAR, and DEM data is available for download on a per county basis with links provided on the **Ohio Metadata Server** by searching for “Downloadable Data” using the keyword “OSIP” or by visiting the **OSIP Data Downloads** page.

In addition the 2M LiDAR data in LAS format and derived DEM data is being hosted by the USGS Center for LIDAR Information Coordination and Knowledge (**CLICK**-<http://lidar.cr.usgs.gov/>) site.



National Agriculture Imagery Program (NAIP) INFORMATION SHEET May 2009

● What is the National Agriculture Imagery Program (NAIP)?

NAIP is a program to acquire peak growing season "leaf on" imagery, and deliver this imagery to USDA County Service Centers, in order to maintain the common land unit (CLU) boundaries and assist with farm programs.

The goal of NAIP is to collect 1 meter imagery for the entire conterminous United States. The imagery is either natural color or "four band" imagery, and is delivered in the year of acquisition.

NAIP will be flown for agricultural areas, and partnership cost shares often assist in acquiring full state coverage. Minimum cost share in individual states is 10% of FSA costs or \$21,500, whichever is greater.

● Who acquires the imagery?

Independent contractors acquire the NAIP imagery. There are currently 6 primary contractors flying imagery for the USDA Farm Service Agency (FSA).

Contractors are selected via "best value" criteria. Contract bids are evaluated on past performance, ability and capacity to perform the work, and cost. Secondary contracts between NAIP cost share partners and NAIP vendors are allowed, subject to FSA approval.

A downloadable PDF of the contract can be found on the APFO website (<http://www.apfo.usda.gov>), under the Contract Services subject, Business Opportunities topic.

● How is the imagery acquired?

NAIP imagery is acquired from aircraft that have sensor systems meeting rigid calibration specifications. Digital sensors may use a continuous collection technology, or may use set "exposures," as in film based flying.

● Aircraft...what about satellites?

Commercial satellite imagery may also be used in NAIP contracts. In 2004, the contract specified spatial resolution of 1 meter or less in all color bands. In 2005, the requirement was changed to allow PAN sharpening of color bands to reach a resolution of 1 meter ground

sample distance (GSD). Although commercial satellite imagery can be used, it hasn't been to date.

● What is the spectral resolution of the imagery?

The default is natural color, or RGB imagery. A "buy-up" option is "four band" imagery, with red, green, blue, and near infrared bands. Either natural color or color infrared imagery is displayed by changing the band assignments.

● What spatial resolution is the imagery?

NAIP imagery has a 1 meter ground sample distance (GSD) with a horizontal accuracy; inspected locations match photo-identifiable ground control points with an accuracy of within 6 meters at a 95% confidence level or (in the earlier years of NAIP) match within 5 meters of reference ortho imagery.

In earlier years of the NAIP program, some states were flown at a 2 meter GSD for compliance purposes. Beginning in 2008, NAIP was 1 meter GSD only.

● What is reference ortho imagery?

The reference ortho imagery was the mosaicked digital ortho quarter quads (MDOQs), initially used to digitize FSA common land unit (CLU), or earlier years of NAIP.

In order to measure the accuracy of deliverable imagery, it must be compared to some type of control imagery/points. Until a pilot in 2006, the control imagery was the existing baseline imagery.

● What is the absolute accuracy specification?

From 2006 – 2008, nine states were selected to meet absolute ground control specification: Utah in 2006, Arizona in 2007, and Indiana, Minnesota, New Hampshire, North Carolina, Texas, Vermont, and Virginia in 2008. Beginning in 2009, all states flown will adhere to this specification.

The contract states that "95% of well-defined points tested shall fall within 6 meters of true ground". Ground control points used in production and/or inspection should ensure a more horizontally accurate product.

● **Is the imagery reviewed to make sure it is accurate?**

APFO has stringent imagery compliance guidelines, and all deliverables are inspected to ensure accuracy and compliance with the contract. Because NAIP is an annual program with short flying seasons, some defects, such as a maximum 10% cloud cover are accepted.

● **How long has NAIP been in existence?**

NAIP pilot projects began 2001-2002. The program has continued and grown since. After an initial five year cycle and a transition year (2008), 2009 marks the start of a second acquisition cycle.

The cycle schedule avoids flying states lying in areas where weather conditions make acquisition difficult within the same year.

Much of the funding for the program is provided by other federal, state, and regional governments. Partnering on an endeavor such as NAIP is important because it reduces duplication of effort and fiscal waste.

● **In what formats can I receive the imagery?**

Imagery comes in two main formats:

1. Compressed County Mosaic (CCM)
 - a. Mosaics are generated by compressing digital ortho quarter quads (DOQQs) into a single mosaic.
 - b. Compression for 2005 – 2008 Natural Color NAIP was MrSID MG3 at a ratio of 15:1.
 - c. Compression for 2004 NAIP and earlier was MrSID MG2 at a ratio of 50:1 or 20:1 for 1m or 2m resolution imagery respectively.
 - d. In 2008, 4-band imagery was compressed with JPEG2000.
 - e. In 2009 Natural Color compression will be either MrSID MG3 (RGB states) or JPEG2000. (4 band states). There will be no 4-band CCMs.
 - f. Coverage of the CCM extends up to 1 mile beyond the county boundaries.
 - g. The mosaic may cover all or portions of an individual final product.
2. Digital Ortho Quarter Quad (DOQQ).
 - a. Each individual image tile (DOQQ) within the mosaic covers a 3.75 x 3.75 minute quarter quadrangle plus a 300 meter buffer on all four sides.
 - b. The DOQQs are available in GeoTIFF format.
 - c. In 2007: 4 band acquisition for AZ.
 - d. In 2008: 4 band acquisition for DOQQs and CCM in CT, IN, KS, MA, RI, TX, VA, VT.
 - e. In 2009: 4 band acquisition for CO, DE, GA, ID, MD, MT, ND, OR, SC, WA.

All individual DOQQs and the resulting mosaic are rectified to the UTM coordinate system, NAD 83 are in a single predetermined UTM zone.

● **How can I get NAIP imagery?**

1. Compressed County Mosaics (CCMs) are available for delivery 30 days after imagery acquisition, through the USDA Geospatial Data Gateway (<http://datagateway.nrcs.usda.gov>). All available imagery for all years flown may be downloaded, whether 1 and 2 meter CCMs. Downloads are at no charge, but download times may be slow. It may be recommended to order the imagery on CD or DVD.
2. Full resolution quarter quads (DOQQs) are available after being inspected and accepted through APFO's Customer Service Section, on media only. Media options include hard copy, CD/DVD and portable hard disc drives (firewire and USB2).
3. Orders for CCMs and DOQQs on media can be placed at the Aerial Photography Field Office (APFO) in person, or at <http://www.apfo.usda.gov/>. Select *Find out more about the NAIP Imagery Program*, then *Ordering NAIP Imagery*.
4. NAIP DOQQs can be added into a GIS project for viewing only through APFO's ArcIMS or ArcGIS servers. For more information, visit the APFO website and follow the steps given in #3., above.

● **How much does it cost?**

Costs vary greatly by product and volume. Contact the APFO Customer Service Section at apfo.sales@slc.usda.gov or at 801-844-2922 for detailed information.

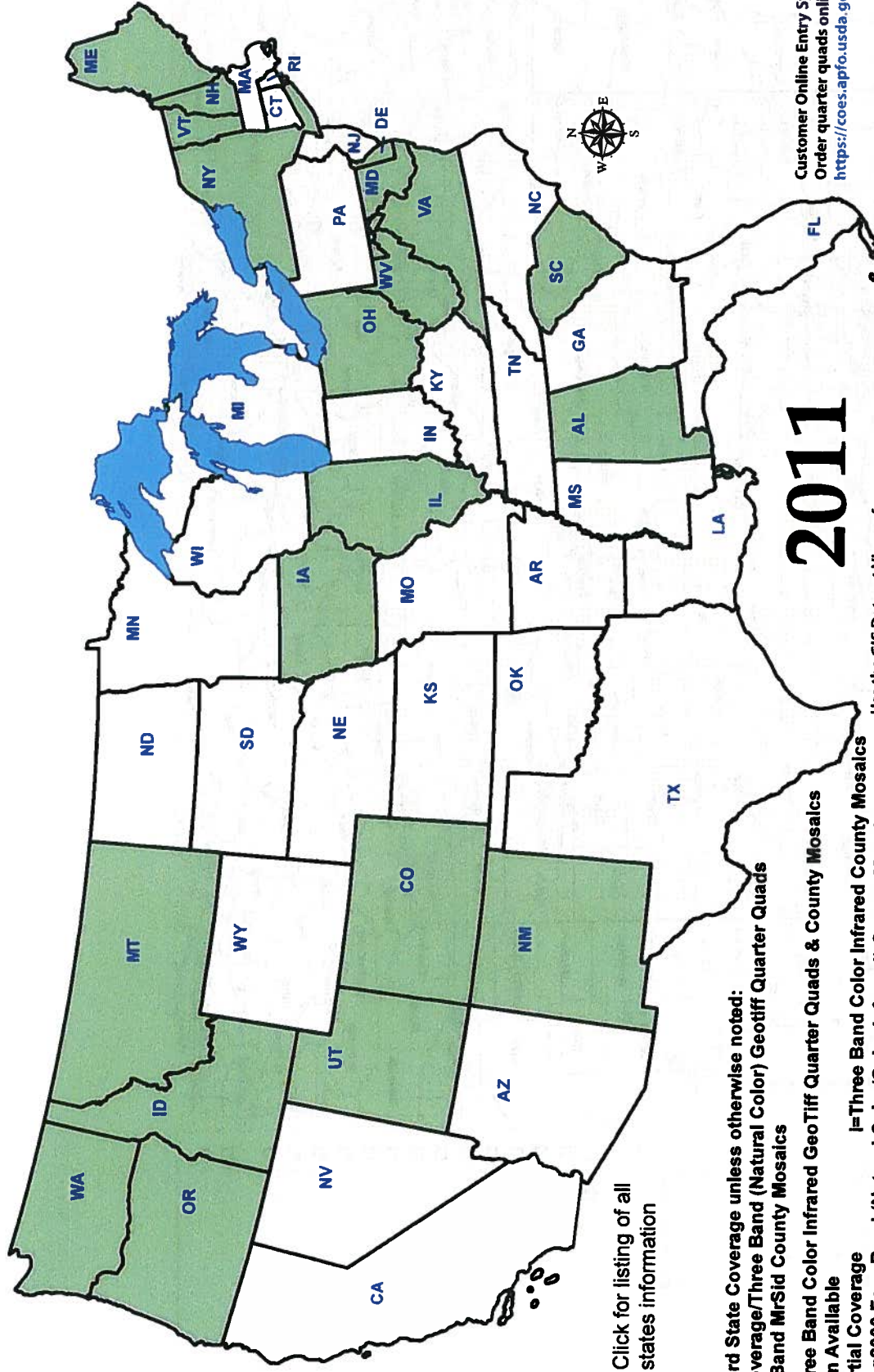
● **Do I need special software to view the imagery?**

1. CCMs from 2005 - 2009 NAIP require software that reads the MG3 or JPEG2000 format. Four band imagery will require software which can recognize all four bands. A list of free viewing software is available at <http://www.apfo.usda.gov>. Select *Get a viewer for my digital imagery*. This list is provided for convenience; USDA-FSA-APFO does not support or endorse these products or services.
2. Most image viewing software will open and view GeoTIFF files.

● **Who do I contact for more information?**

1. For sales information, contact USDA-FSA-APFO at 2222 W 2300 S, Salt Lake City UT, 84119-2020, call 801-844-2922, or visit <http://www.apfo.usda.gov>.
2. For further information contact the NAIP Program Manager Kent Williams at 801-844-2908, or GIS Specialist Louise Mathews at 801-844-2934.

National Agriculture Imagery Program (NAIP) 2003-2011



Click for listing of all states information

Standard State Coverage unless otherwise noted:

Full Coverage/Three Band (Natural Color) Geotiff Quarter Quads
Three Band MrSid County Mosaics

C = Three Band Color Infrared GeoTiff Quarter Quads & County Mosaics

F = Film Available

P = Partial Coverage

J = Jpeg2000 Four Band (Natural Color/Color Infrared) County Mosaics

4 = Four Band (Natural Color/Color Infrared) Geotiff Quarter Quads

Check "All NAIP Format & Years" layer to view all years available

To view layers individually click on the horizontal paper sheets on the left (or the layers tab in Adobe 6) of the document. Uncheck (click eyeball symbol) each NAIP Coverage year except for the one that you want to view. This will ensure the accurate coverage is portrayed.

*Layers are only viewable in Adobe Reader 6 and above

*2011 NAIP coverage is contracted coverage only - official coverage will be updated on the GIS Dataset Viewer

2011

Use the GIS Dataset Viewer for more detailed information, official coverage updates, and search tools at:

<http://gis.apfo.usda.gov/gisviewer>

ArcMAP Users - ArcGIS Server Connection:
gis.apfo.usda.gov/arcgis/services

Customer Online Entry System (COES)-
Order quarter quads online at:
<https://coes.apfo.usda.gov/index.html>



To view year and format information click or hover over a state abbreviation

As of August 16, 2011

US Department of Agriculture
Farm Service Agency
Aerial Photography Field Office
Customer Service Section
2222 West 2300 South
Salt Lake City, UT 84119-2020
Tel: 801-844-2922
Fax: 801-856-3653
Email: apfo.sales@aphis.usda.gov
Website: www.apfo.usda.gov

AMERICAN FactFinder

New Look, New Tools, Easier Access

A new look with improved functionality is coming to American FactFinder, the Census Bureau's online tool for accessing a wide variety of population, economic, geographic, and housing information about the United States.

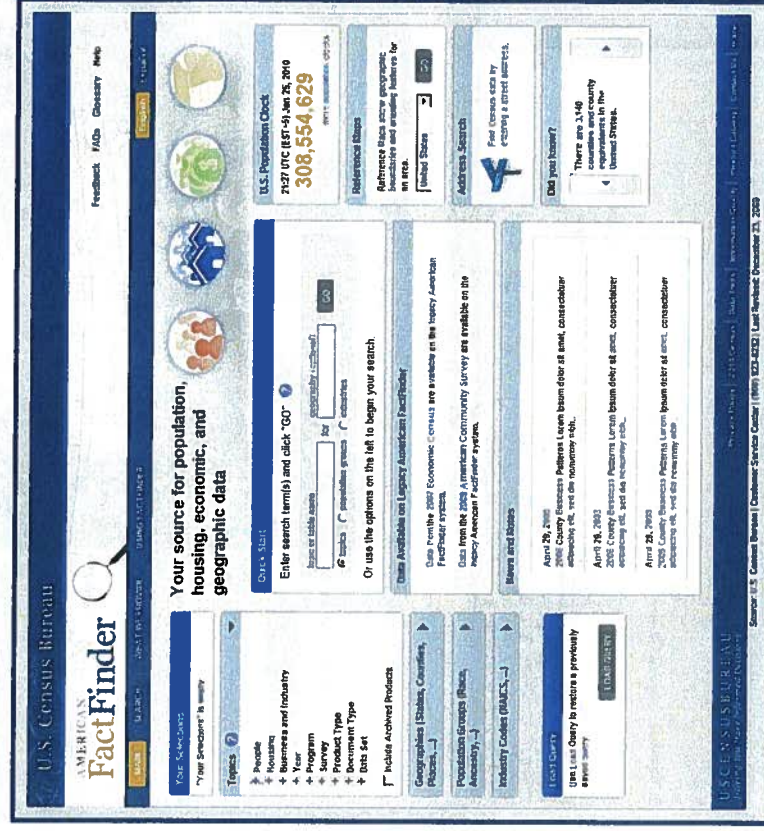
Available January 2011:

- Searches using any of the following:
 - Topics
 - Geographies
 - Population groups
 - Industry codes
- Fast search results
- Enhanced table manipulations
- Advanced mapping capabilities

American FactFinder provides quick access to data from the Decennial Census, American Community Survey, Puerto Rico Community Survey, Population Estimates Program, Economic Census, and Annual Economic Surveys.

U S C E N S U S B U R E A U

Helping You Make Informed Decisions



factfinder.census.gov

Table Features:

- **Customize table views**
- **Sort and filter columns of a table**
- **Transpose rows and columns**
- **Save customized tables**

Mapping Features:

- Select geographies from the map
- Create maps from a table
- Place labels and markers on maps
- Download maps as PDFs

Preview the new American FactFinder in the fall of 2010, and subscribe to get the latest updates at *factfinder.census.gov*.

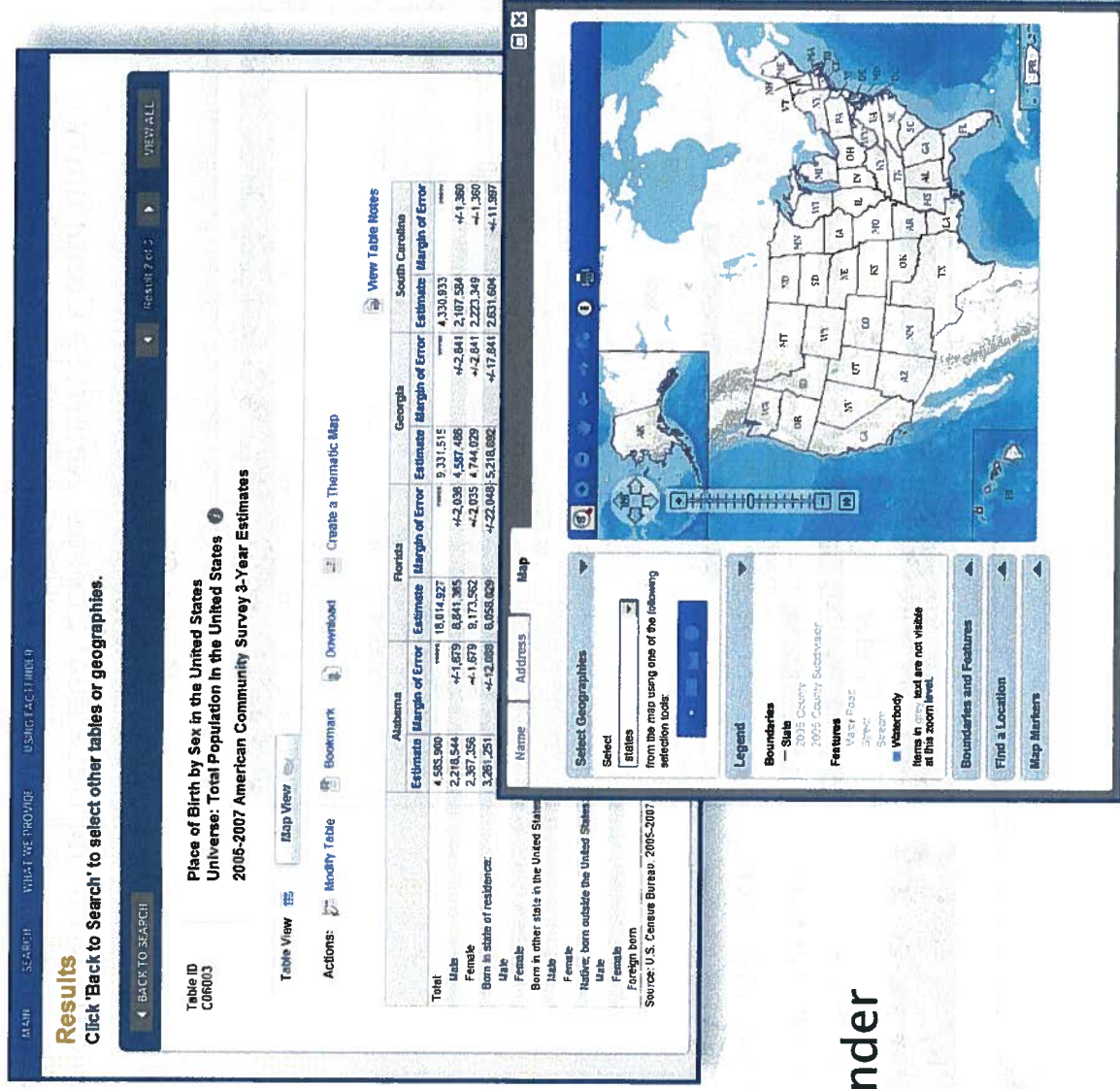




Figure 2. Example of Phase One results. Unedited highway intersection, left. Corrected intersection with access ramps, right.

Data editors were provided with detailed instructions based on USGS data standards. All data editing used heads-up digitizing over *The National Map* orthoimagery layer in the OSM Potlatch browser-based editing software. Interstate highways, U.S. routes, ramps, and service roads were edited by USGS staff. State routes were edited by DASC staff.

At the completion of Phase One, the edited roads for the two Kansas counties met quality requirements for both *The National Map* and the State of Kansas. This phase demonstrated how geographically distributed users could improve data by adding missing interchanges, divided highways, and attributes. The OSM software proved to be easy to use for collaborative editing. Phase One is described in greater detail in the USGS Open File Report "OpenStreetMap Collaborative Prototype, Phase One," by Eric B. Wolf and others (2011). This report is available online at pubs.usgs.gov/of/2011/1136.

OSMCP Phase Two

In Phase Two, the USGS worked with students from the University of Denver and the University of Colorado at Denver. Data for thirty types of structures were systematically collected by the student volunteers for the four 7.5-minute USGS topographic quadrangles containing most of the Denver urban area. The goal of this phase was to better understand the costs and benefits of volunteered data collection relative to data-collection methods normally used at the USGS.

Phase Two used the OSM Potlatch 2 editor. The volunteers used tags to collect the structure attributes required by *The National Map*. Tagging was used to manage a quality control process within the OSMCP. In addition to the orthoimagery layer from *The National Map*, background layers were provided from *The National Map* basemap and digital raster graphics (DRG, scanned 7.5 minute topographic maps) to locate structures.

In order to provide cost-effective quality control of VGI, the USGS needs to use "volunteer editors," such as those used by Wikipedia.com. To understand how well volunteers could check VGI, every data point in the four quads was verified both by volunteers and USGS staff. Phase Two also provided the USGS with valuable feedback on the usability of the OSMCP interface by volunteers. A report on the second phase of the project will be made available online pending internal review.

The Future of The National Map Corps

Phase One of this initiative demonstrated the capabilities of the OSM software as a platform for VGI programs at the USGS. Phase Two demonstrated that a volunteer process can be used to create authoritative data for *The National Map*. A third phase is planned to

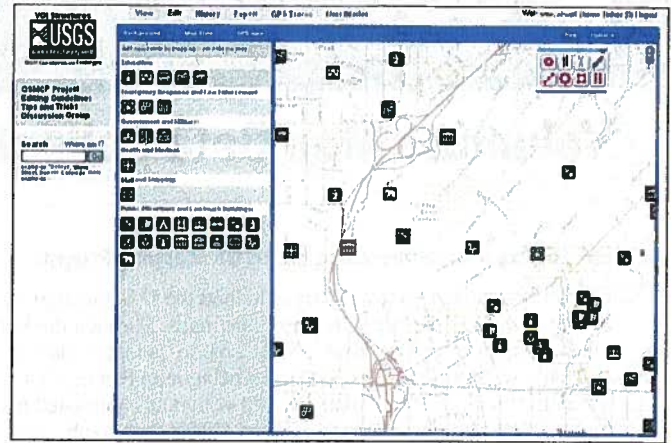


Figure 3. The Potlatch 2 editor used in Phase Two showing symbols created for the OSMCP project overlaid on cartographic tiles from *The National Map*.

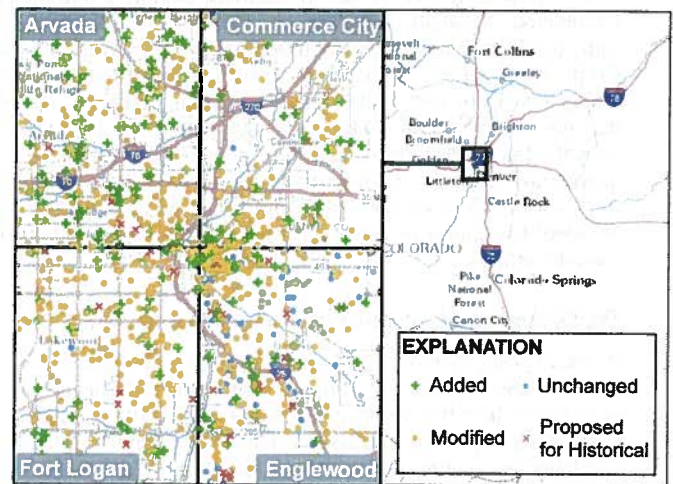


Figure 4. The data representing several hundred structures in the four quadrangles were added, edited, or marked "Proposed for Historical" classification by the volunteers during Phase Two.

begin in late 2011 which will expand volunteer collection of structures data to the entire state of Colorado. The collection process will be simplified through the application of user-centered design principles. A wide range of volunteer groups will be engaged, possibly including state and local government partners, schools, community groups, and individual contributors. If the data-collection methods prove cost-effective, the program may be expanded nationwide. The new data-collection methods actively engage citizens and reflect the principles of transparency, participation, and collaboration set forth in President Obama's Memorandum on Transparency and Open Government, issued on January 21, 2009.

For more information:

The National Map, nationalmap.gov
 OpenStreetMap Collaborative Prototype, navigator.er.usgs.gov
 Kansas DASC, www.kansasgis.org
 National Council on Geographic Education, www.ncge.org
 National Aerial Imagery Program, go.usa.gov/BRj
 USGS Workshop on Volunteered Geographic Information, cegis.usgs.gov/vgi
 USGS Open File Report "OpenStreetMap Collaborative Prototype, Phase One," pubs.usgs.gov/of/2011/1136

Historical Topographic Map Collection

Scanning and Georeferencing Historical USGS Quadrangles

"A government cannot do any scientific work of more value to the people at large than by causing the construction of proper topographic maps of the country."

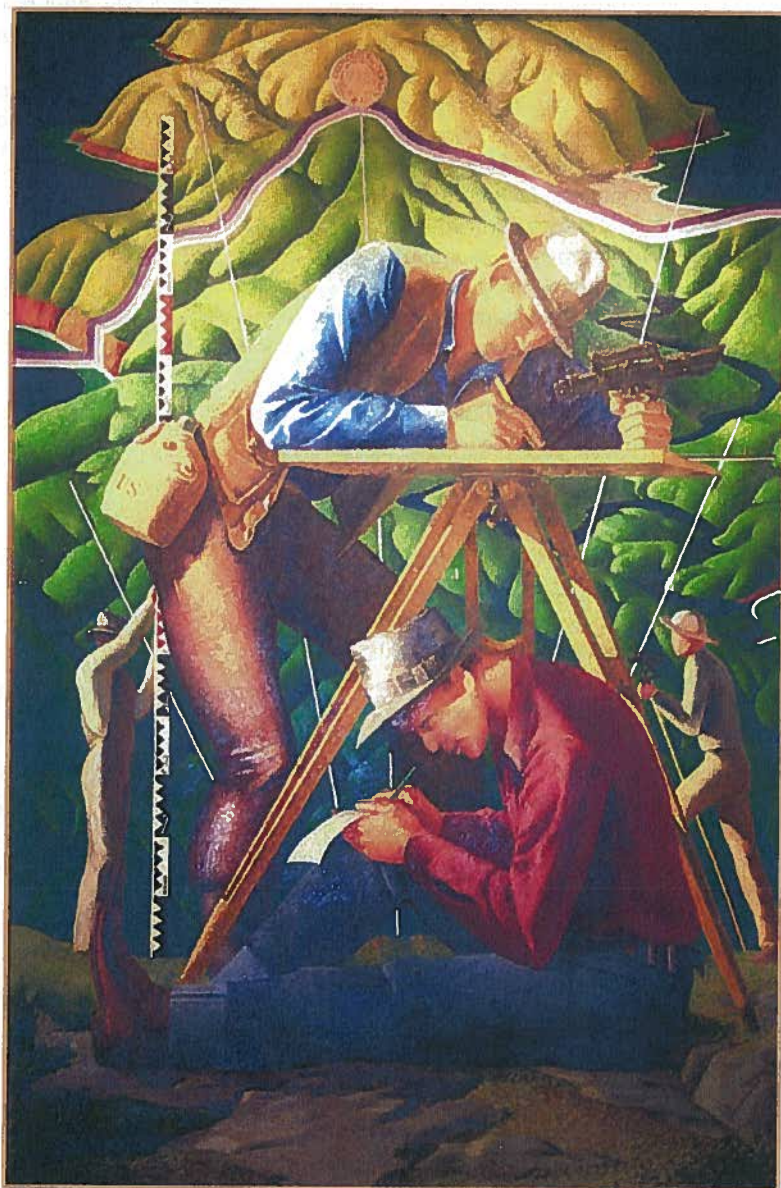
John Wesley Powell to Congress, Dec. 5, 1888

The USGS National Geospatial Program is scanning all scales and all editions of approximately 200,000 topographic maps published by the U.S. Geological Survey (USGS) since the inception of the topographic mapping program in 1884. This scanning will provide a comprehensive digital repository of USGS topographic maps, available to the public at no cost. For more than 125 years, the USGS topographic maps have accurately portrayed the complex geography of the Nation. The USGS is the Nation's largest producer of printed topographic maps, and, prior to 2006, USGS topographic maps were created using traditional cartographic methods and printed using a lithographic process.

As the USGS continues release of a new generation of topographic maps (US Topo) in electronic form, the topographic map remains an indispensable tool for government, science, industry, land management planning, and leisure.

When physical and cultural features change over time, maps are updated, revised and new editions printed. Although they are technically out of date, these historic maps are often useful to scientists, historians, environmentalists, genealogists, and others researching a particular geographic location or area. A series of maps of the same area published over a period of time can show how some areas looked as early as 1884, before current development, and provide a detailed view of changes over time.

Because historical maps are stored in a limited number of collections and are not readily available, the USGS National Geospatial Program has begun to convert these historical printed topographic quadrangles to an electronic format (GeoTIFF and GeoPDF®). This serves the dual purpose of creating a master catalog and digital archive copies of the irreplaceable collection of topographic maps in the USGS Reston Map Library as well as making the maps available for viewing and downloading from the USGS Store and *The National Map Viewer*.



Photographer: Terry Carr, USGS

Cartographers in the Field This Depression-era oil painting, created by Hal Shelton in 1940, depicts mapping techniques used in the early days of cartography, including an alidade and stadia rod for determining distances and elevations and a plane-table for sketching contour lines. This 4-by-6 foot painting is on display in the USGS library in Menlo Park, California.

Goal for Historical Topographic Map Collection

Building a comprehensive historical collection of topographic maps requires accurately cataloging and creating metadata (complete information about each map) to accompany high-resolution, georeferenced digital files representing the lithographic maps. Georeferencing in the digital file allows basic map analysis to be done, such as pointing and clicking on the map to determine distance, area calculation, coordinate points, and other information. Each map image is scanned "as is" and captures the current content and condition of each one. The collection provides ready access to maps that are either no longer available for distribution in print or are being replaced by the new generation of US Topo maps. Georeferencing of the map files—that is, tying them to a known earth coordinate system—enables them to be imported into Geographic Information Systems so that they can be overlain with other geospatial (map) data from other sources, such as from *The National Map*. The potential for research that analyzes change over time is becoming increasingly recognized by the geospatial community, and this project will provide published lithographic USGS maps in georeferenced digital formats.

With georeferencing, the historical maps can be combined with current data from *The National Map*. The product will be delivered as GeoTIFF images with embedded metadata.

The scanned historical maps will also be available for general reference and viewing in a compressed GeoPDF format. These files can be viewed and printed as PDF documents with a wide range of software. Using the geospatial extension requires Adobe Acrobat Reader® with the no-cost TerraGo Toolbar® for Microsoft Windows®. GeoPDF® files will be accessible using all browsers for downloading at the USGS Store web site (store.usgs.gov). These GeoPDF® files will be added to the USGS Store as they become available beginning in September 2011.

1884 map from Massachusetts The first State to participate in the cooperative topographic mapping program.

The USGS National Geospatial Program is:

- developing and publishing specifications for scanning maps;
- creating a catalog and metadata for all topographic maps published by the USGS;
- providing historical paper maps to support the new generation electronic topographic maps (US Topo);
- developing methods to efficiently create accurate, high-resolution scanned georeferenced images;
- archiving files with National Archives and Records Administration and the Library of Congress; and

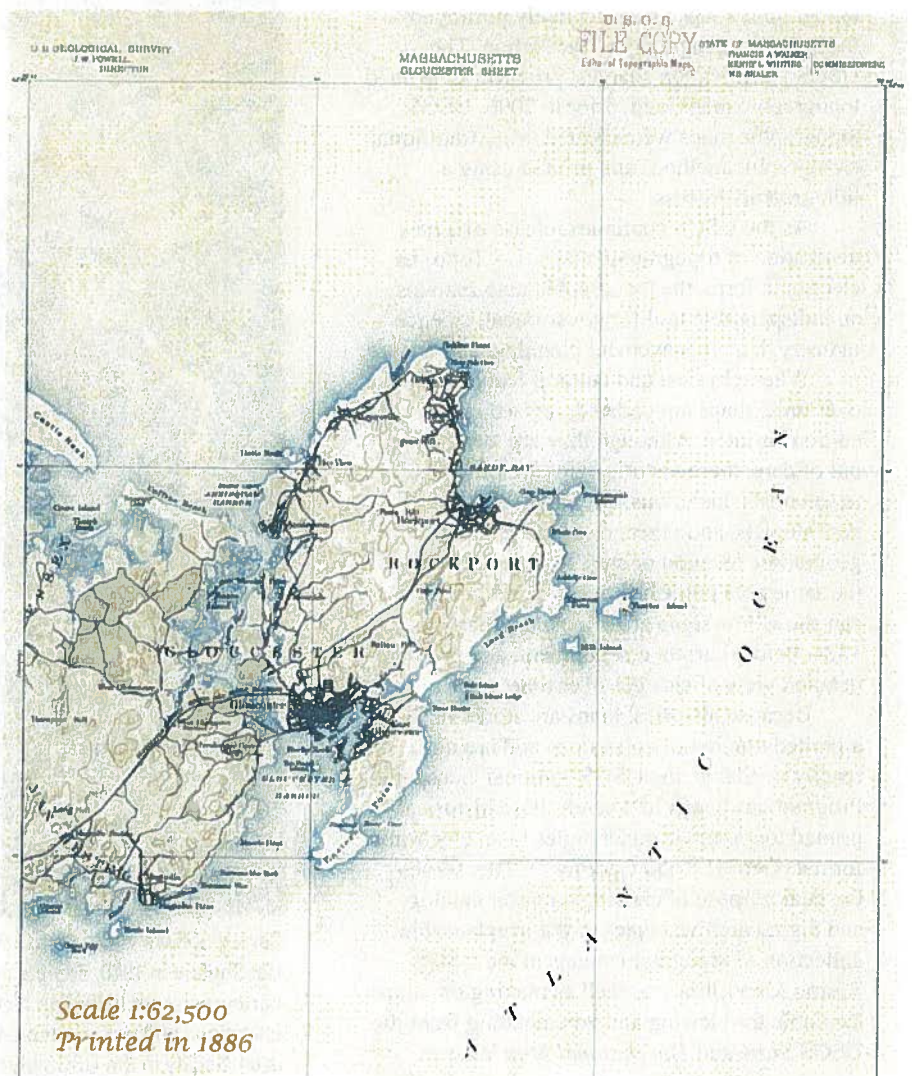
- providing publicly accessible, downloadable and viewable files of all scanned maps with complete FGDC-compliant metadata.

For More Information

To view and download information about *The National Map* go to www.nationalmap.gov. To contact the USGS concerning *The National Map*, go to www.usgs.gov/ask or email nationalmap@usgs.gov.

For information regarding the Historical Topographic Map Collection, go to nationalmap.gov/historical

By G.J. Allord and W.J. Carswell, Jr.



The National Map

Introduction

The National Map comprises a variety of products and services that provide the Nation with access to base geospatial information to describe the landscape of the United States and its territories. *The National Map* (<http://nationalmap.gov/>) supports data download, digital and print versions of topographic maps, geospatial data services, and online viewing. Customers can use geospatial data and maps to enhance their recreational experience, make life-saving decisions, support their scientific missions, and for countless other activities. Nationally consistent geospatial data from *The National Map* enable better policy and land management decisions and the effective enforcement of regulatory responsibilities.

The National Geospatial Program (<http://www.usgs.gov/ngpo/>) of the U.S. Geological Survey (USGS) manages *The National Map*. Partners and other organizations produce and maintain a vast array of high-quality geospatial data. A significant objective of the National Geospatial Program (NGP), through the Partnership Network (<http://liaisons.usgs.gov/geospatial/>), is to leverage these assets through mutually beneficial partnerships that ensure the ongoing availability of current data consistent with National Spatial Data Infrastructure (NSDI) principles.

The National Map Products and Services

The National Map embodies 11 primary products and services and numerous applications and ancillary services.

Data Products and Online Services

The geospatial data available from *The National Map* include boundaries, elevation, geographic names, hydrography, land cover, orthoimagery, structures, and transportation. The Office of

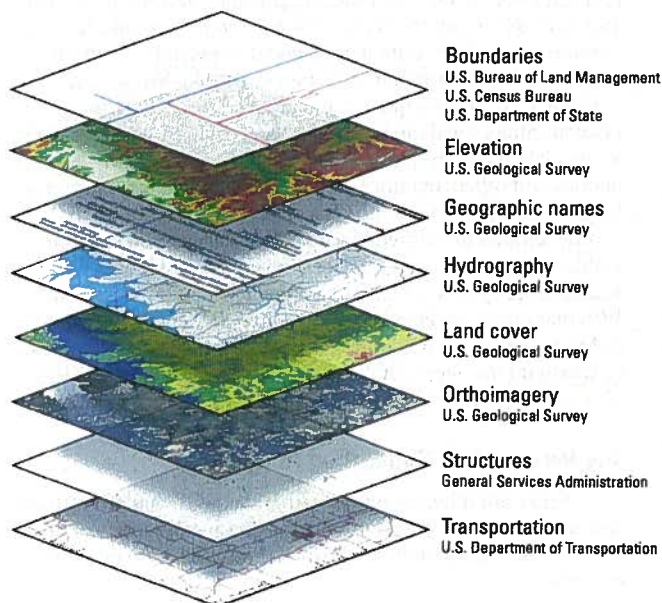


Figure 1. Eight base layers of *The National Map* and associated Office of Management and Budget Circular A-16 thematic lead agencies.

National Geospatial Program Mission

The National Geospatial Program:

- Organizes, maintains, publishes, and disseminates the geospatial baseline of the Nation's topography, natural landscape, and built environment through *The National Map*, a set of basic geospatial information provided as a variety of products and services
- Fosters a general understanding of broad geographic patterns, trends, and conditions through *The National Atlas of the United States of America*[®]
- Increases the efficiency of the Nation's geospatial community by improving communications about geospatial data, products, services, projects, needs, standards, and best practices

Management and Budget (OMB) has designated the USGS as the lead or colead agency (fig. 1) under Circular A-16 for elevation, geographic names, hydrography, land cover, and orthoimagery. Web viewing and download services are available for each of the eight data layers.

Boundaries (Government Units) Dataset.—The boundary data layer represents major civil areas including States, counties, Federal and Native American lands, and incorporated locales such as cities and towns. These data are useful for understanding the extent of jurisdictional or administrative areas for a wide range of applications, including demographics, natural disaster response, recreational activities such as hiking and backpacking, or resource management. The USGS obtains incorporated, unincorporated, county, State, and Native American area boundaries from U.S. Census data releases annually. Federal land boundaries are obtained from the Bureau of Land Management or directly from the source Federal agency if appropriate. The boundary data obtained from the source agency are transformed to a common data model to be rehosted and served from *The National Map*.

National Elevation Dataset.—The National Elevation Dataset (NED) is a seamless raster image dataset at multiple resolutions. NED data are available at 1-arc-second [30-meter (m)] resolution for all the conterminous United States, with 92 percent coverage at 1/3-arc-second (10-m) resolution and 12 percent coverage at 1/9-arc-second (3-m) resolution. Partnerships with a wide variety of Federal, State, and local cooperators to acquire higher resolution elevation data, primarily from light detection and ranging (lidar) sources, are the principal means used to continually improve the NED. While significant areas of new, higher resolution elevation data are being acquired, NED resolution for Alaska is primarily 2 arc-seconds (60 m).

Geographic Names Dataset.—The USGS maintains the Geographic Names Information System (GNIS), which is the authoritative database of official U.S. geographic names and is developed in cooperation with the U.S. Board on Geographic Names (BGN) (<http://geonames.usgs.gov/>). The NGP serves as the executive secretariat for the BGN, which is a Federal inter-agency body empowered by Public Law 80-242 (61 Stat. 456) to approve and issue standard geographic names for use on all material (data files, documents, maps, and reports) published by the Federal Government and its contractors. These geographic names include cultural and physical features, such as bays, hospitals,

mountains, populated places, and valleys. The GNIS does not contain road or street names, nor does it define the extent of features; however, the GNIS contains attributes to help determine the relative extent of features.

National Hydrography Dataset.—The National Hydrography Dataset (NHD) provides mapping coverage of the surface waters of the United States consisting of 7.5 million miles of rivers and streams and 6.5 million lakes and ponds. The NHD provides a complete network that supports the analysis of any type of movement (for example, effluent dispersion, navigation, and sediment transport) by surface waters. Stewardship support services and extensive training are provided to partners interested in assisting in the maintenance of the NHD. The NHDPlus, developed by the U.S. Environmental Protection Agency, extends the power of the NHD by integrating additional geospatial data to generate drainage areas, flow velocity estimates, and flow volume.

National Land Cover Database.—The National Land Cover Database (NLCD) 2001 provides consistent land cover data for all 50 States and a data framework that allows flexibility in developing and applying each independent data component to a wide variety of applications. Components in the database include normalized imagery for three time periods per Landsat path or row; ancillary data, including 30-m NED data derived into aspect, slope, and slope position; per-pixel estimates of percent imperviousness and percent tree canopy; 16 classes of land cover data derived from the imagery, ancillary data, and derivatives; and classification rules, confidence estimates, and metadata from the land cover classification. The NLCD was developed using a mapping zone approach, with more than 60 zones in the continental United States and Alaska. NLCD 2006, which was released in February 2011, quantifies land cover and land cover change between 2001 and 2006 and provides an updated version of NLCD 2001 land cover and imperviousness.

Orthoimagery Dataset.—Through cooperative partnerships, the USGS acquires and disseminates high-resolution digital orthoimagery data that have the accuracy and reliability of a base map. The resolution of the imagery in the USGS digital orthoimagery dataset varies from 1 m to 1 foot or finer. The USGS relies primarily on its partnership with the U.S. Department of Agriculture National Agriculture Imagery Program for 1-m-resolution, leaf-on imagery acquired on a 3-year cycle. Higher resolution data are obtained in partnership with the National Geospatial-Intelligence Agency (NGA), State, local, and tribal partners.

Structures Dataset.—USGS data portray selected structures data, including the function, name, location, and physical form from best available sources. Structures data support disaster planning and response and homeland security organizations and topographic mapping and resource planning needs. Structures data are acquired through partnerships with Federal and State entities. The USGS integrates structure data with the names data from the GNIS. The reconciled content is loaded into *The National Map* database and thus, Federal agencies and State entities have a common base for operating activities and a shared baseline for exchanging transactional data updates.

Transportation Dataset.—Transportation data consist of airports, railroads, roads, and other features associated with the transportation of people or commerce. The data include the address ranges, classification, location, and name or route designator for most roads. Transportation data support mapping and geographic analysis (such as for disaster planning and response). *The National Map Viewer* (<http://viewer.nationalmap.gov/viewer/>) features U.S. Census Bureau, Federal Aviation Administration, and U.S. Forest Service transportation data that can be downloaded, as well as road data as a layer that can be viewed but cannot be downloaded because they are derived from a commercial road dataset.

Map Products and Online Services

In 1879, the USGS was entrusted with the responsibility for mapping the country and has been the primary civilian mapping

agency of the United States ever since. More than 200,000 USGS topographic maps have been published in paper form in scales primarily ranging from 1:20,000 to 1:250,000. The best known USGS maps are the 1:24,000-scale topographic maps, also known as 7.5-minute quadrangles. The 7.5-minute map series was officially completed in 1992, and only minor revisions have been made to the printed product in recent years. While the NGP is converting all the historic topographic map products to a digital format, hard copy maps are available for sale through the online USGS Store (<http://store.usgs.gov/>) and business partner retailers. The NGP began releasing digital topographic (US Topo) maps in October 2009.

Digital Topographic Maps.—US Topo maps (fig. 2) can be downloaded for free from the USGS Store or *The National Map Viewer*. The output of US Topo (<http://nationalmap.gov/ustopo/index.html>) is a georeferenced map in GeoPDF format that has the look and feel of the historic 1:24,000-scale topographic map but includes slightly different content in digital format. As of 2011, 37,500 US Topo maps have been released that include elevation contours, geographic names, hydrography, orthoimagery, and roads. As many as 100 US Topo maps are produced daily, whereas each historic 1:24,000-scale topographic map took 5 years to complete. The NGP is working on plans, procedures, standards, and performance criteria to meet the goal of updating US Topo maps on a 3-year cycle, using available new data and including additional base layers when data content meets specified standards and levels of completeness.

Historic Topographic Maps.—All scales and editions of the maps published by the USGS since the inception of the topographic mapping program in 1884 are being scanned and made available in GeoPDF and GeoTIFF formats. As physical and cultural features changed over time, the topographic maps were updated and revised, and new editions were printed. These maps are often useful to environmentalists, genealogists, historians, scientists, and others researching a particular geographic location. This georeferenced, high-resolution scanning effort serves the dual purpose of creating a master catalog and digital archive of the irreplaceable collection of topographic maps in the USGS Reston Map Library as well as making the maps available for viewing and download from *The National Map Viewer*.

The National Map Viewer and Data Access.—The online user interface of *The National Map* is the Viewer (fig. 3), which allows a user to interactively view *National Map* data as a map, customize the view, print a map, and download the data for use in geographic information systems (GIS). The Viewer provides public access to high-quality, integrated *National Map* data from Federal, State, local, and tribal partners. Map tools allow the user to navigate the map (pan and zoom), identify features, and perform queries and other functions, such as take measurements and spot heights, get coordinates, and create export annotations. The Viewer was developed in partnership with the NGA and other entities. Unlike many others, the Viewer allows geospatial data to be downloaded directly or viewed with Open Geospatial Consortium (OGC) Web mapping services (WMS) and keyhole markup language (KML). Partner Web mapping services that are registered in the Geospatial One-Stop (GOS) portal as online geospatial services are also available to overlay onto *The National Map* base map.

The National Map Supporting Activities

There are other activities within the NGP that provide significant support to *The National Map*—geospatial technical operations, partnership network, geospatial research, and emergency operations.

Figure 2 (facing page). US Topo map for the Coffeyville East, Kans., quadrangle.



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000 000 grid Universal Transverse Mercator, Zone 18
10 000-foot datum Kansas Coordinate System of 1983
(south zone)
and Oklahoma Coordinate System of 1983
(south zone)

Geography.....NIP, July 2006
 Health.....National Transportation Dataset, 2006
 Names.....IPED, 2007
 Neighborhoods.....National Hydrography Dataset, 2006
 Counties.....National Election Dataset, 2006

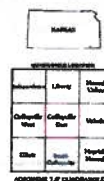


SCALE 1:24 000

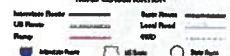


CONTOUR INTERVAL 10 FEET

This map was produced to conform with version 0.5.10 of the draft **UNOS Standards for 7.5-Minute Quadrangle Maps**.
A manual file associated with this product is also draft version 0.5.10



ROAD CLASSIFICATION



COFFEYVILLE EAST, KS
2009

Geospatial technical operations efforts by the National Geospatial Technical Operations Center (NGTOC) (<http://ngtoc.usgs.gov/>) and the Earth Resources Observation Science (EROS) Center (<http://eros.usgs.gov/>) focus on developing and enhancing the usefulness of geospatial products and services; acquiring new geospatial data; assessing the geospatial data for accuracy, quality, and integration into nationwide datasets; archiving of raster and vector imagery; and improving public access to the geospatial data through online viewing and data downloading. NGTOC and EROS also perform research and development into new processes and technology in the implementation of *The National Map*, and one of their most critical roles is providing technical services to assist partners in the acquisition and maintenance of geospatial data that become part of *The National Map*. Finally, NGTOC and EROS develop and provide access to *National Map* products such as US Topo.

Partnerships provide significant cost savings, reduce redundancy in geospatial data acquisition and stewardship, and ensure availability of common base data to a broad range of users and applications. NGP's Partnership Network (<http://liaisons.usgs.gov/geospatial/>) comprises headquarters liaisons, who coordinate with Federal agencies and national organizations, and State-based USGS geospatial liaisons, who are distributed across the Nation to coordinate efforts of the USGS and other Federal entities with State, local, and tribal groups. Liaisons work with these organizations to identify geospatial data requirements and standards, evaluate partnership opportunities, develop agreements, participate in State, regional, and local geospatial data councils, and provide outreach to user communities. Many of these organizations produce and maintain a vast array of current, accurate geospatial data. As a result, a large majority of data in *The National Map* is the product of jointly funded partnership agreements aligned with the goals of the NGP.

Geospatial research is conducted by the Center of Excellence for Geospatial Information Science (CEGIS) (<http://cegis.usgs.gov/>), which identifies and collaborates on geographic information science research issues of national importance. CEGIS basic research activities are guided by the published recommendations of the National Academy of Sciences and priorities established by the NGP management team based on long-term program direction and goals. Most CEGIS basic research efforts are in support of *The National Map*, but also include investigation of emerging technologies (such as the semantic Web and social media) and their effects on the NSDI and the emerging geospatial Web.

The Emergency Operations Office (<http://www.usgs.gov/emergency/>) ensures coordination and rapid availability of *The National Map* and other geospatial information for effective response to natural and other disasters by emergency responders, land and resource managers, and scientists. Procedures are established for acquisition, processing, and archiving of nonproprietary geospatial data; discovery, access, and delivery of data; and providing relevant geospatial products and services during and immediately after emergency events. These activities enable interdisciplinary integration of government assets to improve the value of data and services to responders and citizens in cases of emergency.

Relation of *The National Map* to The National Atlas of the United States of America*

The National Atlas of the United States of America* (<http://nationalatlas.gov/>) uses datasets of a highly generalized framework from *The National Map* as the cartographic foundation for thousands of thematic maps. More than two dozen Federal agencies collaborate in the National Atlas to provide accurate, integrated, and reliable geospatial information about America's natural and socioeconomic landscapes. Most National Atlas products are clearly designed for public use and include wall maps, innovative page-sized printable maps, and an interactive mapmaker for crafting custom maps. The National Atlas also includes multimedia articles about National Atlas maps as well as maps that illustrate how the Nation changes. All National Atlas data are fully documented and provided at no cost for download or direct use on the Internet. The data available from the National Atlas are provided at a scale where 1 inch on the map is roughly 16 miles; US Topo maps from *The National Map* are at a scale of 1 inch equals 2,000 feet.

Additional Information

Information about the National Geospatial Program is available at <http://www.usgs.gov/ngpo/>. For more information about *The National Map*, visit <http://nationalmap.gov/> or e-mail nationalmap@usgs.gov.

By Larry J. Sugarbaker and William J. Carswell, Jr.

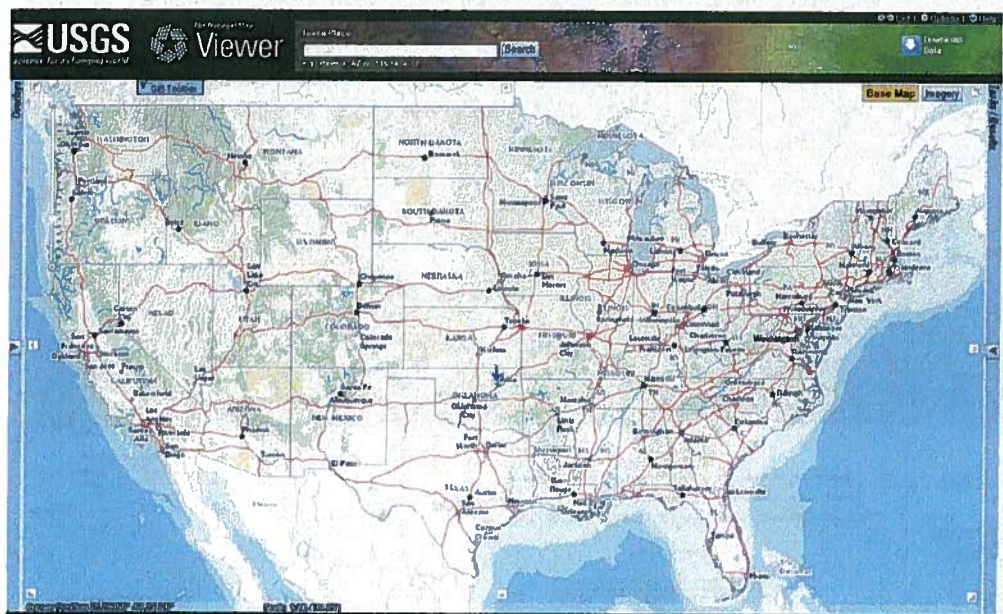


Figure 3. Screen capture from *The National Map Viewer*.

The Appalachian Ohio Geospatial Data Partnership (AOGDP) is a group of professionals from the Appalachian region of Ohio with an interest in Geographic Information Systems (GIS). Our Partnership was formed to facilitate the development of standardized GIS data across county boundaries and in multiple jurisdictions. Charter membership is currently comprised of four member counties (Belmont, Guernsey, Morgan and Noble Counties), two regional governmental agencies (Buckeye Hills-Hocking Valley RDD, Muskingum Watershed Conservancy District) and one academic non-profit organization (The Ohio University's Voinovich School of Leadership and Public Affairs). These grassroots members have the strong desire to include new Charter Members from throughout our defined fifteen county region (see *map inside*). Potential Charter Members include all levels of government, non-profits, and the academic community that are interested in sharing, discussing and implementing Federal Geographic Data Committee's (FGDC) National Spatial Data Infrastructure (NSDI) initiatives and standards. The Partnership's ultimate goal is to promote technologies and policies that allow for the utilization of created GIS data by all levels of government and the private sector. Our plan is to seek funding from multiple sources for development and maintenance of county level data. Our idea is to share geographic data which produces significant savings for data creation and enhances the decision making ability for anyone who uses this data.

MISSION STATEMENT

Adopting and promoting geospatial data standards in Appalachian Ohio between Federal, State, Regional & Local Governments, Academia, Non-Profits and Private Industry. A collaborative environment built on Educating, Creating, Sharing and Maintaining.



Fairview
industries



OHIO
UNIVERSITY

Voinovich School of
Leadership and Public Affairs



APPALACHIAN OHIO
GEOSPATIAL DATA PARTNERSHIP

CURRENT PARTNERS

BUCKEYE HILLS - HOCKING VALLEY
REGIONAL DEVELOPMENT DISTRICT

FAIRVIEW INDUSTRIES

MUSKINGUM WATERSHED
CONSERVANCY DISTRICT

VOINOVICH SCHOOL OF
LEADERSHIP AND PUBLIC AFFAIRS

OGRIP

BELMONT COUNTY

GUERNSEY COUNTY

MORGAN COUNTY

NOBLE COUNTY

AOGDP Partners

Buckeye Hills - Hocking Valley RDD

- Bret Allphin, GISP, GIS Manager

Fairview Industries

- Nancy von Meyer, PhD, Advisor

Muskingum Watershed Conservancy District

- Tom Fisher, AICP, GISP, Information

Systems and Technology Manager

Voinovich School for Leadership and

Public Affairs

- Dave Simon, GIS Manager

OGRIP

- Jeff Smith

Belmont County

- Don Pickenpaugh, PS, GISP, GIS Manager

Guernsey County

- Jim Mercer, GIS Coordinator

Morgan County

- Bo Powell, GIS Coordinator

- Jeff McInturf, P.S., Surveyor

Noble County

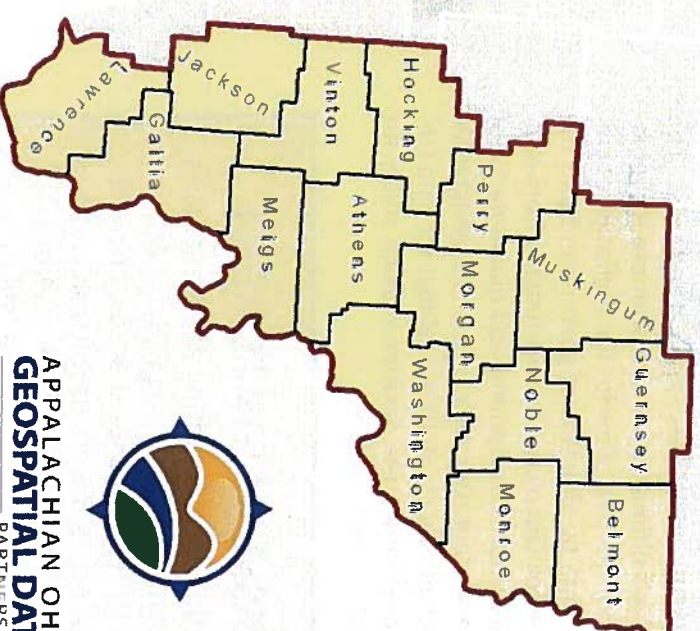
- Mike Stritz, Map Office Coordinator

- Mark Eicher, P.E., Assistant Engineer



AOGDP Cadastral Development Training with Nancy von Meyer held at the Voinovich School for Leadership and Public Affairs in Athens, Ohio.

AOGDP Region



APPALACHIAN OHIO
GEOSPATIAL DATA
PARTNERSHIP