State of Indiana
2023 GIS Data Integration Plan

Developed by the IGIC, Inc. for the Indiana Geographic Information Office | Updated May 18, 2023

TABLE OF CONTENTS

INTRODUCTION

In 2007, the Indiana General Assembly passed IC 4-23-7 the Indiana GIS Mapping Standards. This law established the State of Indiana Geographic Information Office, created the Indiana Mapping Data and Standards Fund, and institutionalized the role of the Indiana Geographic Information Council (IGIC) to annually submit an Indiana statewide Data Integration Plan to the Indiana Geographic Information Office.

This document is the product of IGIC development of the statewide Data Integration Plan. The purpose of the plan is to describe efforts being undertaken within the state of Indiana to integrate framework geospatial data that are developed and maintained by different units of the federal, state, and local governments into statewide coverages. Types of framework data include, but are not limited to:

Indiana Code GIS Mapping Standards 4-23-7.3-12 outlines the purpose of this plan.

IndianaMap is undergoing a transition. The Data Integration Report is a snapshot in time. This plan is updated annually, and any changes will be captured in the next year's plan.
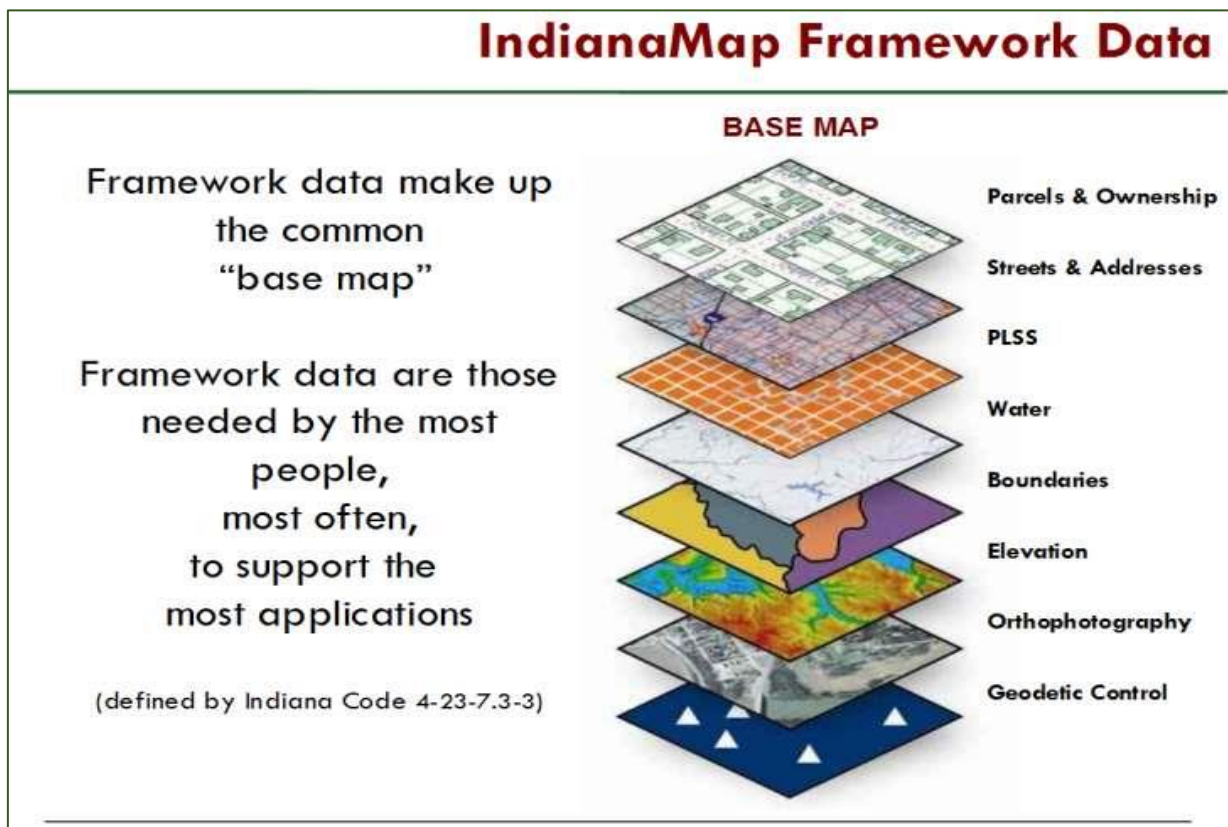
Indiana GIS Mapping Standards

The full GIS Mapping Standards Indiana Code 4-23 Chapter 7.3 can be viewed at
http://statecodesfiles.justia.com/indiana/2016/title-4/article-23/chapter-7.3/chapter-7.3.pdf

In this Indiana Code, the specific requirements for the "Statewide Data Integration Plan" (IC 4-237.3-12) are:

Indiana's Statewide "Data Integration Plan" means a plan (1) to integrate GIS data and framework data developed and maintained by different units of the federal, state, and local government into statewide coverage of framework data; and (2) that includes details for:

a) an inventory of existing data;
b) stakeholder data requirements;
c) identification of data stewards;
d) data standards and schema, costs, work flow, data transfer mechanisms, update frequency, maintenance; and
e) identification of appropriate data sharing policies and mechanisms to facilitate intergovernmental data exchange, such as data exchange agreements.

The State GIS officer (IC 4-23-7.3-14) shall review and either veto or adopt both the

(A) state's GIS data standards and

(B) statewide data integration plan as recommended by the IGIC. If either of the recommendations is vetoed, the State GIS officer shall return the recommendation to the IGIC with a message announcing the veto and stating the reason(s) for the veto.

The standards and the plan adopted under this subdivision must promote interoperability and open use of data with various GIS software, applications, computer hardware, and computer operating systems.

"Framework data" (IC 4-23-7.3-3) includes the following:

(1) Digital orthophotography
(2) Digital cadastre
(3) Public land survey system
(4) Elevation
(5) Geodetic control
(6) Governmental boundary units
(7) Water features
(8) Addresses
(9) Streets

These framework data layers represent foundational layers of the IndianaMap and are addressed in the plan.

IndianaMap

The IndianaMap is a single map for Indiana. It includes everything that goes into making that map a reality planning, partnerships, funding, coordination, and ways to make it available to people who need it. IndianaMap is the largest publicly available collection of Indiana Geographic Information System (GIS) map data. IndianaMap is made possible by an alliance of partners from federal, state, and local government agencies, organizations and universities (https://www.IndianaMap.org).

IndianaMap (Legacy) Home Page

The current (Legacy) IndianaMap was developed through a series of individual projects, each focused on a specific goal, such as integrating boundaries, roads, addresses and parcels county data sharing layers. These projects evolved through the network of partnerships and collaborative efforts to develop, improve, and maintain a wide variety of geographic data layers for Indiana. The Legacy IndianaMap was not managed by a single organization. The legacy managing partners of IndianaMap are the:

- Indiana Geological and Water Survey (IGWS)
- Indiana University -University Information Technology Services (UITS)
- Indiana Geographic Information Council (IGIC)
- Indiana Geographic Information Office (GIO)

The IndianaMap (hosted by the IGSW) had the Coordinate System: NAD83, Zone 16, and the Projection: Transverse Mercator.

IndianaMap (Legacy) Viewer displaying County data sharing layers
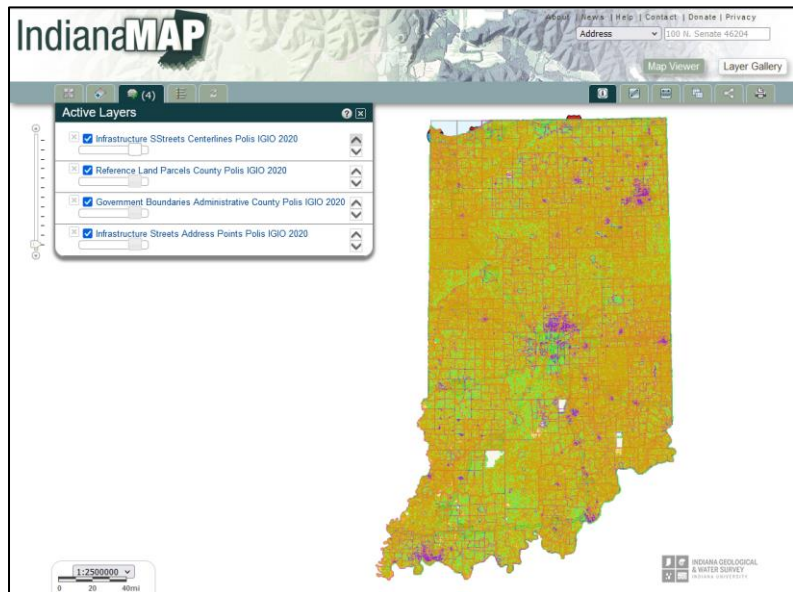
IndianaMap 2.0

The Indiana Geographic Information Office (IGIO) is developing a new single IndianaMap Portal (Hub) to replace the following Legacy sites that were and are hosted by:

- IGIC (IndianaMap.org & IndianaMap.maps.arcgis.com),
- IGWS (maps.indiana.edu),
- IUB UITS (gis.iu.edu)

The new IndianaMap Portal (Hub) was released in 2022. The data published on the legacy sites are in the process of being migrated (Phase 1) and becoming available from the IGIO using IGIC's original URL: IndianaMap.org. The Legacy data sites [may] remain available for some period of time after the state migrates the data layers to IndianaMap. Once the legacy layers are migrated to

IndianaMap.org, the legacy data should only be used for archive or historic GIS data purposes and not for current GIS data.

IndianaMap 2.0 Coordinate System change

The IGWS IndianaMap (archive) GIS layers were published using:
Projected Coordinate System: NAD_1983_UTM_Zone_16N
Projection: Transverse Mercator
IndianaMap 2.0 publishes the layers in the WGS 84 coordinate system.

The IndianaMap Steering Committee

In 2021, the IGIO requested that IGIC stand up a new steering committee to support and provide overall guidance to the IGIO toward the ongoing development of its IndianaMap portfolio of geospatial data and technology activities. Specific IndianaMap support includes the following:

- Provide guidance and direction to the Data Sharing Committee and all IGIC IndianaMap Framework Data Workgroups.
- Support the IndianaMap Portal (HUB) developed, hosted and managed by the State of Indiana Geographic Information Office.
- Identify IndianaMap Data Partners, Develop MOU Agreements for sharing GIS data with these partners and IndianaMap, and Support the ongoing IndianaMap efforts by the IGIO and these other Data Partners.

Data Collaboration, Coordination, Integration & Migration

The GIO continues to successfully migrate the data from the Legacy IndianaMap to the new IndianaMap Portal (Hub) – 2022.

How Projects and Partnerships shape the landscape

The IndianaMap 2.0 data categories have changed.

- IGWS Category - Legacy – used a hybrid of FDGC categories.
- The IndianaMap (Hub) adopted new data categories based on ISO 19115 Topic Categories

IndianaMap - ISO 19115 Topic Category

Farming/Agriculture
> Rearing of animals or cultivation of plants, for example agriculture, irrigation, aquaculture, plantations, herding, pests and diseases affecting crops and livestock

Boundaries
> Legal land descriptions, for example political and administrative boundaries, governmental units, marine boundaries, voting districts, school districts, international boundaries.

Planning, Cadastre
> Information used for appropriate actions for future use of the land, for example land use maps, zoning maps, cadastral surveys, land ownership, parcels, easements, tax maps, federal land ownership status, public land conveyance records.

Climatology, Meteorology, Atmosphere
> Processes and phenomena of the atmosphere, for example cloud cover, weather, climate, atmospheric conditions, climate change, precipitation

Economy
> Economic activities, conditions, and employment, for example production, labor, revenue, business, commerce, industry, tourism and ecotourism, forestry, fisheries, commercial or subsistence hunting, exploration and exploitation of resources such as minerals, oil and gas

Elevation
> Height above or below sea level, for example altitude, bathymetry, digital elevation models, slope, derived products, DEMs, TINs

Environment
> Environmental resources, protection and conservation, for example environmental pollution, waste storage and treatment, environmental impact assessment, monitoring environmental risk, nature reserves, landscape, water quality, air quality, environmental modeling.

Geoscientific Information
> Information pertaining to earth sciences, for example geophysical features and processes, geology, minerals, sciences dealing with the composition, structure and origin of the earth's rocks, risks of earthquakes, volcanic activity, landslides, gravity information, soils, permafrost, hydrogeology, groundwater, erosion.

Health

> Health, health services, human ecology, and safety, for example disease and illness, factors affecting health, hygiene, substance abuse, mental and physical health, health services, health care providers, public health.

Imagery, Base maps, Bare Earth Cover

> Base maps, for example land/earth cover, topographic maps, imagery, unclassified images, annotations, digital ortho imagery

Intelligence, Military

> Military bases, structures, activities, for example barracks, training grounds, military transportation, information collection

Inland Waters

> Inland water features, drainage systems and characteristics, for example rivers and glaciers, salt lakes, water utilization plans, dams, currents, floods and flood hazards, water quality, hydrographic charts, watersheds, wetlands, hydrography

Oceans

> Features and characteristics of salt water bodies (excluding inland waters), for example tides, tidal waves, coastal information, reefs, maritime, outer continental shelf submerged lands, shoreline.

Society

> Characteristics of society and culture, for example settlements, housing, anthropology, archaeology, education, traditional beliefs, manners and customs, demographic data, tourism, recreational areas and activities, parks, recreational trails, historical sites, cultural resources, social impact assessments, crime and justice, law enforcement, census information, immigration, ethnicity

Structure

> Man-made construction, for example buildings, museums, churches, factories, housing, monuments, shops, towers, building footprints, architectural and structural plans.

Transportation

> Means and aids for conveying persons or goods, for example roads, airports/airstrips, shipping routes, tunnels, nautical charts, vehicle or vessel location, aeronautical charts, railways.

Utilities Communication

> Energy, water, and waste systems and communications infrastructure and services, for example hydroelectricity, geothermal, solar and nuclear sources of energy, water purification and distribution, sewage collection and disposal, electricity and gas distribution, data communication, telecommunication, radio, communication networks

GIS Data is Critical for 911 Emergency Service

NENA NG9-1-1 — i3 Elements
Simplified Diagram

Source: NENA

[GIS data is critical for 911 Emergency Services - Source link](#)

Counties submit key GIS data layers: 1) parcels, 2) street centerline, 3) county boundary, 4) administrative boundaries, 5) addresses, [6) section corners requested]

Indiana GIS Data Harvest
https://data-harvest-ingov.hub.arcgis.com/
Two methods for submissions, one for counties working with vendors and the other for counties transmitting the data directly

Data Harvest Questions
Polis Center: inshare@iupui.edu

IndianaMap Portal vs Hub?

Differences and Definitions:
Hub- ArcGIS Hub is an easy-to-configure cloud platform that organizes people, data, and tools to accomplish Initiatives and goals using ArcGIS Online.
Portal – Must have ArcGIS Online Basic account which allows you to create unlimited sites and pages as part of your organization's ArcGIS Online Enterprise Portal

Indiana Data Sharing Dashboard-
Dashboard tracking status
2022
2021
2020
Can download: 1) Statewide Data Harvest file GDB, 2) County datasets in GDB or shapefiles, 3) Metadata, 4) Geocoding GDB & statewide locations (ArcPro), 5) DLGF real property GDB, 6) feature services,

Collaborators share/submit data via ArcGIS Online: Data, Maps & Apps, Documents, Events

Collaborators access & share data from other Collaborators

ArcGIS Online HUB (ESRI hosts)
(catalog) Collection of Data, Maps & Apps, Documents, Events

IndianaMap.org
Provides a collection of data and web services
Data, Maps & Apps, Documents, Events, Services

IndianaMap GIO Hub (Indiana hosts)
Based on GIO ESRI License
State Agency Hub and Collaborators data
https://indianamap-inmap.hub.arcgis.com/

IndianaMap Viewer
Enables viewing of collaboration data from Hub and ArcGIS personal account data (though IN ESRI License – Accesses data from Data Gallery
https://indianamap-inmap.hub.arcgis.com/apps/indianamap-map-viewer-1/explore

Data Gallery
Search data using tags

Allows access to ArcGIS Online services

Indiana ArcGIS Online Hub
State Agency data shares data through ArcGIS Online Organization Enterprise Portal (internal and external data?

Collaborator ArcGIS online Hubs

Federal datasets Hubs

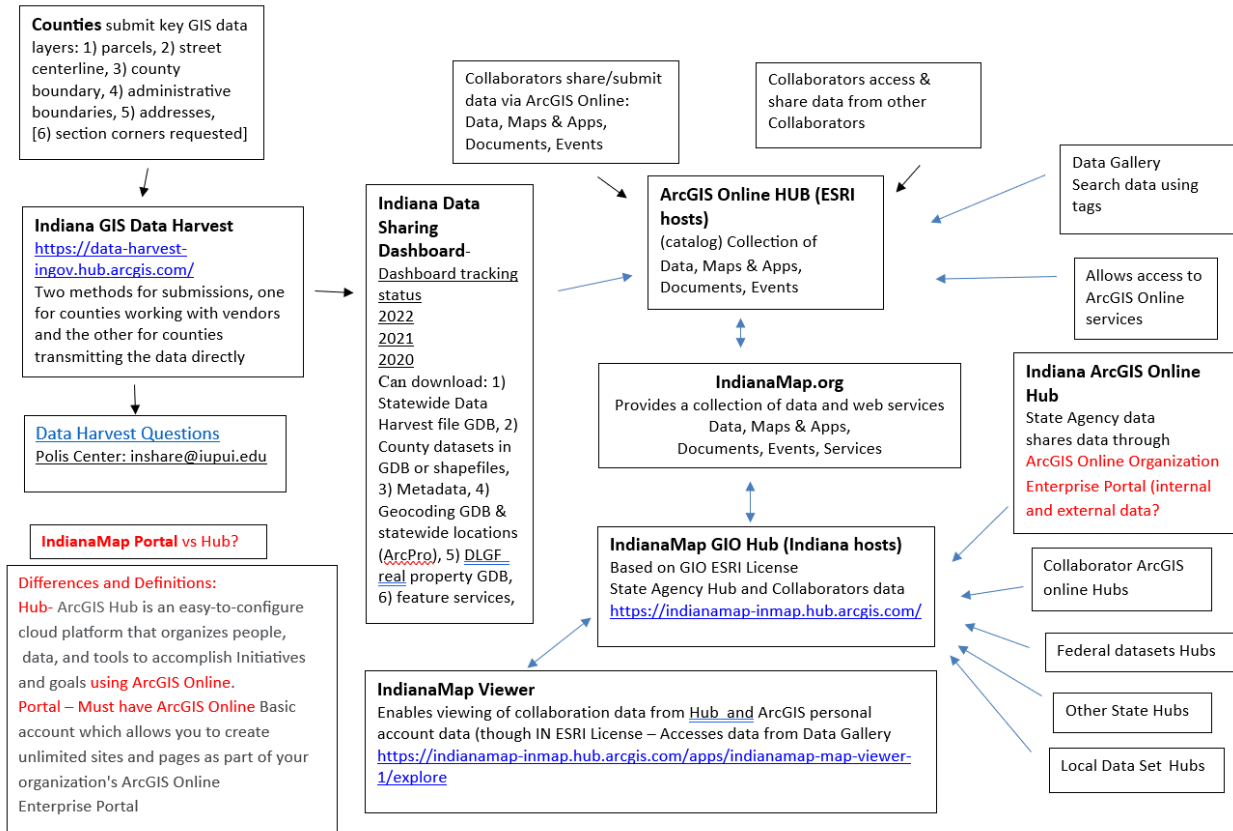Other State Hubs

Local Data Set Hubs

Diagram Showing How Hub Sites Relate through Organizations Using ArcGIS Online (3/22/2023)

Migration - IndianaMap Crosswalk table

IndianaMap Migration - Phase 1 Crosswalk (IndianaMap.org) – See Appendix D
Additional Table contains a list of data layers – migration from old layer names and categories to new layer names and new categories.

Structure of this Plan

The nine framework data layers identified in the Indiana Code are discussed in detail in this Data Integration Plan. Each layer is organized and discussed the same way for consistency and usability. The topics discussed for each GIS framework data layer are as follows.

Overview

The overview section defines and describes the type of framework data in general terms.

Current Holdings

For each specific type of framework data multiple GIS data layers may be available. This section describes the GIS data layers that are publicly available through the various IndianaMap resources.

Data Stewards

Data stewards manage, develop, and maintain the GIS data layers to support the business uses of these data within their organization and throughout their communities. This section identifies each of the appropriate data stewards for the current holdings.

Data Standards

GIS data standards define the digital format, graphic feature types, feature attributes, and default map symbology used to represent each layer. Well-designed data standards also facilitate data sharing and increase interoperability among GIS and other data users. This section describes the data standards for the current holdings.

Data Sharing

This section describes data sharing policies, and data exchange agreements for the current holdings.

Data Distribution

This section describes data viewing, download, web services or other transfer mechanisms available for the current holdings.

Current Plans

This section describes any current and/or ongoing plans to modify, add, or retire GIS layers in the

current holdings, as well as any changes underway or planned for the data stewards, data standards, and data distribution components described above.

Future Plans

This section describes any general plans for future maintenance, improvements, new applications, layer retirements, or new data layer acquisitions being planned to support the type of framework data, as well as any proposed changes to the current data stewards, data standards, and data distribution for the current holdings.

FRAMEWORK DATA

Each of the framework data types listed in IC 4-23-7.3-3 are discussed in detail in this section.

Special Note regarding the County Data Sharing Layers

In recent years all 92 Indiana Counties have agreed to share critical geospatial data with the IGIO. Specifically, counties shared Address Points, Street Centerlines, Parcels, Jurisdictional Boundaries, and Section Corners (only a handful of Counties are sharing this layer) GIS data with the State to make available to the public on current legacy IndianaMap. The overall management for sharing and acquiring these five layers is through the IGIO. IGIC's Addresses and Centerline, and the Cadastral Boundaries-PLSS workgroups support the IGIO and end-user community with the graphic and attribute specifications for publishing these data on IndianaMap, and work with IGIC's Data Sharing Committee to address long-term objectives to improve these data layers and data sharing methods, education and outreach. The Indiana

Example of Indiana County Data Sharing Layers

Geological and Waters Survey (IGWS) publishes these layers on IndianaMap. Updates are made on an annual basis until recently.

The IGIO has provided statistics on the amount of collected framework features for the 2020-2021 data harvest:

- Jurisdictional Boundaries—Over 14,000 boundaries were collected from the Counties.
- Street Centerlines Segments—Just over half a million road segments were obtained for the State. It is important to note that 36 counties provided street centerlines that did not include address ranges.
- Address Points—Approximately 3.2 million address points

- Land Parcels—Approximately 3.6 million parcels
- County Boundaries—75 out of 92 Indiana Counties were collected
- Section Corners—9 Indiana Counties were collected

While the IndianaMap is migrating to a new platform (IndianaMap 2.0), information is still being accessed from indianamap.org which includes framework data (including address points, street centerlines, land parcels, and governmental boundaries). The attributes include boundary names, descriptions, and the date of harvest from each county provider. Specific details for each layer can be found in the individual framework sections and Appendix A of this report. The current datasets comprise differing harvests to provide a statewide dataset.
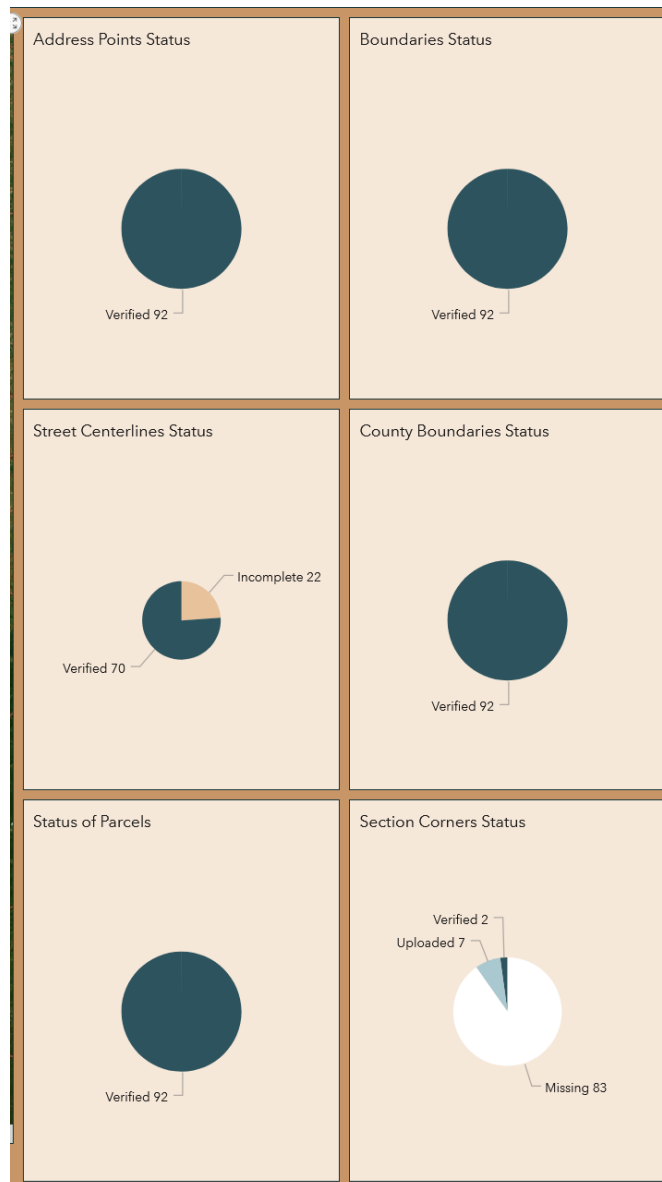
Status of each GIS data layer harvested in 2022.
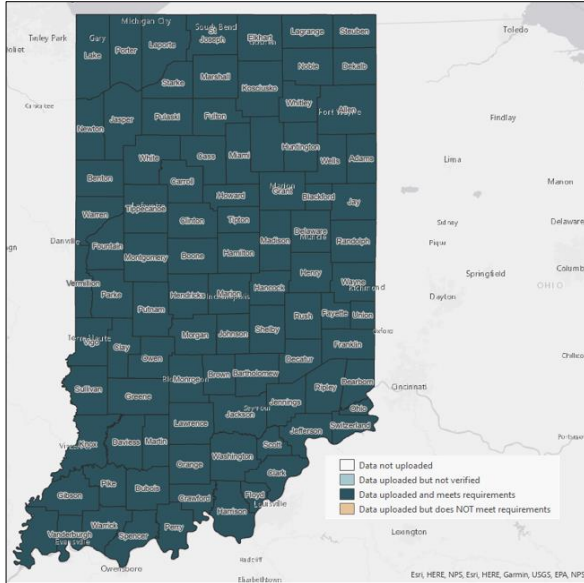
The above map represents Counties providing the following framework layers for the 2022 Indiana Data Harvest:
Address Points, Jurisdictional Boundaries, Parcels and County Boundaries
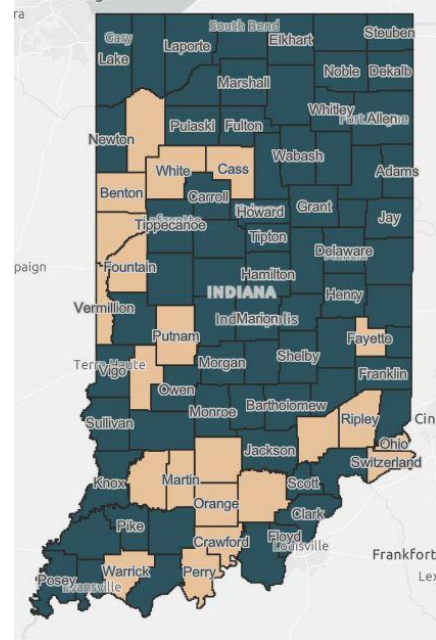
The above map represents Counties providing the following framework layers for the 2022 Indiana Data Harvest: Street Centerlines


The above map represents Counties providing the following framework layers for the 2022 Indiana Data Harvest: Section Corners

Indiana Data Sharing Agreement

The previous Indiana Data Sharing Agreement between the IGIO and Counties has expired. In 2016, IC 6-1.1-4-25(b)(3) was enacted to legislate counties sharing parcel GIS features with Department of Local Government Finance (DLGF) and the IGIO. The counties are also encouraged to continue sharing their Address Points, Street Centerlines and Jurisdictional Boundary layers, and many Counties continue to share these data layers.

Indiana Data Harvest Dashboard

In 2020, the State IGIO partnered with IUPUI's The POLIS Center to develop the 2020 Indiana Data Sharing Dashboard. This dashboard provides information on the status and availability of various framework datasets. Interactive maps show the progress of data harvests from all 92 Indiana counties. Datasets can be downloaded or viewed using feature services. The 2020 Department of Local Government Finance real property geodatabase (including PARCEL, LAND, IMPROVE, DWELLING, BUILDING, and BUILDING DETAIL tables) is available. This site has been updated for the 2022 data harvest.
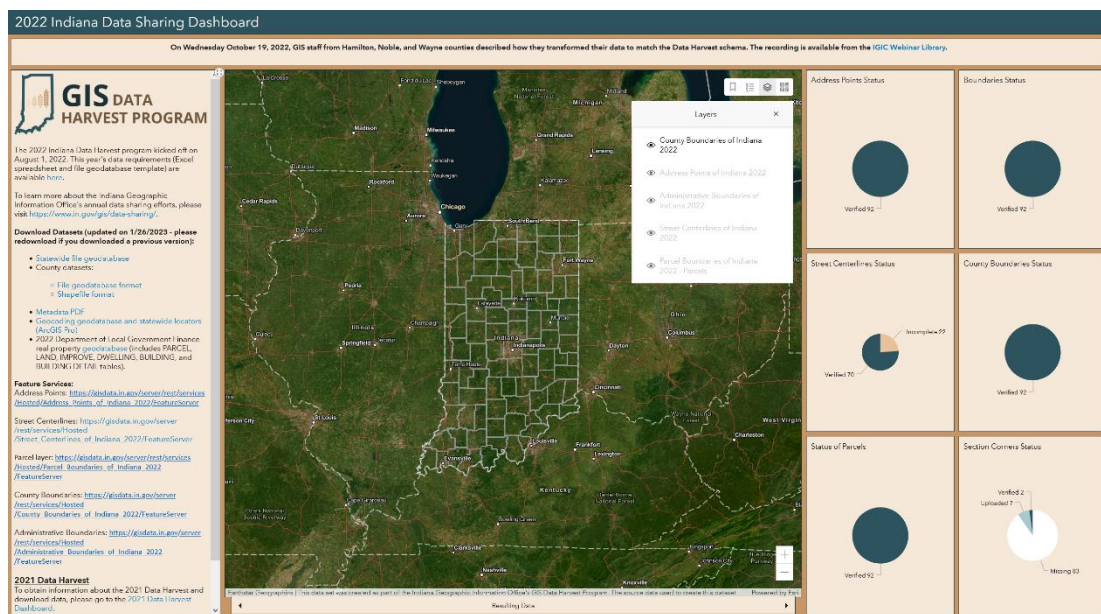
Example of Indiana County Data Sharing Layers on the 2022 Indiana Data Harvest Dashboard: GIS Data Harvest Program.

The 2020 Indiana Data Sharing Dashboard can be accessed using the following URL:
https://iu.maps.arcgis.com/apps/dashboards/4302f9d9fd2a4915b5d49826e457d003

The 2021 Indiana Data Sharing Dashboard can be accessed using the following URL:
https://ingov.maps.arcgis.com/apps/dashboards/9566075da8f2493bbd706b3452944867

The 2022 Indiana Data Sharing Dashboard can be accessed using the following URL:
https://www.arcgis.com/apps/dashboards/a2268a22b8764c9eadca1fe32dfa25e9

For more information on the history of the Data Harvest Dashboard, please refer to the GIS Data Harvest Program by using the following URL:

https://www.in.gov/gis/data-sharing/

Notes Regarding Data Standards, Disclaimers, and Senate Bills

FEDERAL DATA STANDARDS

The Geospatial Data Act of 2018 (GDA) establishes the Federal Geographic Data Committee (FGDC) as the lead entity in the executive branch of government for the development, implementation, and review of policies, practices, and standards relating to geospatial data. The GDA describes responsibilities related to geospatial standards for the FGDC and the agencies covered by the law (covered agencies). These responsibilities are reinforced by Office of Management and Budget Circular A-16 and OMB Circular A-119 (development and use of voluntary consensus standards). In the near future, FGDC will reestablish and resource a sustainable standards process, including implementing supporting governance requirements, updating and improving legacy processes, and validating standards for use as required under the GDA. Agencies should continue, to the extent possible in lieu of an active standards process, to develop, review, update, and achieve compliance with existing and pending standards, and become members of the appropriate FGDC standards body when active. (Approved by the FGDC 12/17/2021)

URISA Geospatial Fact Sheet: Geospatial Data Act of 2018 and the National Spatial Data Infrastructure (NSDI)

Many of the Indiana Framework Layers utilize FDGC standards and they provide a structure to build data on.

IGIC DATA STANDARDS

- IGIC Mapping Standards – Map-Scale-Accuracy Document
- NENA Modified Standard – Data Harvest utilized

DATA USE DISCLAIMER

Data are not intended to be used as a survey product.

- GIS exemptions from "Practice of Surveying" (IC 25-21.5-1-7 and IC 6-1.1-6-9(c)" (excerpts 2021).
- Disclaimers of use clearly indicating that the data are not intended to be used as a survey product.

SENATE BILL 382

SENATE BILL 382 (PASSED IN 2022 LEGISLATION SESSION)
- Funding established for the Indiana Mapping Standards Fund

(1) Digital Orthophotography

Overview

The Orthophotography Workgroup of IGIC (https://www.igic.org/orthoimagery) exists to develop data standards, identify appropriate standards-based data schema, and to investigate appropriate data standards in which to adhere.

Digital orthophotography, also known as Orthoimagery, is defined as, "georeferenced vertical digital imagery data of the Earth's surface captured from satellite or airborne camera systems." Digital orthophotography is a raster image whose pixels have been geometrically corrected (orthorectified) to correct for image distortion caused by camera optics, camera tilt, and variations in elevation. These corrected images share a common georeference with uniform scale and geometry and can be used to accurately determine the geographic location (ground coordinates) of features and accurately measure distances and areas. Orthophotography imagery is now widely used by mappers as base maps (basic geographic reference) for many applications.

Digital orthophotography is commonly described by:

(1) image characteristics (such as black and white, natural color (RGB), near-infrared (NIR), and 4-Band (RGBNIR combined);
(2) the season the imagery was acquired, such as spring/autumn (leaf-off) or summer (leaf-on), to provide a relative indication of the number of ground-level features that can be viewed and identified;
(3) the amount of feature detail clarity that can be viewed (referred to as "pixel size/resolution"); and
(4) the positional accuracy in terms of the measured ground coordinates of orthorectified features viewed in the digital orthophotography as compared to their true surveyed geographic location on the earth's surface.

The Orthoimagery Workgroup of IGIC (https://www.igic.org/orthoimagery) works to help identify local, regional, statewide, and/or federal orthophotography stakeholders, determine these stakeholder orthophotography data needs and requirements, and identify and adopt appropriate orthophotography standards to meet these criteria. The workgroup also maintains an inventory of existing orthophotography data, recommends update and maintenance frequencies, identifies data distribution mechanisms, and provides education and outreach on using these data to stakeholders and the public. At the request of the IGIO, the workgroup also supports the IGIO in the development of the Request for Proposal (RFP) for orthophotography, proposal review, and vendor selection for projects/programs for the State of Indiana.

Current Holdings

Indiana's statewide orthophotography holdings fall into two categories:

(1) High-resolution (spring-leaf-off) imagery: The IGIO provides 4-Band Color (RGBNIR) orthophotography datasets to the IndianaMap in 6-inch-foot pixel (minimum) resolution with some Counties and Cities buying-up to 3-inch pixel resolution.

(2) Medium-resolution (summer-leaf-on) NAIP imagery: The US Department of Agriculture provides 4-Band Color (RGBNIR) Orthophotography datasets to the IndianaMap in 60-centimeters/2-foot pixel resolution.

The most recent orthophotography from the statewide program is the western tier of Indiana counties captured in 2023.

Previous years of statewide orthophotography datasets from 1976 through 2018 are also available on the Indiana Spatial Data Portal (ISDP) and from the IndianaMap viewer.

ISDP: A repository of current publicly available orthophotography datasets in Indiana is provided by the ISDP Legacy site at Indiana University.
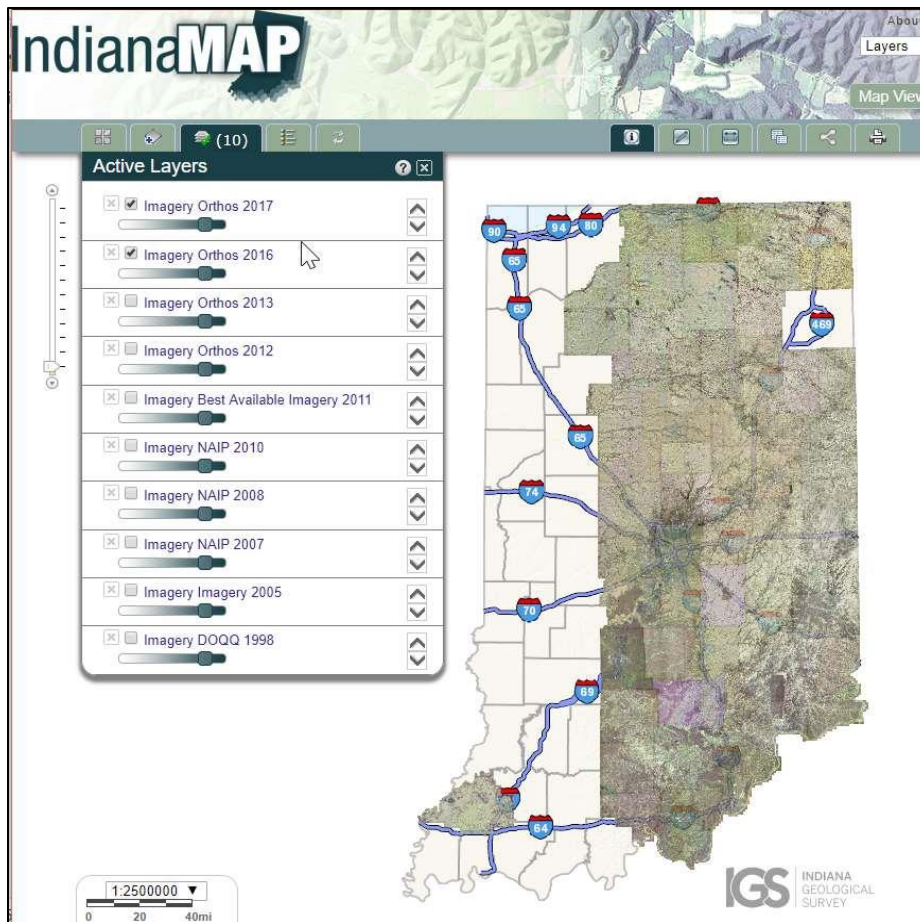
Other orthophotography datasets that individual counties have acquired and contributed to the ISDP are also available from this site. Detailed information about each dataset available can be found here: https://gis.iu.edu

IndianaMap: Orthophotography imagery layers available on IndianaMap Legacy Viewer are listed under the "imagery: group" at https://maps.indiana.edu/layerGallery.html. As imagery services become available, they will be added to the IndianaMap.org Open Data site.

Indiana imagery datasets:

Year	Dataset Name	Type	Number of Bands	Acquisition
2021-2022	Indiana Orthophotography Refresh	Natural Color and Infrared	4	spring
2016-2018	Indiana Orthophotography Refresh	Natural Color and Infrared	4	spring
2011-2013	Indiana Orthophotography, Lidar, & Elevation Program	RGBI, Lidar, Elevation	4	spring
2012	2012 Indiana NAIP	Natural Color and Infrared	4	summer
2010	2010 Indiana NAIP	Natural Color and Infrared	4	summer
2008	2008 Indiana NAIP	Natural Color and Infrared	4	summer
2007	2007 Indiana NAIP	Natural Color (RGB)	3	summer
2006	2006 Indiana NAIP	Natural Color (RGB)	3	summer
2006	IndianaMap Reflight Orthophotography	Natural Color (RGB)	3	spring
2006	IndianaMap Reflight Orthophotography	Color Infrared	3	spring
2005	2005 Indiana NAIP	Natural Color (RGB)	3	summer
2005	IndianaMap Orthophotography	Natural Color (RGB)	3	spring
2005	IndianaMap Orthophotography	Color Infrared	3	spring
2004	2004 Indiana NAIP	Natural Color (RGB)	3	summer
2003	2003 Indiana NAIP	Natural Color (RGB)	3	summer
1998-1999	USGS Digital Orthophotography	Black and White	1	spring
1992-1994	USGS Digital Orthophotography	Black and White	1	spring

Current ISDP Statewide Orthophotography Holdings

Current IndianaMap Statewide Orthophotography Holdings
(with the 2016 & 2017 County imagery displayed).

Data Stewards

- For the "High-resolution (spring -Leaf-off) imagery" datasets, the Indiana Geographic Information Office is the data steward. Megan Compton is the GIO for Indiana.
- For the "Medium-resolution (summer-Leaf-on) imagery" datasets, the US Department of Agriculture is the data steward. In Indiana, Chris Morse, GIS Manager at the Indianapolis USDA, NRCS office is the main point of contact.

Data Standards

Standards for digital orthophotography like file formats, spectral bands, pixel resolutions, coordinate systems, horizontal accuracy, and metadata contents are well defined across the industry to both document the requirements of the digital imagery product as well as its ultimate uses. The detailed data standards used to create each statewide digital orthophotography dataset are documented in their associated metadata (documentation about the dataset) available for each dataset.

- Metadata documentation can be accessed for the IndianaMap Imagery layers here: https://maps.indiana.edu/metadata/Imagery/, and for the

- ISDP, click on the individual products listed on the left side of the page at https://gis.iu.edu/

- An example of available metadata can be accessed here: https://rds-sds-prd-1.uits.iu.edu:8080/isdp/pull?p=collections/statewide/metadata/Statewide2021Metadata.zip&uid=[login user email must be used: steve.hook@nobleco.gov]

Data Sharing

All statewide orthophotography products are in the public domain, with no data sharing restrictions.

Data Distribution

As new orthophotography datasets are acquired, the IGIO, the ISDP, the IndianaMap, and IGIC serve as the principal sources to distribute these data.

IGIO: For the 2020-2023 statewide project the IGIO is using a cloud-based data download service to deliver data to the counties and other end users. For the 2011-2013, and 2016-2018 statewide projects, the State of Indiana GIO delivered individual portable hard drives to each county with the new collected imagery files for their geographic area.

ISDP: All legacy digital orthophotography tiles (2018 and before) are publicly available for download from the ISDP at Indiana University at:

https://gis.iu.edu/

(Note: A free account is required to log in to download these data from the ISDP).

IndianaMap: Web-based mapping users can access the Orthophotography imagery layers on the IndianaMap Legacy Viewer Layer Gallery web page under the "Imagery" group:

http://maps.indiana.edu/layerGallery.html.

All of the imagery data layers available can also be viewed interactively on the IndianaMap Legacy Viewer here: http://bit.ly/2BgxnHB

Desktop GIS users may also access the IndianaMap Orthophotography by connecting to the Web Services available. A list of the different services available can be found at http://maps.indiana.edu/arcgis/rest/services/Imagery

IGIC: The Indiana Geographic Information Council also maintains a set of portable hard drives of the statewide high-resolution 2005-2006, 2011-2013, 2016-2018, and 2020-2024 leaf-off orthophotography datasets. These hard drives are available to IGIC members to borrow and make copies of these data. This distribution function is prescribed by IC 4-23-7.3-16, Dissemination of GIS data and framework data, "The state GIO officer may also provide access through the IGIC and other entities as directed by the State GIO officer."

Current Plans

The GIO, through the Indiana Office of Technology (IOT), is currently under contract with Sanborn for new spring 2020-2024 orthophotography imagery acquisition, and subsequent delivery of digital color orthophotography and selected optional mapping products, at resolutions of 6-inch and 3-inch imagery.

Current four-year 2021-2024 (3 Tier) County Orthophotography Plan
(Center—2021; East—2022; West—2023)

Future Plans

Depending on the availability of funds, the IGIO's goal is to acquire imagery for approximately one-- third of the state per year on a 4-year cycle. This includes a built-in 1-year buffer to accommodate acquisition schedule overruns and new contracting options. Under this program, the oldest leaf-off orthophotography available in Indiana will be no more than 4 years old. Therefore, after the current acquisition cycle is complete, the plan is to follow with a new cycle beginning in 2024.

(2) Digital Cadastre

Overview

The Cadastral-Boundaries-PLSS Workgroup of IGIC (https://igic.memberclicks.net/cadastre-boundaries-plss-workgroup) exists to develop data standards and identify appropriate standards-based data schema and to investigate appropriate data standards in which to adhere.

The IGIO works with Counties through the Data Sharing Initiative to develop the Data Harvest of the Digital Cadastre. The Data Harvest includes address points, administrative boundaries, parcels and street centerlines.

Digital cadastre consists of the boundaries of individual land parcels which, in Indiana, are assigned a unique state parcel identification number to allow access to ownership and property assessment information. The digital cadastre layer displays the boundaries of individual properties within each of Indiana's 92 counties and is often used to support land management applications. The term parcels, parcel map or parcel layer are commonly used with discussing digital cadastre. It is important to note that the parcel layer in a GIS system does not represent the legal boundary of the land units and is only provided as a visual reference.

Indiana uses a 24-digit number to represent each unique parcel within the State.

50 Ind. Admin. Code 26-8-1
Real parcel numbering system for real property

> "00-00-00-000-000.000-000"
> 00 - County
> 00 - Congressional township (also called a survey township or PLSS Township) and range
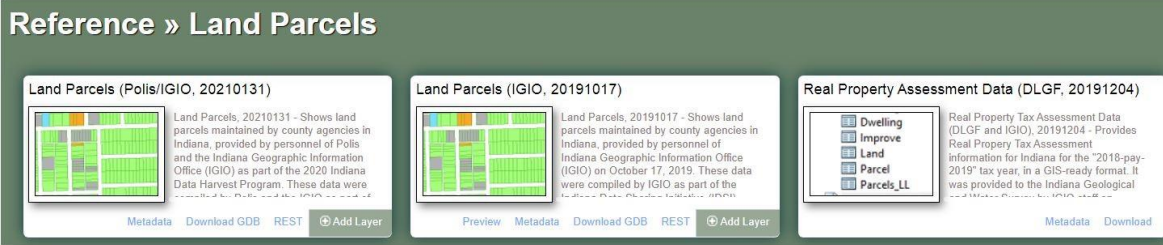> 00 - Section number (PLSS)
> 00 - Block numbers in urban areas (if no block number is necessary, they remain all zeros).
> 000.000 - Permanent parcel number assigned to identify each parcel.
> 000 - State assigned taxing district in which the parcel is located (if it is only a two (2) digit number the first digit is to remain a zero (0)).

The majority of County Assessors use Computer Assisted Mass Appraisal (CAMA) software. It provides a seamless integration with the assessor software giving Auditors, Treasurers, and Assessors a fully integrated property tax software solution. INtax™ simplifies the tax and billing process by automating many of the daily functions in the office and providing custom tools to assist with Abatements, TIF's and Other/Special Assessments.

Land Parcels & Indiana Real Property Tax Assessment Data (DLGF and IGIO)— Provides Real Property Tax Assessment information.

Reference » Land Parcels

Land Parcels (Polis/IGIO, 20210131)
Land Parcels, 20210131 - Shows land parcels maintained by county agencies in Indiana, provided by personnel of Polis and the Indiana Geographic Information Office (IGIO) as part of the 2020 Indiana Data Harvest Program. These data were compiled by Polis and the IGIO as part of

Metadata   Download GDB   REST   ⊕ Add Layer

Land Parcels (IGIO, 20191017)
Land Parcels, 20191017 - Shows land parcels maintained by county agencies in Indiana, provided by personnel of Indiana Geographic Information Office (IGIO) on October 17, 2019. These data were compiled by IGIO as part of the Indiana Data Sharing Initiative (IDSI)

Preview   Metadata   Download GDB   REST   ⊕ Add Layer

Real Property Assessment Data (DLGF, 20191204)
Real Property Tax Assessment Data (DLGF and IGIO), 20191204 - Provides Real Propery Tax Assessment information for Indiana for the "2018-pay-2019" tax year, in a GIS-ready format. It was provided to the Indiana Geological and Water Survey by IGIO staff on

Metadata   Download

Legacy IndianaMap layers
Land Parcels maintained by the Indiana County agencies.

Below are the new IndianaMap 2.0 Data

🖲 **Data**

Parcel Boundaries of Indiana 2020
IndianaMap

COUNTY_PARCEL is a polygon feature class that contains land **parcels** maintained by county agencies in Indiana, provided by personnel of Indiana Geographic Information Office (IGIO) on...

Type: Feature Layer	**Rows:** 3,571,984
Last Updated: March 21, 2018	**Tags:** Indiana, Counties, Data Sharing Initiative, **Parcel**, Cad...

🖲 **Data**

Parcel Boundaries of Indiana 2021
IndianaMap

Type: Feature Layer	**Rows:** 3,644,984
Last Updated: November 28, 2022	**Tags:** boundaries, cadastre, **parcels**, planningCadastre, Ind...

🖲 **Data**

Parcel Boundaries of Indiana Current
Megan R.L. Compton, Indiana Office of Technology, Indiana Geographic Information Officer | IndianaMap

This data layer is an Esri file geodatabase polygon feature class that contains parcel boundaries maintained by county agencies in Indiana. It was released by the Indiana Geographic Informatio...

Type: Feature Layer	**Rows:** 3,644,984
Last Updated: December 13, 2022	**Tags:** boundaries, cadastre, **parcels**, planningCadastre, Ind...

Real Property geodatabases can be downloaded from the Depart of Local Government Finance (DLGF).

[2020 Indiana Data Sharing Dashboard](#)
- 2020 Department of Local Government Finance real property geodatabase (includes PARCEL, LAND, IMPROVE, DWELLING, BUILDING, AND BUILDING DETAIL (tables)

- 2021 Department of Local Government Finance real property geodatabase (includes PARCEL, LAND, IMPROVE, DWELLING, BUILDING, and BUILDING DETAIL tables).

- 2022 Department of Local Government Finance real property geodatabase (includes PARCEL, LAND, IMPROVE, DWELLING, BUILDING, and BUILDING DETAL tables
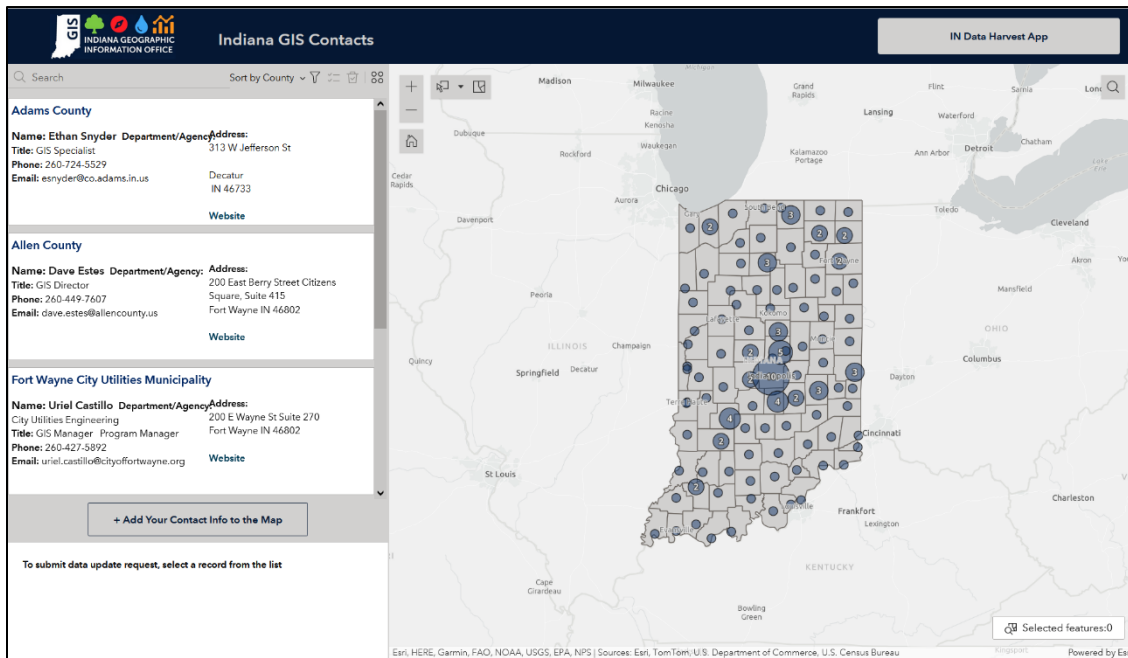
Indiana GIS Contacts Web Application

Use the Indiana GIS Contacts web application to reference GIS professionals' contacts.

https://experience.arcgis.com/experience/4641f179b6b44d0683ffb14b6f7826e6/

Current Holdings

Legacy IndianaMap—Land Parcels, (IGIO, 20210131) - Shows land parcels maintained by county agencies in Indiana, provided by personnel of Polis and the Indiana Geographic Information Office (IGIO) as part of the 2020 Indiana Data Harvest Program. In the latest version published January 31, 2021, there are 3,644,984 Land Parcels on IndianaMap. These data were compiled by Polis and the IGIO as part of the Indiana Data Sharing Initiative (IDSI) between Indiana Geographic Information Council (IGIC), Indiana Geographic Information Office (IGIO), Polis, Indiana Geological and Water Survey (IGWS) and participating Indiana counties to provide the most accurate framework data (including address points, street centerlines, land parcels, and governmental boundaries) for the citizens of Indiana. The attributes have been expanded to now include parcel ID, dates of harvest from each county, property classification codes, property classification descriptions, street address information, and tax district ID numbers.

NOTE: As of the April 2018 update, new attribute fields are now included in the data structure for the ISDI framework layers (land parcels, street centerlines, address points, and governmental boundaries). The new attribute information includes improved street address information better suited for geocoding, property classification codes and descriptions, and tax district numbers. The additional attribute fields have been added with information that was obtained by personnel of Polis from land and property tax assessment records provided by the Indiana Department of Local Government Finance (DLGF, "Real Property 2019 - Pay 2020" data records), as well as U.S. Census (TIGER) data.

In accordance with Indiana Code 6.1.1-4-25, GIS parcel information and property assessment data from each county is shared on an annual basis by township assessors and county assessors with Indiana's Legislative Services Agency (LSA), Department of Local Government Finance (DLGF) and the Indiana Geographic Information Office (IGIO). For more details see: https://iga.in.gov/legislative/laws/2017/ic/titles/006#6-1.1-4-25

Legacy IndianaMap—Land Parcels (IGIO, 20180412) – Parcel boundary layers collected and integrated as part of the County data sharing initiative. In the latest version published April 12, 2018, there are 3,598,373 Land Parcels on IndianaMap.

Legacy IndianaMap—Real Property Tax Assessment Data (DLGF and IGIO), 20191204 - Provides Real Property Tax Assessment information for Indiana for the "2018-pay-2019" tax year, in a GIS-ready format. It was provided to the Indiana Geological and Water Survey by IGIO staff on December 4, 2019. The data were compiled by IGIO staff as part of the Indiana Data Sharing Initiative (IDSI), which provides the most accurate framework data (including address points, street centerlines, land parcels, and governmental boundaries) for the citizens of Indiana. It contains nine file geodatabase tables named "BUILDING," "BUILDING_DETAIL," "DWELLING," "IMRPOVE," "IMRPOVE_DWELL," "LAND," "PARCEL," "PARCELS_LL," and "PARCELS_LL2019."

An associated Microsoft Excel spreadsheet named REAL_PROPERTY_2018_DATA_DICTIONARY.ZLSX" is the data dictionary for the nine file geodatabase tables. It provides the relationships and primary key fields between the nine file geodatabase tables, definitions for the attribute fields within the tables, and code list definitions for any coded values contained within.

This layer is provided 'as-is' and has not been quality control checked for completeness, accuracy, or content, and should not be used for any official or business purpose. Be sure to read the full metadata for each layer. This data set was compiled by IGIC as part of the IndianaMap Data Sharing Initiative between IGIC, Indiana Office of Technology (IOT), Indiana Geographic Information Office (GIO), Indiana Department of Homeland Security (IDHS), Indiana Geological and Water Survey (IGWS) and participating Indiana counties to provide the most accurate framework data (including address points, street centerlines, land parcels, and governmental boundaries) for the citizens of Indiana.

Legacy IndianaMap—Real Property Assessment Data (DLGF and IGIO, 20180412) – Provides Real Property Tax Assessment information for Indiana for the "2017-pay-2018" tax year, in a GIS-ready format. It was provided to the Indiana Geological and Water Survey by IGIO staff on April 12, 2018. The data were compiled by IGIO staff as part of the Indiana Data Sharing Initiative (IDSI). Each

County is the steward of their own parcel data. The GIO is the steward of the publicly available Indiana statewide layer containing all combined parcel data.

The IndianaMap Apps and the Indiana Data Sharing Dashboards provide viewing and download information for the following years of Parcel layers:

- 2022 Indiana Data Sharing Dashboard
- 2021 Indiana Data Sharing Dashboard
- 2020 Indiana Data Sharing Dashboard

The Casdastre Framework layers are listed on the current IndianaMap under the Category: planningCadastre, along with other data.

- IndianaMap Categories are based on ISO 19115 Topic Category;
    - Information used for appropriate actions for future use of the land, for example land use maps, zoning maps, cadastral surveys, land ownership, parcels, easements, tax maps, federal land ownership status, public land conveyance records.
- IndianaMap tabs indicate whether information is Data, Apps, Maps, Documents, or Events

IndianaMap Data layers

Parcel Boundaries of Indiana Current, data – IndianaMap (Date Updated: March 19, 2023)
> **Summary**
> This dataset was developed to provide accurate parcel boundaries for Indiana, as part of Indiana's annual GIS Data harvest Data Sharing Initiative (IDSI) of the Indiana Geographic Information Office (IGIO)

Parcel Boundaries of Indiana 2022, data – Indiana GIO
> **Summary**
> This dataset was developed to provide accurate parcel boundaries for Indiana, as part of Indiana's annual GIS Data harvest Data Sharing Initiative (IDSI) of the Indiana Geographic Information Office (IGI

Parcel Boundaries of Indiana 2021, data – Indiana GIO
> **Summary**
> This dataset was developed to provide accurate parcel boundaries for Indiana, as part of Indiana's annual GIS Data harvest Data Sharing Initiative (IDSI) of the Indiana Geographic Information Office

Parcel Boundaries of Indiana 2020, data - IndianaMap GIO
> **Summary**
> This data set was developed to provide accurate framework data (including address points, street centerlines, land parcels, and governmental boundaries) for Indiana, as part of the Indiana Data Sharing Initiative (IDSI) of the Indiana Geographic Information Office (IGIO). Last updated October 2019. Parcel geometries loaded between 11/26/2018 and 6/18/2019. DLGF information from "Real Property 2018 - Pay 2019" data records.

Real Property geodatabase (can be downloaded from):

Summary

2021 Indiana Data Sharing Dashboard

- o 2021 Department of Local Government Finance real property geodatabase (includes PARCEL, LAND, IMPROVE, DWELLING, BUILDING, and BUILDING DETAIL tables).

2022 Indiana Data Sharing Dashboard
- o 2022 Department of Local Government Finance real property geodatabase (includes PARCEL, LAND, IMPROVE, DWELLING, BUILDING, and BUILDING DETAL table

Data Standards

Information on data standards for Digital Cadastre can be found at:

- **FDGC Geographic Information Framework Data Standards (access to Part 1 through Part 7 of the Standards)**
  https://www.fgdc.gov/standards/projects/framework-data-standard/framework-data-standard.

- Part 1, Cadastral, FGDC-STD-014.1-2008, Maintenance Authority – BLM, NGDA theme – Cadastre

- Geospatial Standards — Federal Geographic Data Committee (fgdc.gov) – Endorsed and under review standards listed.

- **FGDC Endorses the Real Property Asset Data Standard (RPADS), FGDC-STD-019-2014**
  Includes one or more of the following: unimproved land, a building, a structure, site improvements and the underlying land. Complex real property entities (aka "facilities") are used for a broad spectrum of functions or missions.

  https://www.fgdc.gov/standards/projects/RPADS/RPADSnewsItem

- NENA-STA-006.1.1-2020   Also includes NENA-REF-006.1-2020 and NG9-1-1 GIS Template Files.   2020/02/18

- NENA Standards & Other Documents - National Emergency Number Association

- **IGIC adopted NENA standard**—The Data Harvest utilized a slightly modified version of the NENA standard (See Appendix A—Data Harvest Metadata).

- **IndianaMap - ISO 19115 Topic Category -** planningCadastre, 015 information used for

appropriate actions for future use of the land e.g., land use maps, zoning maps, cadastral surveys, land ownership.

These framework standards provide sufficient information to support integrating basic land parcel information across jurisdictional boundaries and answering fundamental questions for business processes that need cadastral information.

See the Appendix (end of document) for a listing of the data schema for Land Parcels.

Data Sharing

All layers on Legacy IndianaMap, 2020, 2021, and 2022 Indiana Data Sharing Dashboard and IndianaMap Open Data Hub (arcgis.com)—IndianaMap Data Sharing Initiative are in the public domain and there are no data sharing restrictions.

Data Distribution

The statewide digital cadastre (land parcels) data holdings are available for download from:

- Legacy IndianaMap here: http://maps.indiana.edu/layerGallery.html?category=Land

- Indiana GIS Data Harvest website and the Indiana Data Sharing Dashboards:

    o 2020 Indiana Data Sharing Dashboard

    o 2021 Indiana Data Sharing Dashboard

    o 2022 Indiana Data Sharing Dashboard

- IndianaMAP Open Data Hub (arcgis.com)

The Real Property Assessment Data (DLGF and IGIO) layer is available for download from:

- Legacy IndianaMap—http://maps.indiana.edu/layerGallery.html?category=Land (Real Property Assessment Data)

- Current IndianaMap—Parcel Boundaries of Indiana 2020, 2021, and 2022 (includes DLGF parcel number)
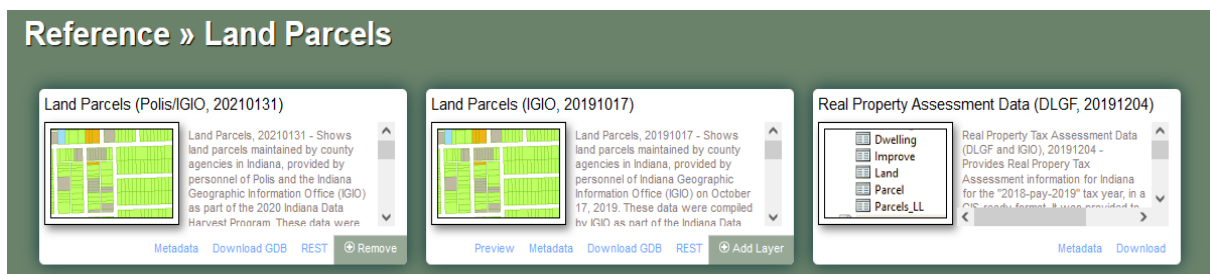
Legacy IndianaMap Land Parcel Layers

Cadastre data can be downloaded from several websites.

1. Indiana Data Sharing **Dashboards** for 2022, 2021, and 2020 – for **fastest** download speeds.

    2022
    - [2022 Indiana Data Sharing Dashboard](https://www.arcgis.com/apps/dashboards/a2268a22b8764c9eadca1fe32dfa25e9)
      https://www.arcgis.com/apps/dashboards/a2268a22b8764c9eadca1fe32dfa25e9
    - [2022 Department of Local Government Finance real property geodatabase](https://countydataharvest.gis.in.gov/RealProperty/Real_Property_2022.gdb.zip) (includes PARCEL, LAND, IMPROVE_DWELLING, BUILDING, and BUILDING DETAIL tables.
      https://countydataharvest.gis.in.gov/RealProperty/Real_Property_2022.gdb.zip

    - 2022 Parcel Feature service links are in the attached Appendix D (crosswalk table).
      ArcGIS REST Service

    2021
    - 2021 Indiana Data Sharing Dashboard
      https://www.arcgis.com/apps/dashboards/9566075da8f2493bbd706b3452944867
    - [2021 Department of Local Government Finance real property geodatabase](https://countydataharvest.gis.in.gov/RealProperty/Real_Property_2021.gdb.zip) (includes PARCEL, LAND, IMPROVE, DWELLING, BUILDING, and BUILDING DETAIL (tablet).
      https://countydataharvest.gis.in.gov/RealProperty/Real_Property_2021.gdb.zip
    - [2021 Parcel Feature service](https://gisdata.in.gov/server/rest/services/Hosted/Parcel_Boundaries_of_Indiana_2021/FeatureServer) (ArcGIS Rest Services Directory)
      https://gisdata.in.gov/server/rest/services/Hosted/Parcel_Boundaries_of_Indiana_2021/FeatureServer

    2020
    2020 Indiana Data Sharing Dashboard
    Link: Indiana Data Harvest (2020) (arcgis.com)

2. The same data can be downloaded from the Indiana Data Harvest Hub - GIO
    https://data-harvest-ingov.hub.arcgis.com/

3. The same data can be downloaded from the IndianaMap – slower download speed. If you use, filter data for area of interest.

4. IndianaMap
    - Parcel Boundaries of Indiana Current (Updated: March 19, 2023)
    - Parcel Boundaries of Indiana 2022
    - Parcel Boundaries of Indiana 2021
    - Parcel Boundaries of Indiana 2020

Current Plans

As part of the existing data sharing initiative:
- Provide support for the IndianaMap Data Sharing Initiative and the development of quality control reporting methods on the harvested county data.
- Create quality improvement guidelines and education to help local authoritative data

owners improve base feature sets.

- Update the County Geospatial Information Resource Layer (government websites and contacts with links to various government resources relevant to the IGIC Framework data workgroups.
- Work with other state and federal government organizations to publish a national land parcel layer.

Future Plans

Enhance the public IndianaMap parcel layer to include the Indiana Department of Local Government Finance (DLGF) annual Property Assessment data.

Continue working with other groups to transition to IndianaMap 2.0

(3) Public Land Survey System (PLSS)

Overview

The Cadastral-Boundaries-PLSS Workgroup of IGIC (https://igic.memberclicks.net/cadastre-boundaries-plss-workgroup) exists to develop data standards and identify appropriate standards-based data schema and to investigate appropriate data standards in which to adhere.

The PLSS is "the description of the location of land in the United States using a survey system established by the federal government in 1785." The system is based on the concept of a township, a square parcel of land measuring approximately 6 miles on each side. The township's position is described as several 6-mile units east or west of a north-south line (called the principal meridian) and north or south of an east-west line (called the baseline). Each township is divided into 36 sections, each of which is 1 square mile, more or less. A section is divided into quarters equal to 160 acres. The quarter-section may be further divided into four 40-acre parcels. The PLSS is also called the "rectangular survey."

The PLSS is used extensively in land surveying and also to describe where specific parts of land (e.g., Parcels) are located. An example of a PLSS location description would be: The parcel is located beginning at the SW1/4 NE1/4 of Section 13 T2S R2W.

Indiana's land records are based on either PLSS and/or non-PLSS land descriptions. Example of non-PLSS land descriptions would be based on land grants, lots, or reservations. The majority of Indiana land records are described using the PLSS Township, Range, Section descriptions.

There is an area in southern Indiana that was not surveyed as part of the original federal government PLSS surveys and there are no PLSS notes for the area. The area should still be described using the Township/Range land system structure even though there may be no documents at BLM to describe the land. Example: The area on the east of PM02 T07S R11W along Ohio River actually has Kentucky permitted wells on it.

Kentucky originally claimed parts of Evansville and Clarksville, so the U.S. Geological Survey used data from two surveys conducted by the Corps of Engineers from 1896 to 1914 to help establish the 1792 low-water mark which became the Indiana – Kentucky Boundary until a U.S. Supreme Court case determined the Indiana-Kentucky Boundary Line is fixed as geodetically described in the 1985 case. The 1985 boundary was incorporated into the PLSS layers by the IGWS.
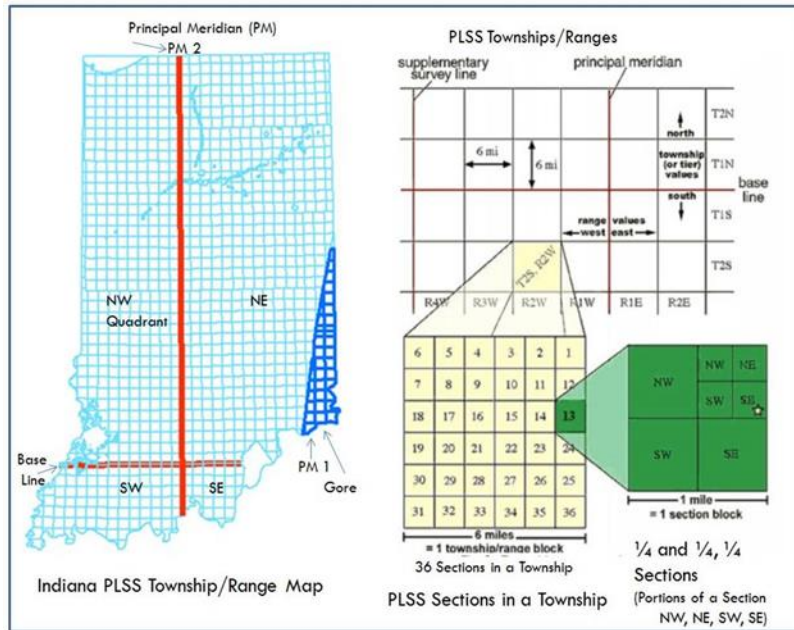
Indiana's PLSS Layout
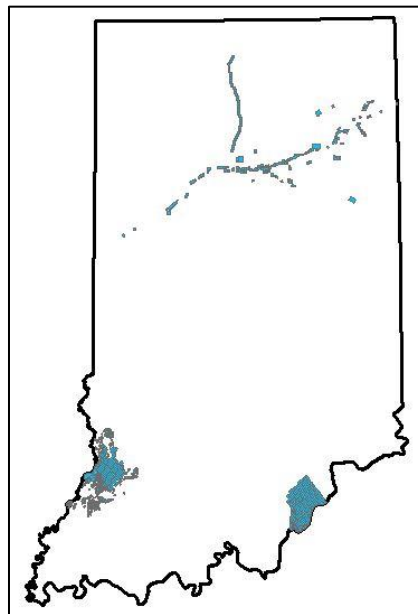
IndianaMap non-PLSS areas (found in subset of PLSS Section layer (Township 99, Range 99)

Current Holdings

PLSS – The group of GIS layers consisting of PLSS sections, townships and ranges, county boundary, and state boundary can be found on IndianaMap at:

- http://maps.indiana.edu/layerGallery.html?category=PLSS
- and in the future at IndianaMap (arcgis.com).

Legacy IndianaMap PLSS Layer

The PLSS layers are listed on the IndianaMap under the Category: Boundaries, along with other data.

> ☐ Data
>
> ## PLSS Sections of Indiana
> Indiana Department of Natural Resources | IndianaMap
>
> **Type**: Feature Layer   **Rows**: 37,811
> **Last Updated**: January 11, 2023   **Tags**: DNR, Indiana, **PLSS**, TSR, Topo, Quad

> ☐ Data
>
> ## PLSS Quarter-Quarter-Quarter Sections of Indiana
> Indiana Department of Natural Resources | IndianaMap
>
> **Type**: Feature Layer   **Rows**: 2,260,558
> **Last Updated**: January 11, 2023   **Tags**: DNR, Indiana, **PLSS**, TSR, Topo, Quad

> ☐ Data
>
> ## PLSS Quarter Sections of Indiana
> Indiana Department of Natural Resources | IndianaMap
>
> **Type**: Feature Layer   **Rows**: 143,576
> **Last Updated**: January 11, 2023   **Tags**: DNR, Indiana, **PLSS**, TSR, Topo, Quad

> ☐ Data
>
> ## PLSS Townships/Ranges of Indiana
> Indiana Department of Natural Resources | IndianaMap
>
> **Type**: Feature Layer   **Rows**: 1,278
> **Last Updated**: January 11, 2023   **Tags**: DNR, Indiana, **PLSS**, TSR, Topo, Quad

> ☐ Data
>
> ## USGS Topo Quadrangles of Indiana
> Indiana Department of Natural Resources | IndianaMap
>
> **Type**: Feature Layer   **Rows**: 711
> **Last Updated**: January 11, 2023   **Tags**: DNR, Indiana, **PLSS**, TSR, Topo, Quad

PLSS Layers not migrated yet but should be:
- PLSS County Boundary
- PLSS State Boundary
- Federal CadNSDI Boundaries

Historical PLSS and non PLSS Framework Project – The project utilizes the PLSS and non-PLSS layers to link to scanned images of the surveyor field notes (1800's) that describe the PLSS and non-PLSS (grants, lots, reservations, etc.) system. The PLSS Section layer contains the non-PLSS locations.
Phase 1 Project
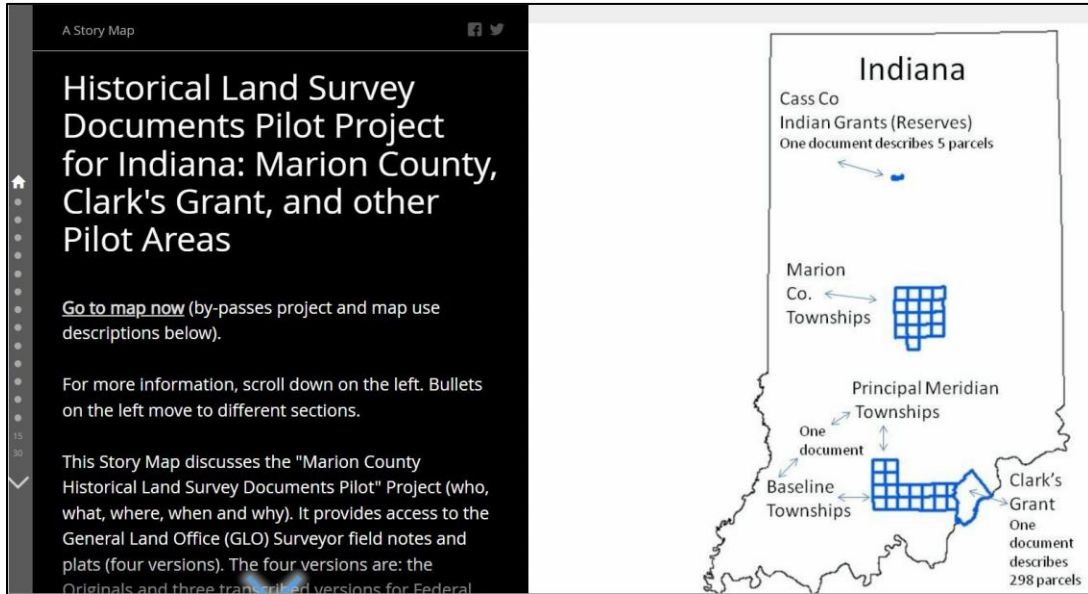
Historical PLSS and non-PLSS Framework layer - IGIC Story Map explains the "Historical Land Survey Documents Pilot Project for Indiana: Marion County, Clark's Grants, and other Pilot Areas (an Indian Reserve). Phase 1 Project
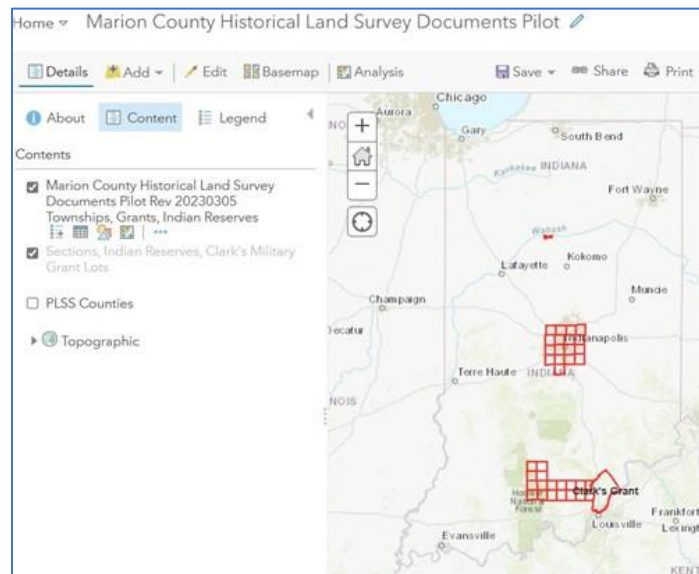
Historical PLSS Framework: IGIC ArcGIS Online — Marion County Project links a subset of General Land Office – Original Surveyor field notes to the PLSS and non-PLSS layers. Marion County has links to four sets of notes – original, and federal, state, and county transcribed versions). Phase 1 Project
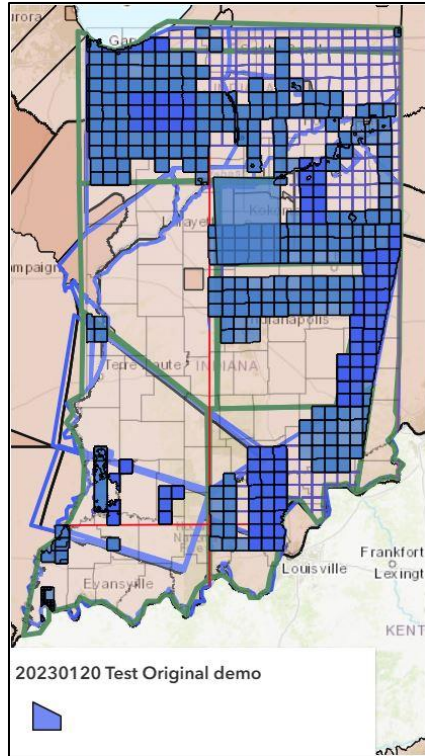
*Draft Demonstration of History at your fingertips: A new way to access
and use Historical Land Surveying Documents, Phase 2 Grant Project*

Historical Indiana PLSS Township Record Viewer

View and retrieve digitized PLSS notes and
plats.

Historical Indiana PLSS Township Record Viewer - ArcGIS Online Application, IndianaMap

View and retrieve digital copies PLSS Notes and Plats

- Federal Notes and Plats (transcribed version)
- State Plats (transcribed version)
- Marion County Notes and Plats

View and retrieve digital copies of PLSS Notes and Plats

- Federal Notes and Plats (transcribed version)
- State Plats (transcribed version)
- Marion County Notes and Plats

Data Stewards

The PLSS is a cadastral reference data theme that provides a basis for parcel descriptions and mapping the rights and interests in land. The PLSS is maintained by two authorities (1) federal authority and (2) state authority. On federally managed lands, the Bureau of Land Management (BLM) is the legally identified PLSS authority. On all lands without a federal right or interest, the PLSS is under state authority or the state delegated authority. The Manual of Survey Instruction, 2009, defines survey procedures and provides definition to the PLSS nationwide. In States like Indiana, for which the original PLSS surveys were completed by about 1840, earlier instructions (e.g., Surveyor General Tiffin's in 1815) controlled the surveys.

- **PLSS State, Counties, Township and Range, and Sections**—IGWS is the steward of these data layers on the Legacy IndianaMap. Work on these PLSS layers is complete and no maintenance is currently planned for these layers until the Indiana-Michigan State boundary line is defined. The layers on IndianaMap.org are not being hosted by the DNR.

- **PLSS CadNSDI**—The steward is the Bureau of Land Management (BLM). Note: Indiana provided the IGWS PLSS layers to BLM to create the Indiana portion of the CadNSDI.

- **Indiana-Kentucky Boundary (court case determined boundary)**—IDNR is the steward of this layer. DNR's Bob Wilkenson, created the shapefiles from the court case coordinates. This layer was incorporated into the PLSS layers. The shapefile and Court index sheets are accessible from the Indiana-Kentucky Boundary files.

- **Story Map: Historical Land Survey Documents Pilot Project for Indiana: Marion Co, Clark's Grant, and Other** – Lorraine Wright is the data steward for IGIC.

- **ArcGIS Online project -Marion County Historical Documents Pilot** – Data Steward: Lorraine Wright for IGIC.

- **Historical Indiana PLSS Township Record Viewer** – Data stewards: Rachel Oser and Clayton Hogston

- **Internet Archive:** Internet Archive: View and retrieve digital copies of PLSS Notes and Plats

Data Standards

- **PLSS State, Counties, Township and Range, and Sections**—These PLSS layers were originally digitized by the Indiana Geological and Water Survey from paper quadrangle maps (1:24,000). A degree of error is inherent in all data. This product is distributed "AS-IS" without warranties of any kind, either expressed or implied, including but not limited to warranties of suitability to a particular purpose or use.

- **PLSS CadNSDI**—These standards are found in the CadNSDI PLSS Handbook.

- **Indiana-Kentucky Boundary (court case determined boundary)**—IDNR. See metadata file and court case. This product is distributed "AS-IS" without warranties of any kind, either expressed or implied, including but not limited to warranties of suitability to a particular purpose or use.

- **Appendix B** – Draft document identifying attributes following FGDC data standards from Cadastral, Geodetic, and Boundary Standards (PLSS County Boundary Standards and can be used for other point, line, area features, and Section Corners).

- The ArcGIS Online and Story Maps for the Historical Documents Projects follow the PLSS rectangular system structure.

- **IndianaMap - ISO 19115 Topic Category** – Boundaries: Legal land descriptions, for example political and administrative boundaries, governmental units, marine boundaries, voting districts, school districts, international boundaries.

Data Sharing

All PLSS layers and projects are available on IndianaMap or online and are in the Public Domain. There are no data sharing restrictions.

Data Distribution

- PLSS data (state and Federal) can be downloaded online from the Legacy IndianaMap http://maps.indiana.edu/layerGallery.html?category=PLSS.

- IndianaMap – Category Boundaries, search for PLSS layers for viewing and downloading data.

- ArcGIS Online IGC Historical Documents Project files can be downloaded from: https://www.arcgis.com/home/webmap/viewer.html?webmap=500be33d254d4fd9ab05e69c4608fe75&extent=-91.4065,37.3059,-80.6289,42.0301

- Historical Indiana PLSS Township Record Viewer
  - The records (field notes and plats) can be viewed or downloaded through this interactive map.

- The combined PDF files (named by township and range) are available for download from our [Internet Archive](#) page.

- [Indiana-Kentucky Boundary Line data](#) can be downloaded.

Current Plans

- Background: The General Land Office - Original PLSS field notes are located at State Archives. There were three sets of transcriptions of the notes, and they are located at the National Archives, State Archives, and at County Surveyor Offices. The documents provide details of how the PLSS was originally field-surveyed (late 1700's-mid 1850s).
- IGIC's Phase 2 Historical Documents (originals) project is ongoing. It includes scanning a subset of the original field notes (not previously available). Notes were scanned and will become available for the Historical Documents Project (Phase 2). The scanned notes were named to reference their geographic location of Township/Range.
- Creating a new GIS Historical GLO Land Survey Documents layer that will contain links to historical land survey documents (PDFs) and stored at Internet Archive data repository. The permanent PDF URLs links will be associated with a new Township, Grants, Reserves (etc.) layer developed for linking to the documents. The historical documents will consist of scans of the General Land Office (GLO) Field Notes.
- Developed and currently testing an ArcGIS Online pilot application of the new Historical GLO Land Survey Documents Layer (Phase 2—Original field notes).
- Work with County Surveyors to update the processes needed to link their surveyor corner description cards to a pilot State-County PLSS point layer for IndianaMap.
- Section corner locations were requested through the data sharing initiative. Only 7 counties submitted data for the 2022 Data Harvest.

Future Plans

Incrementally develop a statewide Historical PLSS Framework of Historical Land Survey Documents (basis for the PLSS surveys). Build on the results of the Phase 1 - Marion County Pilot Project and the current Phase 2 Project.

- Historical document scanning will continue when funding becomes available.

Work with County Surveyors to link their surveyor current corner descriptions to a new State-County PLSS point layer for IndianaMap. (Interim phase to work on process.)

Request section corner location attribute information from Counties that would help improve a more accurate representation of the PLSS layers (not appropriate for surveying or legal purposes).

Gather information/attributes to help improve representation of PLSS. Continue working with counties and adding disclaimers and reassess new standards.

The PLSS should be utilized as the framework for all cadastral (cadastre and other tax related) GIS data. This could improve the accuracy of the PLSS Framework.

Standard needed for disclaimer example:

- Disclaimer for State, County, and Local data:
  - Location of the points, lines and boundaries in the GIS Layers are graphic representations and are approximate locations.   The information should not be used for surveying or legal purposes and are not approved by a County Surveyor for surveying purposes. Contact the County Surveyors' Office when conducting research for surveying.

- DATA DISCLAIMER: layer disclaimer:
  - This data set was compiled by Indiana University, Indiana Geological Survey, using data believed to be accurate; however, a degree of error is inherent in all data. This product is distributed "AS-IS" without warranties of any kind, either expressed or implied, including but not limited to warranties of suitability to a particular purpose or use. No attempt has been made in either the design or production of these data to define the limits or jurisdiction of any federal, state, or local government. These data are intended for use only at the published scale or smaller and are for reference purposes only. They are not to be construed as a legal document or survey instrument. A detailed on-the-ground survey and historical analysis of a single site may differ from these data.

- Make sure disclaimer is added to all GIS data.
- Add disclaimer to all metadata.

Reassess standards needed moving forward:

- Work toward future collection of attributes standards for land data (ex: monument types, etc.)

- Work with surveying community to determine attribute template for collecting GPS coordinates.
  - Refer to Appendix B - County Boundary project document: GIS County Boundary Field Attributes and Alias Names - Rev 3/06/13. (This document may be updated based on County Representative feedback)

Revisit/redraw the PLSS layers when the new Indiana-Michigan Boundary Line is completed:

- Indiana-Michigan Boundary Line Commission was formed to determine a new northern Indiana State Boundary. 2019 Senate Bill 605—Establishes the Indiana-Michigan boundary line commission (commission). Requires the commission to administer and oversee a survey and re-monumentation of the Indiana-Michigan border. Bill expires July 1, 2025
  - Layers affected – State Boundary, PLSS layer boundaries, northern county boundaries, other local boundaries affected.

(4) Elevation

Overview

The Elevation Workgroup of IGIC (https://www.igic.org/elevation-workgroup) exists to develop data standards, to and identify appropriate standards-based data schema, and to investigate appropriate data standards in which to adhere.

Elevation data for GIS has traditionally consisted of georeferenced layers (called Digital Elevation Models or DEMs) which store elevation heights for the earth's surface. DEM data is like imagery except an elevation value is stored on each pixel instead of colors. Similar to imagery, many factors affect the accuracy, precision, and overall quality of DEM data such as pixel size or resolution as well as data capture and production techniques. These DEM data products are collected from active sensors such as Lidar (laser based) or IFSAR (radar based) which consist of high accuracy scans of the earth's surface taken from a vehicle (usually an aircraft). Alternatively, elevation can be collected or generated from stereoscopic imagery. Lidar is the more suitable technology for Indiana's landscape and consists of very dense point data (called a point cloud) that stores the positions and heights of features detected on the ground by laser sweeps. Raw lidar data can be used directly or be processed to derive the more traditional DEM layers. Elevation data is a critical base layer that is widely used for imagery orthorectification, preliminary and alternative engineering designs, and many applications such as flood modeling, watershed and hydrographic mapping, and viewshed analysis (also known as line of sight).

Elevation data is commonly described by:

- the detail level (pixel size or resolution) of a DEM or other raster elevation products;
- the vertical accuracy of any given height expressed as a difference from a surveyed height;
- the density of lidar points;
- the units of measurement for the heights (feet, meters, inches, or centimeters);
- the date of the source data; and
- the technique used to generate the elevation data.

Example of Indiana Lidar (Hillshade Visualization)

The Elevation Workgroup of IGIC (https://www.igic.org/elevation-workgroup) identifies local, regional, and statewide elevation stakeholders, determines their elevation data requirements, and adopts appropriate elevation standards to meet those requirements. The workgroup maintains an inventory of existing elevation data, recommends update cycles, identifies data sharing and distribution mechanisms, and provides education and outreach on data uses to stakeholders and the public. At the request of the IGIO, the workgroup supports the IGIO in the development of a Statewide 3DEP Lidar Acquisition Plan and development of a 3DEP BAA Proposals, and Request for Proposal (RFP) for elevation projects for the State of Indiana. The workgroup also collaborates with and advises other workgroups within IGIC that seek to utilize lidar data for other projects where elevation data is one of the inputs, but where the final data layer may not necessarily be actual elevation layers. One such example would be advising on the use of new 3DEP 1-meter DEM elevation data set for the update/maintenance of the National Hydrography Dataset (NHD) and Watershed Boundary Dataset (WBD) for the Waters Workgroup.

Current Holdings

Indiana's statewide elevation holdings fall into several categories which have progressively improved quality and accuracy of the data in each new product:

Current (Legacy) Holdings

IndianaMap (Legacy) Viewer 2011-2013 Lidar Resources
*(*http://maps.indiana.edu/layerGallery.html?category=Elevation*)*

Description of All Current Holdings

(1) 2016-2020 Lidar and Lidar Base Products consist of the following:
   1. Lidar Tiles – individual tiles in LAS 1.4 Format (QL2 Lidar data consists of 2 laser pulses per meter spacing)
   2. DEM Tiles – individual tiles in IMG Format (Bare-Earth Hydro-Flattened Digital Elevation Model)
   3. Breaklines – GIS hydrography features (rivers and lake polygons) used to create Bare-Earth Hydro-Flattened DEM
   4. Intensity Data Tiles – individual tiles in TIF Format (2.5-foot pixel intensity image generated from the first return lidar pulse recording of surface reflectance)
   5. DEM Mosaic – Merged countywide DEM mosaic file in IMG Format generated from #2 above
   6. County Delivery Tile Grid – GIS Shapefile showing all delivery tiles and their file names
   7. FGDC Metadata

Indiana 2016-2020 3DEP Lidar Collection Years
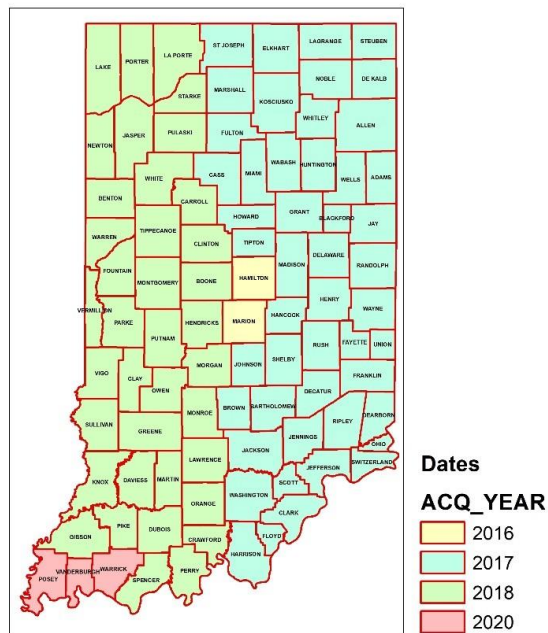
This new lidar data is providing valuable and exciting new elevation products for Indiana that are twice as detailed and twice as accurate as Indiana's previous 2008 – 2013 statewide lidar.

With this accomplished, Indiana's statewide GIS elevation data efforts are now focused on enhanced distribution of this new data, the development of derivative products, and the collection of new bathymetric lidar data for inland river and stream channels. Read below to learn more about lidar and for more information on the status of Indiana's 3DEP lidar initiatives. For more detailed information about these data visit - https://igic.memberclicks.net/indiana-s-new-3dep-Lidar-data-and-informational-resources.

(2) 2008-2013 lidar and lidar derived DEMs: The Indiana GIO has assembled and provides lidar point cloud data and derived DEM data to the public. The lidar consists of point cloud data with a vertical accuracy better than +/-39 cm in open terrain and +/-59 cm in vegetated terrain. The derived DEMs have a 5-foot pixel resolution. This data was published with imagery from the 2011-2013 Orthoimagery project and is available for download from Federal, State, and Higher Education Web Sites (See Data Distribution Section below).

(3) 2005 Statewide DEMs & DSMs: Indiana has Digital Elevation Models (Bare-Earth DEMs) and Digital Surface Models (DSMs) from a 2005 project performed in conjunction with the 2005 Orthophotography project, including 2006 re-flights of select areas. These DEMs were processed into USGS's official 10-meter pixel resolution DEM product for the state from 2005-2011. Vertical accuracy of these DEMs is typically +/-3 meters.
https://gis.iu.edu/dataset/elevation/index.html

(4) USGS Historical DEMs and Digital Line Graphics (DLGs): Indiana also has complete coverage of historical USGS DEMs from the National Elevation Dataset in 1999 at 30-meter resolution. Vertical accuracy of these DEMs is typically +/-7 meters.

- https://gis.iu.edu/dataset/elevation/index.html
- https://apps.nationalmap.gov/downloader/#/

(5) Historic DLGs or hypsography (surface elevations) from 7.5 minute (1:24,000 scale) topographic maps were also produced as a cooperative project between the Indiana DNR and the USGS. Data were obtained from USGS topographic maps produced prior to 2002. These DLGs were processed by personnel of the Indiana Geological Survey to produce GIS layers arranged by USGS quadrangle grid. Major and minor code attributes were simplified for ease of use.

- http://maps.indiana.edu/metadata/Reference/Elevation_Contours_24k_USGS.html
- https://apps.nationalmap.gov/downloader/#/

(6) Current hypsography data developed during the production of USGS Topographic digital maps (USTopo) are available through the National Map Download client. The hypsography elevation for Indiana was derived from Indiana's 2011-2013 statewide lidar DEM's. USGS National Map Download Client: [LINK] Note: The map will open and zoom into Indiana. Click on the layer list icon and then scroll down to toggle display of the elevation layers.

Data Stewards

- For the lidar and lidar derived elevation datasets, the IGIO is the data steward.
- For USGS integrated versions of the elevation products, US Geologic Survey is the data steward. For Indiana, David Nail, National Map Liaison is the main point of contact.

Data Standards

Standards for elevation data are well defined across the geospatial industry to document detailed specifications and outline final uses. All elevation projects led by the GIO utilize the current USGS

standards and specifications, which is common practice for elevation data throughout geospatial sectors to promote common understanding and interchangeability of elevation data. The current USGS standards for lidar data can be found here - https://www.usgs.gov/ngp-standards-and-specifications/lidar-base-specification-online

USGS is continuously updating its Lidar Base Specifications to cover the latest advancements in elevation data technology. The Elevation Workgroup will continue to review and adopt the latest standards that are practical for Indiana, as they are released.

Standards for digital elevation data used to create each statewide elevation dataset described in *Current Holdings* are documented in their associated metadata files. Metadata can be accessed for each product on the individual product pages.

Data Sharing

All of Indiana's elevation datasets and products provided on IndianaMap are in the public domain, and there are no data sharing restrictions.

Data Distribution

Data distribution for new acquisitions are being explored (see *Current Activities*, below). Existing holdings are distributed as follows:

IGIC: For the 2016-2020 lidar data, IGIC distributed a copy of these data products on individual hard drives to each Indiana County and also two (2) full sets to the State of Indiana.   A full copy of the 2016-2020 data was also provided to Purdue University's School of Civil Engineering, Geospatial Sciences Lab, and the Integrated Digital Forestry Initiative (iDiF) which has created products for viewing and download available at: https://lidar.digitalforestry.org/ Subsequent distribution efforts have now been turned over to the IGIO.

IGIO: For the 2008-2013 lidar data and derived DEMs, the GIO delivered individual portable hard drives to each county with the lidar point cloud and DEM files for their respective geographic areas. The IGIO now also hosts and distributes copies of Indiana's latest lidar products developed from the 2016-2020 NRCS/USGS 3DEP lidar acquisition project.

The IGIO also provides a Statewide Elevation DEM REST Service, as well as an interactive map to download Statewide and County-based DEM Elevation Layers for 2016-2020, 2011-2013, and 2005.

- REST Services: https://imagery.gis.in.gov/arcgis/rest/services/Elevation
- Download Map: https://www.arcgis.com/home/webmap/viewer.html?webmap=a604905f59ab4d7684d867d91a52e23b&extent=-92.8985,36.9421,-79.9566,42.3838

OpenTopography: The 2011-2013 holdings of statewide lidar data and related DEM files were also provided to OpenTopography for public access through an agreement with IGIC. Accessing the data through this system allows interactive selection of an area of interest for data download and can be accessed here.   IGIC is currently planning to add the new 2016-2020 lidar data to this site (see

Current Plans section below).

USGS: The USGS hosts national elevation datasets which includes integration of Indiana's elevation data. DEM and point-cloud data are available through the National Map Download Client here: https://apps.nationalmap.gov/downloader/#/

IndianaMap (Legacy) Viewer & Map Services: Web-based users can access elevation related datasets online through the IndianaMap (Legacy) Viewer, hosted by the Indiana Geological and Water Survey. Representations of elevation data can be found in the Layer Gallery, under the Reference category. Also, here is a pre-configured map for an overview of the data on the IndianaMap website.   Desktop GIS users may access the IndianaMap Reference datasets which contain elevation data by connecting to published web services found here: http://maps.indiana.edu/arcgis/rest/services/Reference

ISDP (Legacy Site): A repository of the historic elevation data (2002 – 2013) in Indiana is provided by the Indiana Spatial Data Portal (ISDP) of Indiana University at https://gis.iu.edu/dataset/elevation/index.html

Current Plans

IGIC is currently conducting a fundraise to raise a one-time investment of $50,000 to add our latest 2016-2020 statewide lidar dataset to our existing IndianaMap OpenTopography site.

IGIC is currently developing recommendations for the IGIO to develop a new statewide lidar plan based on an 8-year refresh cycle of our existing 2016-2020 Statewide 3DEP elevation products.

The IGIO is currently developing a new single IndianaMap Portal to replace the following legacy sites currently hosted by IGIC (IndianaMap.org & IndianaMap.maps.arcgis.com), the IGWS (maps.indiana.edu), and IUB UITS (gis.iu.edu). When this new IndianaMap Portal is released later this spring the Elevation data published on the current legacy sites will be available from the new IGIO site using IGIC's original URL: IndianaMap.org.

Future Plans

The GIO has a goal to maintain Indiana lidar data on a refresh frequency of no more than 8 years. Our plan is to refresh our existing 2016-2020 lidar in 2024-2028 by participating in the USGS Annual 3D Elevation Program (3DEP) Broad Agency Announcement (BAA) grant program. Additionally, our goal is to also upgrade Indiana's existing statewide lidar from Quality Level 2 (QL2) to Quality Level 1 (QL1) lidar. Quality Level 1 data will quadruple our current lidar point cloud density from 2 Pulse Per Meter^2 to 8 Pulse Per Meter^2, and improve the vertical accuracy of Indiana's elevation data to at least +/- .10 m in open terrain and +/-.30 m in vegetated terrain. This data update is being done to meet additional needs of stakeholders and the public for uses that are only possible through better accuracy and precision in the data. This level of data quality is the recommended level from the most recent USGS 3D Nation Study for Indiana to achieve the greatest benefit/cost ratio for use of

this data.

Another project that has technical requirements already defined, would utilize the new 2016-2020 ortho and lidar data products to classify roofed buildings of 10'x10' or larger within the data and then use that classification to extract building outlines. The building outlines would be added to the framework datasets for the state of Indiana and could be used for activities including, but not limited to: disaster and resilience planning, assisting county governments with updating building inventories for assessments, and assisting with impervious surface analysis. The Polis Center at IUPUI has conducted extensive work to show the potential and the value for these additional data classifications and further activities to formally reclassify existing data are contingent on full funding support for standardized projects.

Other types of elevation data are highlighted below and are generally used for specialized applications, but may be relevant to Indiana's elevation needs in the future.

Bathymetry Data Acquisition Planning
The term "bathymetry" originally referred to the ocean's depth relative to sea level, although it has come to mean "submarine topography," or the depths and shapes of underwater terrain.

In the same way that topographic maps represent the three-dimensional features (or relief) of overland terrain, bathymetric maps illustrate the land that lies underwater. Variations in sea-floor relief may be depicted by color and contour lines called depth contours or isobaths.

Bathymetry is the foundation of the science of hydrography, which measures the physical features of a water body. Hydrography includes not only bathymetry, but also the shape and features of the shoreline; the characteristics of tides, currents, and waves; and the physical and chemical properties of the water itself. (The above information is from https://oceanservice.noaa.gov/facts/bathymetry.html).

Capturing underwater bathymetry data along Indiana's Lake Michigan shoreline, and in our major Inland Rivers is an important new data source for IDNR and IGIO in their project work. The USGS is planning to include the option for the collection of bathymetry data as a component in future 3DEP BAA annual grant proposals, and IGIC, IDNR and the IGIO are already making plans to identify and prioritize bathymetric mapping Areas of Interest (AOI) across the state.

(5) Geodetic Control

Overview

The Geodetic Control Workgroup of IGIC (No Workgroup Link Available) exists to develop data standards and identify appropriate standards-based data schema and to investigate appropriate data standards in which to adhere.

Geodetic control refers to a common, permanent reference system (Bench Marks) for establishing coordinate positions for all geographic data.

The Geodetic Control Workgroup is a joint IGIC workgroup with the Indiana Society of Professional Land Surveyors (ISPLS) to develop plans, standards, and technical implementation guidance for the IndianaMap framework data layers. This workgroup also does work on the Height Modernization Project. http://www.igic.org/igic-indianamap-workgroups/indianamap-geodetic-controlworkgroup/

Current Holdings

The National Oceanic and Atmospheric Administration (NOAA) and the National Geodetic Survey (NGS) are data originators for this data. Shapefiles for each Indiana county were downloaded from the following URL of NOAA: http://www.ngs.noaa.gov/cgi-bin/ds_county_sf.prl.

On IndianaMap the shapefiles available for download were those specific to Indiana and specified as "GPS only" and "Any stability."
See:

http://maps.indiana.edu/layerGallery.html?category=Benchmarks

IndianaMap Geodetic Control (Bench Marks)

Data Stewards
The primary data steward for geodetic control is the National Geodetic Survey, a part of the National Oceanic and Atmospheric Association (NOAA). For more information on geodetic benchmark data, go to http://www.ngs.noaa.gov/# and see "Data and Imagery."

Data Standards
Geodetic control data standards can be found at:

https://www.fgdc.gov/standards/projects/framework-data-standard/

Part 4: Geodetic Control FGCD-STD-014.4-2008 is the current standard in use.

Data Sharing

All the geodetic control datasets and products provided on IndianaMap are in the public domain, and there are no data sharing restrictions.

Data Distribution

Benchmark data is available for download at
http://maps.indiana.edu/layerGallery.html?category=Benchmarks.

GPS confirmed and unconfirmed data is also available for browser viewing via various Map Service engines including ArcGIS JavaScript, ArcGIS.com Map, Google Earth, ArcMap, and ArcGIS Explorer.

NGS provides both vertical and horizontal control data through the NGS Data Explorer interactive map - https://www.ngs.noaa.gov/NGSDataExplorer/.

Various Cities and Counties also provide horizontal control data (typically USPLSS section corners or other GPS survey monuments) and vertical control data layers through their GIS sites.

Current Plans

The Geodetic Control Workgroup completed work on the development and implementation of the Indiana Geospatial Coordinate System (INGCS). Work continues on providing information and education on the use of the system, as well as incorporating into INDOT Survey Manual and requiring use on state projects.

Continue progress on state height modernization program including: completing data processing and submittal for central districts (Greenfield & Crawfordsville) phase; completing observations, running level lines, and processing data for Northeast district (Ft Wayne); and begin recon for Northwest district (LaPorte). Also, promote participation in GPSonBM program and provide data for the hybrid Geoid2018 model release.

Providing statewide response to Federal Register Notice regarding draft SPCS2022 policy and procedures. Task force formed to compile response and draft reply.

Future Plans

The Geodetic Control Workgroup is continuing working toward quantifying and publicizing the benefits realized from all current and ongoing projects. Members of this workgroup will also continue to pursue Height Modernization initiatives in 2018, particularly in the northern part of the state. Pursuing additional funding through the State Planning & Research program and working to devise new and creative ways to help educate and fund Height Modernization for Indiana are also planned.

The workgroup will continue to promote state participation in GPSonBM project to improve the 2018 hybrid Geoid model as it specifically affects Indiana. In addition, the workgroup will work to assist in facilitating the transition to the 2022 Reference Frame, including considering options for SPCS2022. The transition will be a significant undertaking, with impacts across the geospatial profession. Input from a broad range of users will be necessary to ensure the transition is as smooth possible. The workgroup will also assist and support the legislative changes needed to facilitate the use of new coordinate systems and proposed reference frame transitions.

Funding is being sought to create a data layer for Indiana DNR benchmarks. Currently, DNR benchmark holdings are available at—http://www.in.gov/dnr/water/3573.htm, in the form of digitized quadrangle maps with the locations plotted by hand and benchmark description documents organized by County. These are great resources, but could be made much more accessible in shapefile format.

(6) Governmental Boundary Units

Overview

The Cadastral-Boundaries-PLSS Workgroup of IGIC (https://igic.memberclicks.net/cadastre-boundaries-plss-workgroup) exists to develop data standards and identify appropriate standards-based data schema and to investigate appropriate data standards in which to adhere.

The GIO works with Counties through the Data Sharing Initiative to develop the Data Harvest of the Digital Cadastre. The Data Harvest include**s** address points, administrative boundaries, parcels and street centerlines.

A governmental boundary unit can be considered any of the following:

1. a geographic area with legally defined boundaries established under Federal, Tribal, State, or local law, and with the authority to elect or appoint officials and raise revenues through taxes.

2. an administrative unit is a geographic area established by rule, treaty, or regulation of a legislative, executive, or judicial governmental authority, a non-profit organization, or private industry for the execution of some function.

3. a statistical unit is a geographic area defined for the collection, tabulation, and/or publication of demographic, and/or other statistical data (e.g., Census Data).

4. other unit geographic area that is not a governmental unit, administrative unit, or statistical unit, as defined herein, and that is not an area defined or described in other framework parts.

Governmental Boundary Units consist of Federal, State, local, and other type boundaries.

2020 Data Harvest—Administrative Governmental Boundaries 20200113 – Shows administrative governmental boundaries maintained by county agencies in Indiana, provided by personnel of Polis and the Indiana Geographic Information Office (IGIO) as part of the 2020 Indiana Data Harvest Program. Boundaries that are included are ESN (Emergency Service Numbers) boundaries, fire districts, voting precincts, school districts, and ta districts. Data are current as of January 13, 2021.

2021 Data Harvest—Administrative Governmental Boundaries 2021—There were 11,609 Administrative boundary features collected in 2021.

2022 Data Harvest - Administrative Governmental Boundaries 2022—There were 14,713 Administrative boundary features collected in 2022.

Below is a table showing the types and counts of government boundaries collected via the 2021 and 2022 Data Harvest.

Boundary Type	2021 Total Received	2022 Total Received	2022 Counties Contributing
CIVIL TOWNSHIPS	591	706	63
CONGRESSIONAL DISTRICT	16	15	10
COUNTY COMMISSIONER	--	66	20
COUNTY COUNCIL	--	136	23
EMERGENCY MEDICAL SERVICE AREA	247	250	28
ESN BOUNDARY	707	836	38
FIRE DISTRICT	309	1938	38
INCORPORATED AREAS	844	661	80
LIBRARY DISTRICT	11	13	4
METROPOLITAN PLANNING ORGANIZATION	13	13	2
NEIGHBORHOOD COMMUNITY	3929	3452	7
POLICE DISTRICT	246	574	34
PROVISIONING BOUNDARY	4	3	3
PSAP BOUNDARY	6	4	4
REGIONAL PLANNING COMMISSION		10	2
SCHOOL ATTENDANCE BOUNDARY	32	8	1
SCHOOL DISTRICT	81	193	25
SURVEY TOWNSHIPS	12	--	--
TAX DISTRICT	430	626	13
TIF DISTRICT	1308	2235	35
TOWNSHIP	9	--	--
UNINCORPORATED BOUNDARY	1	4	4
VOTER PRECINCT BOUNDARY	1471	2605	41
ZIP CODE	1342	365	17

Current Holdings

The IndianaMap provides access to a variety of boundary units.

Indiana Data Sharing Dashboard: GIS Data Harvest Program
2020, 2021, and 2022 - Address Points, Street Centerlines, Parcels, County Boundaries, Administrative Boundaries
https://ingov.maps.arcgis.com/apps/dashboards/9566075da8f2493bbd706b3452944867
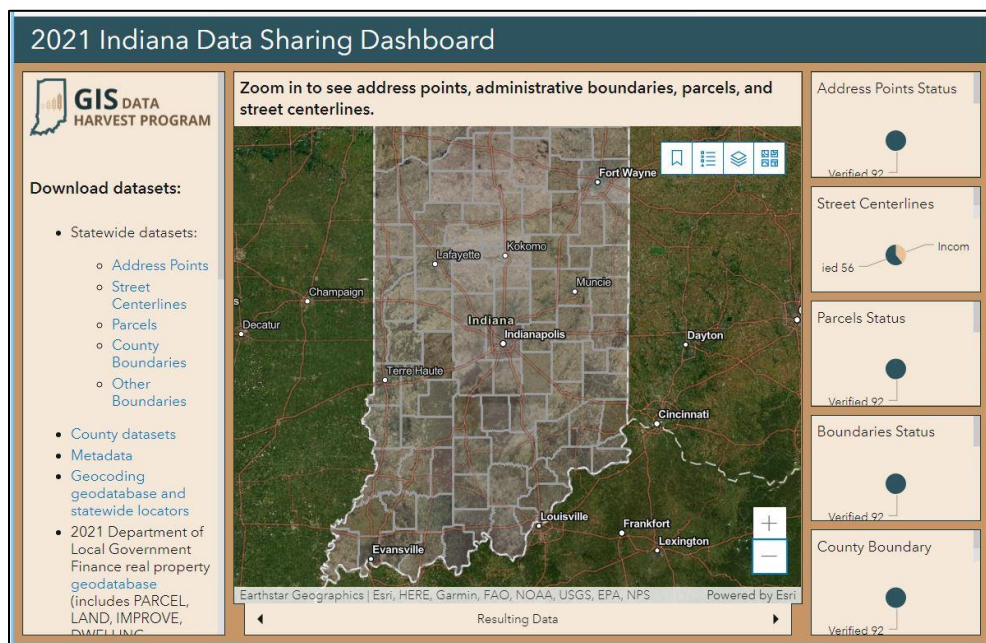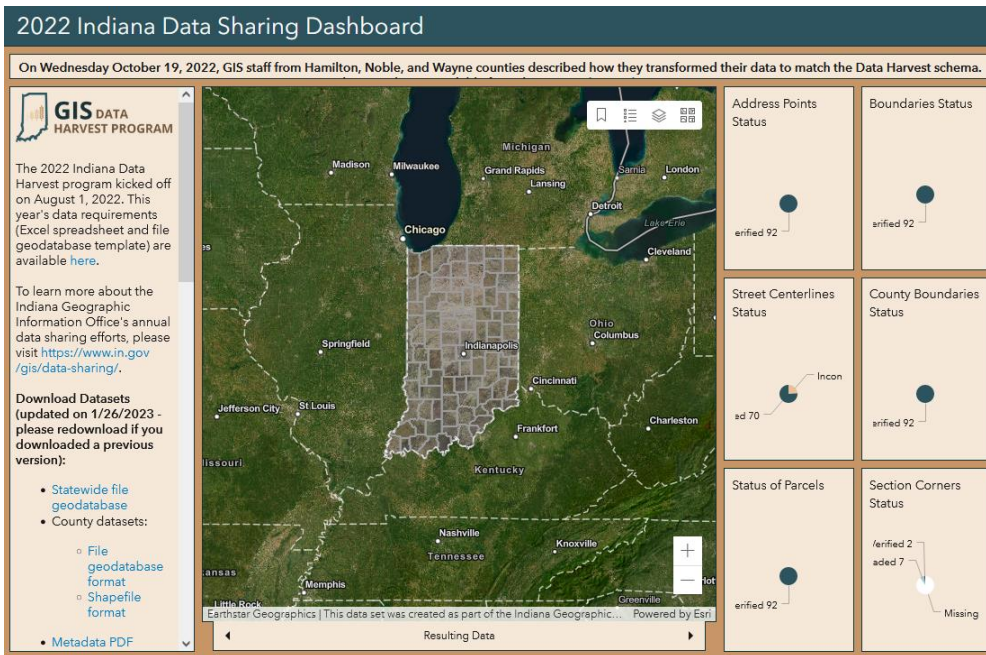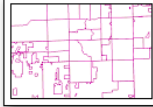
Examples of New Indiana County Data Sharing Layers on the 2021 and 2022 Indiana Data Harvest Dashboard: GIS Data Harvest Program.

- Statewide datasets:
  - Address Points
  - Street Centerlines
  - Parcels
  - County Boundaries

- o [Other Boundaries](#)
- o [Section Corners](#)
- [County datasets](#)
- [Metadata](#)
- [Geocoding geodatabase and statewide locators](#)
- 2021 Department of Local Government Finance real property [geodatabase](#) (includes PARCEL, LAND, IMPROVE, DWELLING, BUILDING, and BUILDING DETAIL tables).

Legacy Government Boundaries – Administrative & Miscellaneous
http://maps.indiana.edu/layerGallery.html?category=Boundaries

Legacy Government Boundaries - Congress
https://maps.indiana.edu/layerGallery.html?category=Congress

Legacy Government Boundaries - General Assembly
https://maps.indiana.edu/layerGallery.html?category=GeneralAssembly

Legacy Government Boundaries - Local Boundaries
https://maps.indiana.edu/layerGallery.html?category=localBoundaries

Legacy Government Boundaries - Voting
https://maps.indiana.edu/layerGallery.html?category=Voting

Legacy Demographics - Census Boundaries

The IndianaMap provides access to a variety of statistical demographic (Census Bureau) boundary data here: http://maps.indiana.edu/layerGallery.html?category=Census

Legacy Infrastructure - Schools

https://maps.indiana.edu/layerGallery.html?category=Schools

Legacy Reference Boundaries - Places

https://maps.indiana.edu/layerGallery.html?category=Places

Legacy Reference Boundary - U.S. National Grid

https://maps.indiana.edu/layerGallery.html?category=NatGrid

Legacy Reference Boundary - Quadrangles

https://maps.indiana.edu/layerGallery.html?category=Quadrangle

Legacy Reference Boundary - Time Zone

https://maps.indiana.edu/layerGallery.html?category=TimeZones

Legacy Reference Boundary - Zip Codes

https://maps.indiana.edu/layerGallery.html?category=ZipCodes

Indiana County Boundaries Compiled – Layer/Application based on 2021/2022 Data Harvest layers from Counties – DNR (GIO is planning on adopting)

In conjunction Indiana Geographic Information Office, State Land Office staff compiled a County Boundary layer with no gaps or overlaps using data submitted in the 2021 Data Harvest. The submitted county boundary and parcels layers were utilized on a case-by-case basis, with the road layer as a last resort. A web application including all source data and the potential arbitrating lines is publicly available at: https://gisdata.in.gov/portal/home/item.html?id=ced4032e27a44731ab5ca42e7127d5fd.

A polygon layer created from the potential arbitrating lines is also available at https://gisdata.in.gov/server/rest/services/Hosted/County_Boundary_Compiled/FeatureServer/5.

In 2023, section corners collected during the 2022 Data Harvest were added to the compiled County Boundary web application.

https://gisdata.in.gov/portal/home/item.html?id=ced4032e27a44731ab5ca42e7127d5fd
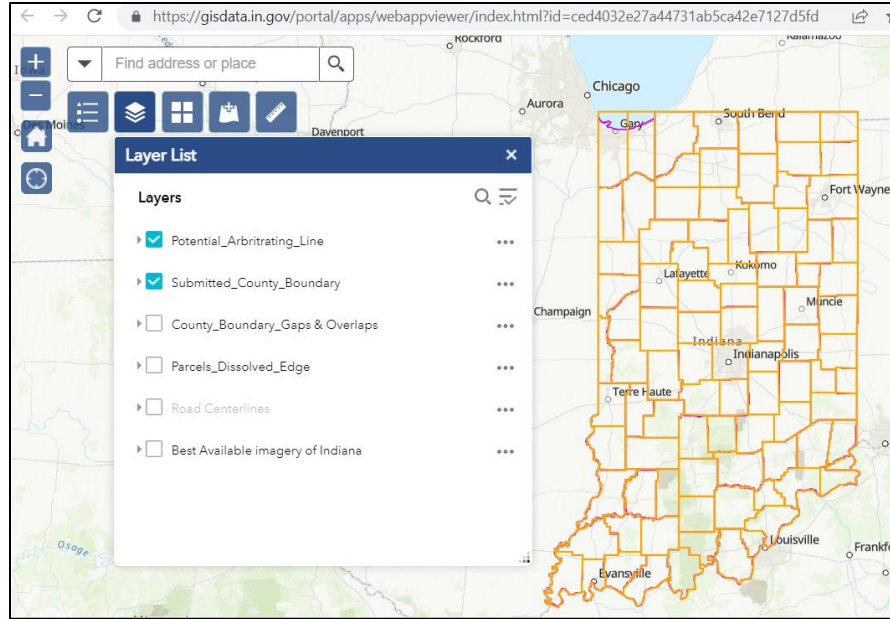
List of Boundaries: Identified as important at the 2021 Geospatial Summit, Data Harvest, and on IndianaMap.

Boundary Types	Identified Important at GeoSpatial Summit	Data Harvest Boundaries collected ?	Legacy Indiana Map 2018	Standard for Data Harvest	INMAP
Administrative Boundaries			x		County based
Annexations	x				
Census Block			x		2011, 2000
Census Block Group			x		2011, 2000
Census Boundaries	x				
Census County			x		2000
Census Tracks			x		2011, 2000
Civil Townships Census			x		
Civil Township		x			
Congressional Districts		x			

Boundary Types (Continued)	Identified Important at GeoSpatial Summit	Data Harvest Boundaries collected ?	Legacy Indiana Map 2018	Standard for Data Harvest	INMAP
Congressional Districts Census			x		7 dif - US congressional district by years: 2021, 2019, 2017, 2015, 2013, 2011, 2009
Corporate Limits	x				
County Boundaries		x		NENA Modified, State Standard	
County Boundary - Census			x		
County Boundary – PLSS (PLSS Digitized at 1:24,000)	x		x		
EMS Emergency Services Areas		x			
ESN Boundaries		x		NENA Modified, State Standard	
Fire Districts		x			
Flood Hazard Boundaries	x				
General Assembly, Indiana Election Division			x		House districts: 2021, 2019, 2017, 2015, 2013, 2011, 2009 (2009 duplicated); Senate District: 2021, 2019, 2017, 2015, 2013, 2011, none for 2009
Incorporated Areas - Reference Places (INDOT), Graphics Area			x		2001

Boundary Types (Continued)	Identified Important at GeoSpatial Summit	Data Harvest Boundaries collected ?	Legacy Indiana Map 2018	Standard for Data Harvest	INMAP
Incorporated Areas (Incorporated Municipality)		x		NENA Modified, State Standard	
Library Districts		x			
Major Urban Areas Reference Places - Census Tiger			x		2000
Metropolitan Planning Organizations		x			
Minor Civil Divisions (Civil Townships) derived and modified from a preexisting file developed by the U.S. Census Bureau.			x		
Miscellaneous Boundaries (GIO)			x		County based
Municipal Boundaries	x				
Neighborhood Communities		x		NENA Modified, State Standard	
Parcels	x				
Police Districts		x			
Populated Areas (Census Tiger)			x		2000
Populated Places - Reference Places (GNIS) USGS			x		1996
Provisioning Boundaries		x		NENA Modified, State Standard	
PSAP - (Public Safety Answering Point) Boundaries		x		NENA Modified, State Standard	
Quadrangle 100K (USGS)			x		1998
Quadrangle 24K (USGS)			x		1998
Quadrangle 250K (USGS)			x		1998
Regional Planning Commissions		x			
School (MHMP) - points			x		2011

Boundary Types *(Continued)*	Identified Important at GeoSpatial Summit	Data Harvest Boundaries collected	Indiana Map 2018	Standard for Data Harvest	INMAP
School Attendance Boundaries		x			
School Districts	x				
School Districts		x			
School Districts Census			x		
Schools HAZUS modified from data provided by the Federal Emergency Management Agency and the National Institute of Building Sciences, as part of a program referred to as 'HAZUS.'			x		1992
Tax Districts		x			
Taxing Districts	x				
TIF Districts	x				
TIF Districts		x			
Time Zone (IGS)			x		2007
Unincorporated Areas		x		NENA Modified, State Standard	
US National Grid 10000-Meter (Reference), Center for Interdisciplinary Geospatial Information Technologies			x		
Voter Precinct Boundaries		x			
Voting Districts Census			x		2010, 2000
Voting Precincts	x				
Watersheds	x				
Wellhead Protection Areas	x				
Wetland Areas	x				
ZIP Code Boundaries		x			

Boundary Types (Continued)	Identified Important at GeoSpatial Summit	Data Harvest Boundaries collected	Indiana Map 2018	Standard for Data Harvest	INMAP
Zip Codes Tabulation Areas (ZCTA's) Census Tiger			x		2005
Zoning Boundaries	x				

Data Stewards

- Miscellaneous (IGIO)—These governmental boundaries are provided by the individual counties and are available from the IndianaMap through the previously described Data Sharing agreement with the Indiana GIO. In the current layer on IndianaMap (April 2018) there are 9,689 Jurisdictional Boundaries.
- The GIO is the steward of the public available Indiana statewide layer containing all combined miscellaneous governmental boundary data.
- The Indiana Department of Natural Resource is the data steward of the County Boundary with no gaps or overlaps.
- The primary data steward for the Congressional Boundaries, Civil Townships and Voting Districts is the US Department of Commerce, Bureau of the Census.
- The primary data steward for the General Assembly units is the Indiana Election Division.
- Local boundaries are also referred to as Minor Civil Divisions (Civil Townships). The layer is derived and modified from a preexisting file developed by the U.S. Census Bureau.
- The National Grid (USNG) establishes a nationally consistent grid reference system. This data set was originally obtained from the Center for Interdisciplinary Geospatial Information Technologies, Delta State University.
- Places—Populated data steward is from the Geographic Names Information System (GNIS) developed by the U.S. Geological Survey.
- Places—Incorporated data steward is the Indiana Department of Transportation, Graphics Engineering.
- Places—Populated are areas from U.S. Department of Commerce, U.S. Census Bureau, Census 2000 Tiger Line Files and SF1 tables.
- Place—Major Urban Areas are from the U.S. Department of Commerce, U.S. Census Bureau, Census 2000 TIGER Line Files.
- Quadrangles layer(s)—data steward is the U.S. Geological Survey.
- Schools Districts—data steward is the U.S. Census Bureau.
- Schools—Higher Education Layer data steward is the Indiana Commission for Higher Education (ICHE).
- Schools—HAZUS was modified from data provided by the Federal Emergency Management Agency and the National Institute of Building Sciences, as part of a program referred to as 'HAZUS.'
- Time Zone layer—The boundaries of time zones coincide with selected county boundaries of

Indiana. The data steward is the Indiana Geological Survey.

- Voting layers—The U.S. Census Bureau is the steward for these layers.
- The primary data steward for the Census: Block Groups, Blocks, Counties, and Tracts is the U.S. Census Bureau.
- The primary data steward for the Indiana-Kentucky Boundary shapefile is the Indiana DNR. The boundary was incorporated into the PLSS layers.
- The ZIP Code Tabulation Areas (ZCTAs), which are statistical entities developed by the U.S. Census Bureau.
- 2020, 2021, and 2022 Data Harvest layers provided by 92 different counties, Geographic Information Office/POLIS.

Data Standards

Federal Geographic Data Committee Standard, Part 5 – Governmental unit and other geographic area boundaries (FGDC-STD-014.5-2008).

FGDC Geospatial Standards — Federal Geographic Data Committee – endorsed, under development and discontinued standards.

Census Bureau Standards

NENA standards – Data sharing initiative uses NENA with a few changes.

Data Harvest Standards—Data Harvest Metadata.

IndianaMap - ISO 19115 Topic Category – Boundaries: Legal land descriptions, for example political and administrative boundaries, governmental units, marine boundaries, voting districts, school districts, international boundaries.

Data Sharing

The products listed above are in the public domain, and there are no data sharing restrictions.

Data Distribution

Legacy boundary data can be downloaded from the IndianaMap here:

http://maps.indiana.edu/layerGallery.html?category=Boundaries

http://maps.indiana.edu/layerGallery.html?category=Census

https://maps.indiana.edu/layerGallery.html?category=Congress

https://maps.indiana.edu/layerGallery.html?category=GeneralAssembly

https://maps.indiana.edu/layerGallery.html?category=localBoundaries

https://maps.indiana.edu/layerGallery.html?category=NatGrid

https://maps.indiana.edu/layerGallery.html?category=Places

https://maps.indiana.edu/layerGallery.html?category=Quadrangle

https://maps.indiana.edu/layerGallery.html?category=Schools

https://maps.indiana.edu/layerGallery.html?category=Voting

https://maps.indiana.edu/layerGallery.html?category=ZipCodes

New IndianaMap 2.0 and Data Harvest:
- Indiana Data Harvest (2020, 2021, and 2022) (arcgis.com): https://www.arcgis.com/apps/dashboards/a2268a22b8764c9eadca1fe32dfa25e9

- IndianaMap—search boundaries and categories: https://www.indianamap.org/

Current Plans

- The State Land Office is working with the Indiana Geographic Information Council and the Indiana Geographic Information Officer to create a County Boundary layer with no gaps or overlaps. This effort is utilizing all parcel and boundary information from Data Harvest layers submitted by Counties.
- Continue to develop a County Boundary layer utilizing best available County Surveyor data. County boundaries following Township/Range boundaries would utilize the County Surveyors' PLSS coordinate and non PLSS information.
- Need to start referring to County Boundary with a descriptor to know which boundary is being referenced (ex: Data Harvest - County Boundary, PLSS - County Boundary, Census - County Boundary).
- Charline is working on the Tax and TIF Districts (sits on the Indiana Gateway with demographic data (different use case). Need to add layer to IndianaMap.
- Put Charline's layer on IndianaMap.
- Continue working with the IGIO on boundary layers and topics.
- Need to define a County Boundary based on Township and Range information and then improve with coordinate information (ex: County – PLSS County Boundary, Data Harvest – County Boundary, and Data Harvest – County Alignment Boundary).

Future Plans

To support Next Generation 9-1-1 (NG9-1-1) GIS efforts, IGIC will work with the GIO to develop a plan to improve the collection of what is currently the Miscellaneous boundary units layer (Legacy IndianaMap) and layers under Boundary category on IndianaMap that is maintained by the Indiana County agencies. Initial plans include:

- Provide support for the IndianaMap Data Sharing Initiative and the development of quality control reporting methods on the harvested county data.
- Create quality improvement guidelines and education to help local authoritative data

owners improve base feature sets.

- Update the County Geospatial Information Resource Layer (government websites and contacts with links to various government resources relevant to the IGIC Framework data workgroups)—(GIO).
- Improve the accuracy of a statewide County Boundary layer by creating a GIS County Boundary layer. Define source and always refer to boundary and how it was created, since there are numerous versions of County Boundaries.
- Work with County Surveyor's to add County data to the GIS PLSS County Boundary layer to improve the PLSS Framework.
- Improve the new Historical Treaty Boundary layer – IGIC.
- Improve the new Historical General Land Office District layer – IGIC.

(7) Water Features

Overview

The Waters Workgroup of IGIC (https://igic.memberclicks.net/waters-workgroup) exists to develop data standards and identify appropriate standards-based data schema and to investigate appropriate data standards in which to adhere. No updates were submitted for this section as of May 2023.

Water features across Indiana are mapped in the National Hydrography Dataset (NHD). The NHD is a feature-based database of the nation's surface water drainage system. It includes area, line, and point features, as well as a topological network that models the flow of water. The NHD has been developed nationwide at a scale of 1:24,000, which is considered high-resolution. In 2016, Indiana completed a multi-year statewide project to upgrade the NHD features to a scale of 1:2,400, which is considered to be local-resolution. The Indiana Waters Framework Dataset consists of the NHD flowline, waterbody, area features and network topology at local-resolution or better. Several advantages are gained by adopting and stewarding the NHD in Indiana as the framework dataset: it is based on a well-tested, nationally consistent database model, it can be used in conjunction with data from surrounding states, it allows for establishing events along waterways, it feeds directly into the National Map framework data, and USGS has developed procedures for stewardship and updates. These data support planning and analysis related to Indiana's water resources.

The IGIC Waters Workgroup strives to develop plans, standards, and technical implementation guidance for the IndianaMap framework data layers. Documents produced by this workgroup as well as the group's objectives can be found at: https://www.igic.org/waters-workgroup

Current Holdings

NHD data exists at local-resolution for the entire state of Indiana. Further details about the NHD can be found at the USGS NHD website: https://nhd.usgs.gov/. The high resolution NHD for Indiana in

the national geodatabase has been updated with local-resolution data, there is not a separate local resolution dataset for Indiana in the USGS NHD holdings. The USGS NHD file geodatabase includes a Hydrography feature dataset and a Watershed Boundary Dataset. The Hydrography feature dataset includes network topology (allows upstream/downstream navigation of the NHDFlowlines) and the following feature classes: NHDArea, NHDFlowline, NHDLine, NHDPoint, and NHDWaterbody. The file geodatabases are available from USGS by HUC4 subregion or HUC8 subbasin found at: https://www.usgs.gov/national-hydrography/access-national-hydrography-products

Alternatively, vector feature classes without network topology are available from the IndianaMap.org. NHD-like data from the IndianaMap.org are found in the Hydrology>Water Bodies Layer Gallery and are named: Classified Drainage Flowlines, Unclassified Drainage Flowlines, Lakes-Ponds, and Rivers-Canals. The Rivers-Canals Layer (NHDArea in NHD model) are 2d features for stream/rivers, inundation areas, canal/ditches, and submerged streams, and the Lakes-Ponds Layer (NHDWaterbodies in the NHD model) represent lakes/ponds, reservoirs, and swamp/marshes. The Classified Drainage Flowlines Layer (derived from the NHDFlowline in the NHD model) represent 1d linear features consisting of classified perennial and intermittent streams/rivers, canals/ditches, artificial paths, connectors, underground conduit, and pipelines. The Unclassified Drainage Flowlines Layer (derived from the Drainageway NHDFlowline in the NHD model) are areas delineated where terrain modelling indicates potential headwater drainage, but no channel is detectable and these features are not considered stream/rivers, these features may or may not have water present outside of a rain event and may or may not exhibit channelization associated with streams.

Data Stewards

The Indiana Geographic Information Office (IGIO) is the steward for the Indiana local-resolution NHD data. The office will work closely with and rely on other state agencies, local agencies, and other organizations to assist with the stewardship activities. A memorandum of understanding (MOU) document currently exists between the IGIO and USGS to define the roles and responsibilities for Indiana's data steward and ongoing maintenance responsibilities, and USGS's data acceptance testing and certification responsibilities. In addition to the NHD, the stewardship agreement includes the Watershed Boundary Dataset. Future updates and improvements to each dataset will be submitted to both USGS and the IndianaMap.

Data Standards

The NHD incorporates the National Spatial Data Infrastructure framework criteria set out by the Federal Geographic Data Committee. Details on the standards for the National Hydrography Dataset, Watershed Boundary Dataset, and NHDPlus HR can be found at https://usgs-mrs.cr.usgs.gov/SPECX/treeview/index.
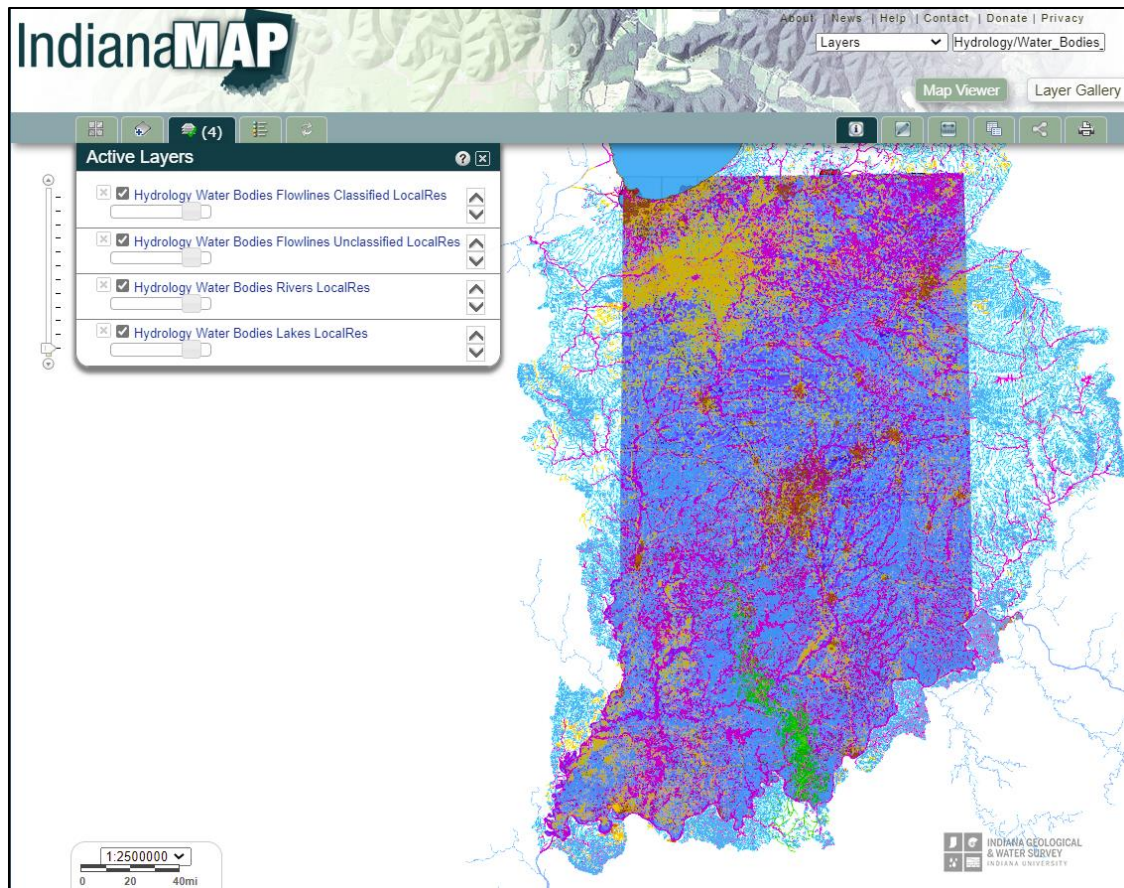
IndianaMap with classified and unclassified flowlines, lakes, and rivers layers.

Data Sharing

All statewide water products are in the public domain, and there are no data sharing restrictions.

Data Distribution

The high-resolution NHD datasets, with network topology, is available for download through the US Geological Survey either by 4-digit HUC subregion or 8-digit HUC subbasin. A state download is also available from USGS, but does not include the network topology. Simple vector GIS data can be downloaded from (http://maps.indiana.edu/layerGallery.html?category=WaterBodies) or viewed on the IndianaMap Viewer here (https://bit.ly/3iNbYfi). The layers include flowlines (NHD Flowlines that are stream/rives classified as perennial and intermittent streams, , canals, ditches, artificial paths, connectors and pipelines), lakes (NHD Waterbodies, including lakes, ponds, reservoirs, swamps and marshes), rivers (NHD Areas including two-dimensional rivers, inundation areas, canals, ditches, submerged streams and other linear waterbody areas), and drainageway flowlines (NHD Flowlines that are not Stream/River, most of which are drainages that may or may not have water present outside of a rain event.

The Local-Resolution Feature Classes available on the current IndianaMap Viewer hosted by IGWS

Current Plans

- The IGIO is currently developing a new single IndianaMap Portal to replace the following legacy sites currently hosted by IGIC (IndianaMap.org & IndianaMap.maps.arcgis.com), the IGWS (maps.indiana.edu), and IUB UITS (gis.iu.edu). When this new IndianaMap Portal is released later this spring the hydrography data published on the current legacy sites will be available from the new IGIO site using IGIC's original URL: IndianaMap.org.

- Indiana's Stewards at IDNR & IDEM continue to edit/maintain Indiana's NHD & WBD:

  - Using NHD Update tools, edit the USGS NHD database to correct errors that are found.

  - Continue publicizing the USGS Markup tool for crowd sourcing input. Taking advantage of the work USGS did on creating the mark up tool, we have incorporated it into our crowd sourcing plan to receive suggestions and requested error fixes.

  - Continue adding names to rivers, streams, and lakes that are currently unnamed in the NHD by using the web application for users to submit names for unnamed streams and lakes. After completing the Board of Geographic Names review process, approved names would be added. A U.S. BGN name change proposal can be submitted by printing and completing a Domestic Geographic Name Proposal form (PDF version).

  - Continue adding attribute entries of drainageway for records previously marked as unclassified to signify the adoption of the drainageway flowline definition by USGS.

- Continue to the follow the USGS 3D Hydrography Program's approach to water data. The USGS is building on the decades of experience developing and managing the National Hydrography Datasets and is establishing the 3D Hydrography Program (3DHP) initiative to completely refresh the Nation's hydrography data and improve discovery and sharing of water-related data. https://www.usgs.gov/national-hydrography/3d-national-topography-model-call-action-part-1-3d-hydrography-program

Future Plans

- Continue to the follow the USGS 3D Hydrography Program's (3DHP) approach to water data and adjust Indiana's NHD/WBD Local-Resolution NHD development, maintenance and stewardship efforts accordingly. See https://www.usgs.gov/national-hydrography for additional details.

- Complete the update the Watershed Boundaries Dataset for Indiana based upon the local resolution NHD and updated elevation data.

- Research creating an automated process to complete the editing process to determine and properly code of local-resolution unclassified streams/rivers as perennial, intermittent, or ephemeral streams, or change to the drainageway feature classification.

(8) Addresses

Overview

The Streets and Address Workgroup of IGIC (https://igic.memberclicks.net/streets-and-addresses-workgroup) exists to develop data standards and identify appropriate standards-based data schema and to investigate appropriate data standards in which to adhere.

A major goal for the data steward is to support address location geocoding with a secondary goal to support routing. The workgroup has gathered the most well-known data standards (from the FGDC, NENA (9-1-1), USPS, USDOT, US Census) and will be adhering to the approved NENA for NG9-1-1 standard. The workgroup has reviewed and compiled a recommendation to supplement attributes previously gathered through the IndianaMap Data Sharing agreement. The workgroup will be creating quality improvement guidelines and education to help local authoritative data stewards improve base feature sets.

Current Holdings

Address Points, 2022—County Address Points are available from the IndianaMap through the previous Data Sharing agreement with the Indiana GIO. In this latest version there are 3,240,163 Address Points on IndianaMap. Ninety-two Counties provided updated addresses.

Address Points, 2021—County Address Points are available from the IndianaMap through the previous Data Sharing agreement with the Indiana GIO. In this previous version there are 3,146,263 Address Points on IndianaMap. Ninety-two Counties provided updated addresses.
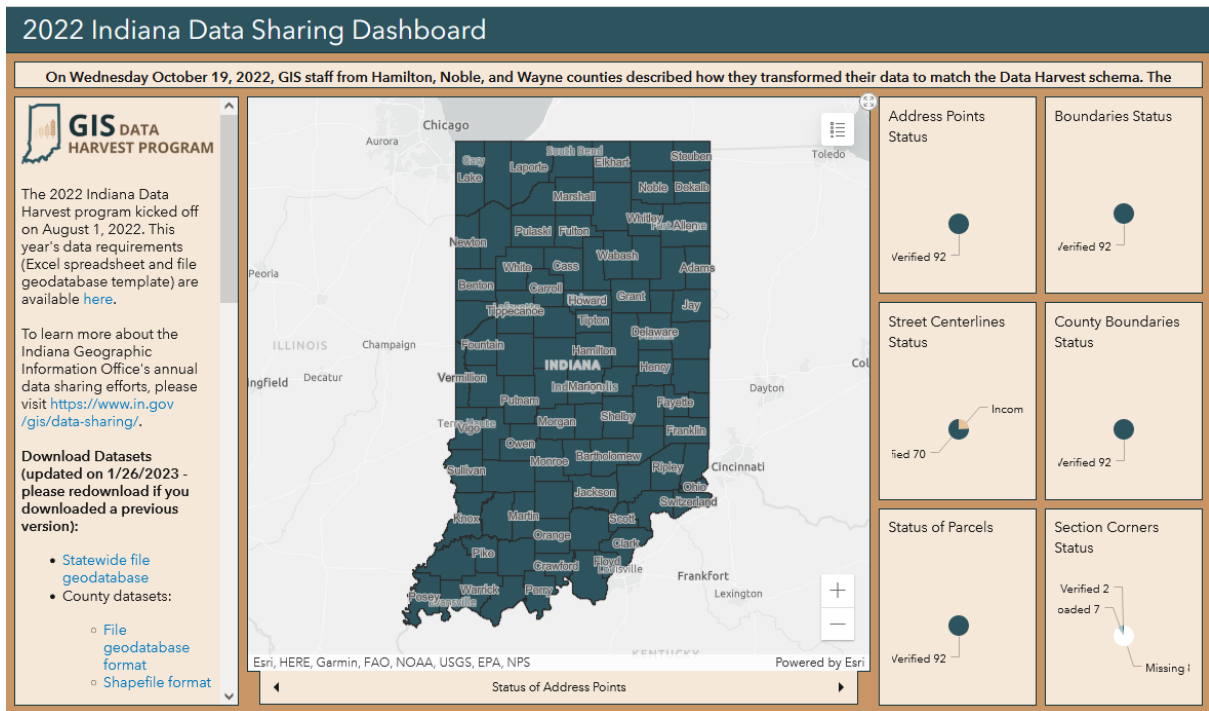
Address Points Feature Class available on the 2022 Indiana Data Sharing Dashboard

This layer is part of the first set of data harvested through the ongoing Data Sharing Initiative program by IGIO from local government sources. These data have been completely quality control checked for completeness, accuracy or content and are available for download from the 2022 Data Harvest dashboard. The current dataset is dated Data Harvest 2022 and comprises address points from 92 counties. The attribute field LOADDATE identifies the data date for the record and it references the date of the harvest. In many counties, the zip code attribute was not available for sharing so it was generated during quality control to provide a dataset that could be used for creating a geocoding service. Additional attribute fields have been added to facilitate geocoding and compliance with the NG911 Standards. These attributes were necessary because the counties quite often don't fully address locations if they are vacant land or non-residential structures like cell towers, silos, barns. The GEO_FULL_ADDRESS was created to identify those addresses that could be used for geocoding services. The GEO_FULL_ADDRESS was also used to create parsed standardized address attributes. These were required for submittal to the NAD which require domains to be used for address prefixes, pre-types and suffixes.

LUCA Project for Indiana

Special processing was made using this dataset to enhance it so that it could be used for the 2020 LUCA analysis for the State. All addressing entities have the opportunity to review Census records through the LUCA project. Many entities participated in this review. Those that did not participate were analyzed through a project performed by IBRC at the request of the Governor. The address dataset was processed through census geocoder as well as private free geocoder to add deliver point validation, quality codes for matching to census and postal service addresses and street

names. Data from the parcel dataset was added through a spatial join and then joined to the DLGF Parcel table to capture the property classification code. 62 counties were analyzed for submittal to the 2020 LUCA Project.

Each County is the steward of their own address data. The GIO is the steward of the public available Indiana statewide layer containing all combined address point data.

National Address Data (NAD) for the Nation

Special processing was made using this dataset to enhance it so that it could be submitted to the US Department of Transportation. This will be the 2nd time Indiana has contributed. See this: https://www.transportation.gov/gis/national-address-database

Statewide Geocoder

Special processing was made to create a statewide geocoder to support many departments with accurate geocoding. A composite locator has been made to provide most results. This tool is useful in that the counties have the most accurate and up-to-date data. Testing new addresses against other services show the necessity. The composite locator uses a tiered approach to provide results. The address points being the most accurate. Each dataset provides a Latitude, Longitude as well as other information. A geocoding service is also provided for use by other software.

See this:

https://gisdata.in.gov/server/rest/services/Geocode/State_Geocoder_WGS84/GeocodeServer

Name	Style	Table
IDSI_Address	Single Address with Subaddress	Addresspoints
IDSI_Streets	US Dual Range	StreetCenterlines,StreetAlias
Tiger_Street	US Dual Range	TigerRoads
Zipcode	US 5-Digit ZIP Codes	EsriZipCodes
City	Admin Places US Address - City State	IDNR_S_Pol_Ar
County_Single	Single Field	Landsurvey_County_Poly_IN
PLSS_Single	Single Field	Landsurvey_Sections_Poly_IN

Sources for the statewide geocoder.

Data Standards

Standards for street names and addresses are continually evolving to support Next Generation 9-11 (NG9-1-1). The list of emerging standards below illustrates that there are a number of interested parties; fortunately, all parties seem to be moving towards a consensus for standards. URISA and now NSGIC are taking the lead in the consolidation of the two main standards. NG9-1-1 and the 2020 Census needs are being included in the analysis and have become a primary motivator for address quality and completeness. NG9-1-1 is using a new standard that is based on the FGDC standard and has been approved.

Addressing Standards have consolidated with the approval of the NENA Standard for NG 911. The NG-911 GIS Data Model is no longer a draft. NENA Standards can be found at: https://www.nena.org/page/NG911GISDataModel

The workgroup is following the NENA standard, adhering to the field names, as well as to the field content; the NENA Standard is to be used as a guide. A data mapping document has been created to facilitate the identification of each field. See the 2021 or 2022 Indiana Data Harvest Dashboard and specifically the Metadata link Metadata. The additional attributes have been recommended to the GIO for use as the progress to a statewide NG9-1-1 dataset is being developed. A geodatabase has been created and is available for sharing. Funding is becoming available to support quality improvement from federal sources.

Data Sharing

All statewide address point records are in the public domain, and there are no data sharing restrictions. The address point dataset is also being used as part of the public geocoding service Indiana Composite Locator that maybe used within ArcMap by accessing it from: https://gis.in.gov/arcgis/services

The address point records have been translated into the NAD format and submitted for the state. The NAD is being consumed by several other GIS Services for geocoding.

Data Distribution

Users can access the IndianaMap address point dataset by directly downloading it or connecting to the published web services.

- GIS users can access the address point layers on IndianaMap from the IndianaMap Layer Gallery web page under the "Infrastructure/Streets" group
  http://maps.indiana.edu/layerGallery.html?category=Streets

- A list of the different services available can be found at:
  http://maps.indiana.edu/ArcGIS/rest/services/Infrastructure/Streets_Address_Points_IDHS

- Dashboard for 2020, 2021, 2022 Data Harvest features:
  Indiana Data Sharing Dashboard: GIS Data Harvest Program

- 2020, 2021, and 2022—Address Points, Street Centerlines, Parcels, County Boundaries, Administrative Boundaries:
  https://www.arcgis.com/apps/dashboards/a2268a22b8764c9eadca1fe32dfa25e9

- Download NAD for the Nation:
  https://www.transportation.gov/gis/national-address-database

Current Plans

As part of the existing data sharing initiative:

- Provide support for the IndianaMap Data Sharing Initiative and the development of quality control reporting methods on the harvested county data.
- Create quality improvement guidelines and education to help local authoritative data owners improve base feature sets.
- Create a County Geospatial Information Resource Layer (government websites and contacts with links to various government resources relevant to the IGIC Framework data workgroups.
- Maintain the statewide geocoder using Data Harvest address points and street centerlines.
- Create and submit address points to USDOT National Address Dataset.

The IGIO is also cooperating with other national agencies to develop extended datasets using the address points.

Future Plans

The goal of the Streets and Addresses Workgroup is to provide a uniform seamless GIS coverage of centerline and point address data in a statewide format viewable on the IndianaMap and to provide the data necessary to create a geocoding service for visitors to the IndianaMap as well as submittal to USDOT initiative to create a NAD. The address point dataset is also essential for the GIS needs of NG9-1-1.

The IGIO is working with counties to host centerline, address point, county parcel, and other GIS layers on the IndianaMap. The goal is to have all 92 counties consistently participate so the county data can be reliably viewed and updated in a statewide view.

It is the goal of this workgroup to create a quality dataset that can be used for geocoding in conjunction with the centerline dataset. The most difficult issue for counties is to match the spelling of the street name from the address point dataset with the street name from the centerline dataset. Development of a statewide Master Street Address Guide (MSAG) would further support matching. Only the counties have the knowledge of their local data to match the addresses to centerlines, and update their datasets accordingly. Modifications to the address point data harvest supports creating the MSAG. The workgroup is creating a webinar to display and describe how the results can be used to correct the county address points.

- Provide support for the IndianaMap Data Sharing Initiative and the development of quality control reporting methods on the harvested county data.
- Create quality improvement guidelines and education to help local authoritative data owners improve base feature sets.
- Develop priorities for quality improvement of both the address points and street centerlines, so that over the next 18 months we develop authoritative statewide point address and road centerline GIS layers to provide statewide geocoding and routing web

services built upon the best-available local data.

- Continue to submit datasets to national initiatives USDOT Transportation for the Nation and the NAD (National Address Dataset), NG9-111, US Postal Service and US Census.
- Support NG9-1-1 Workgroup/Board with necessary modifications to Indiana Data Sharing Initiative.

(9) Streets

Overview

The Streets and Address Workgroup of IGIC (http://www.igic.org/igic-indianamap-workgroups/indianamap-streets-address-workgroup/) exists to develop data standards, identify appropriate standards-based data schema, and to investigate appropriate data standards to adhere to.

A major goal for the data standard is to support address location geocoding with a secondary goal to support routing. The workgroup has gathered the most well-known data standards (from the FGDC, NENA (911), USPS, URISA, and the US Census) and will be adhering to the approved NENA for NG9-1-1 standard. The NENA standard was based on the most extensive data standard, the Federal Geographic Data Committee (FGDC), whose goal was to provide a framework for all addressing. The workgroup has reviewed and compiled a recommendation to supplement attributes now being gathered through the IndianaMap Data Sharing agreement. The workgroup will be creating quality improvement guidelines and education to help local authoritative data stewards improve base feature sets.

In order to provide adequate geocoding, the data must have the necessary fields and the centerlines data should spatially match with the most current orthophotography of the streets. The positional accuracy of centerlines is the responsibility of the data stakeholder. It is a goal of this workgroup to develop QA/QC processes that support sharing back to the stakeholder's centerline data; this would help them improve their data for both geocoding and routing purposes. The workgroup is also investigating several crowdsourcing organizations to help with corrections and additions.

Current Holdings

Street Centerlines, 2022: County Street Centerlines are available from the IndianaMap through the Data Sharing agreement with the Indiana GIO. In the current layer on IndianaMap there are 538,369 Street Centerlines Segments.
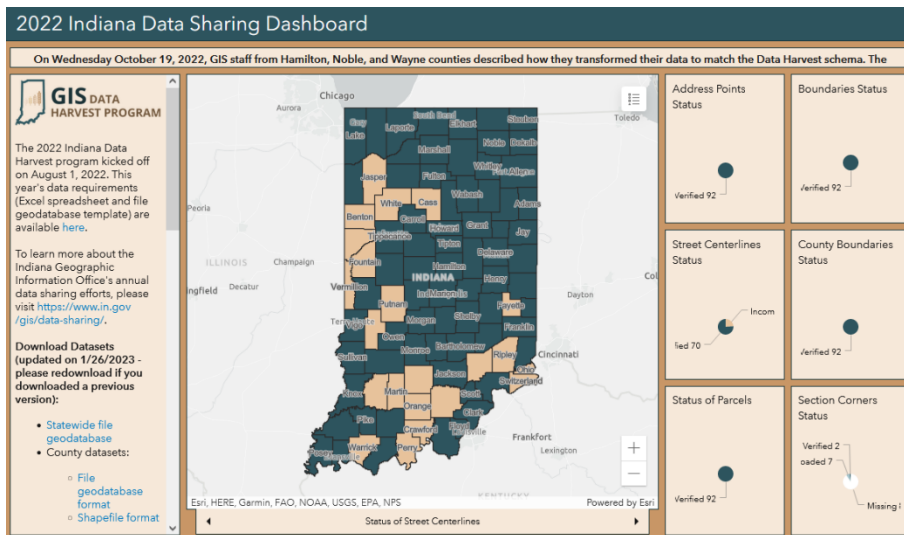
Street Centerlines, 2021: County Street Centerlines are available from the IndianaMap through the previous Data Sharing agreement with the Indiana GIO. In the previous year's layer on IndianaMap there are 525,473 Street Centerlines Segments.

Street centerlines are maintained by county agencies in Indiana, and provided to the IGIO. Though the data sharing agreement is expired, many of the counties are continuing to share.

This layer is part of the first set of data harvested through the ongoing Data Sharing Initiative program by the IGIO from local government sources. The current 2022 street centerlines have been fully quality control checked for completeness, accuracy or content and are available for download on the 2022 Data Harvest dashboard. Where county data did not include necessary attributes, processing was done to provide them. Not all counties had zip codes so a GIS process was done to apply zip codes from zip code feature polygons. The municipality name was then updated from the preferred city from the zip code feature. To make the dataset more useful, the US Census Bureau's Tiger line features were used to assign street classification codes and address ranges. The GEO_STREET_NAME was used to store standardized street names. A parsed, full street name was created from the GEO_STREET_NAME to support geocoding.

Street Centerlines Feature Class available on the 2022 Indiana Data Sharing Dashboard

Data Stewards

Each County is the steward of their own street centerline data. The IGIO is the steward of the public available Indiana statewide layer containing all combined street centerline data.

Data Standards

Standards for street names and addresses are continually evolving to support Next Generation 9-9-1. The list of emerging standards below illustrates that there are a number of interested parties; fortunately, all parties seem to be moving towards a consensus for standards. Street Centerline standards have consolidated with the approval of the NENA Standard for NG 911. The NG-911 GIS Data Model is no longer a draft. NENA Standards can be found at: NG911 Data Model

The workgroup is following the NENA standard, not in adherence to the field names, but to the field content; the NENA Standard is to be used as a guide. A data mapping document has been created to facilitate the identification of each field Link # 7 the Data harvest metadata document. The additional attributes have been recommended to the IGIO for use as the progress to a statewide NG9-1-1 dataset is being developed. This workgroup is also working with the IGIO, Indiana Public Safety and the 9-1-1 Board to support creation of a statewide address point and centerline dataset required for NG9-1-1 activities. A geodatabase has been created and is available for sharing. Funding is becoming available to support quality improvement from federal sources.

Data Sharing

All statewide street centerline records are in the public domain, and there are no data sharing restrictions. A useful Geocoding Composite Locator can be made from the Street Centerline and Address Point datasets.

Data Distribution

Desktop GIS users may also access the IndianaMap Street Centerlines dataset by connecting to the Web Services available. A list of the different services available can be found here:

IndianaMap: Web-based mapping users can access the Address point layers on IndianaMap in several ways.

1. From the IndianaMap Layer Gallery web page under the "Infrastructure/Streets" group: http://maps.indiana.edu/layerGallery.html?category=Streets Address points and Street Centerlines data layers available can also be viewed interactively on IndianaMap IDHS Street Centerlines.
2. From the IndianaMap Organization Home Page on ArcGIS Online at http://indianamap.maps.arcgis.com/home/index.html
3. From the IndianaMap Open Data Hub at https://gis-indianamap.opendata.arcgis.com/datasets?q=streets
4. **Indiana Portal:** Web-based mapping users can access the Street Centerline in several ways.

   • Dashboard for 2020,2021 Data Harvest features:
     Indiana Data Sharing Dashboard: GIS Data Harvest Program
   • 2020 and 2021 - Address Points, Street Centerlines, Parcels, County Boundaries, Administrative Boundaries:
   https://ingov.maps.arcgis.com/apps/dashboards/9566075da8f2493bbd706b3452944867

Current Plans

The workgroup is currently creating Quality Improvement Guidelines for creating and maintaining street centerlines. A geodatabase has been created for sharing and it includes a Master Street Address Guide (MSAG) which will support the counties who are interested in incorporating one into their GIS. Several GIS vendors that the counties use have a MSAG to help maintain the street name quality. This MSAG would be a hybrid that would support creating the table MSAG and the locator

style geocoder for centerlines. We should call it a geoMSAG to differentiate it from the database that is used for call routing. Should the NG911 Board support a statewide MSAG this geoMSAG could be used to programmatically create it. The workgroup is developing a webinar to help counties review the results of processing. A standard for centerline connectivity is being used to develop an ESRI topology of several counties. This process can be used to identify needed fixes to use the centerlines for routing purposes. Counties are being encouraged to add the attributes needed for routing (speed limits, one-way streets, surface type, and elevation).

- Provide support for the IndianaMap Data Sharing Initiative and the development of quality control reporting methods on the harvested county data.
- Create quality improvement guidelines and education to help local authoritative data owners improve base feature sets.
- Develop a process to create a MSAG from the Data Harvest Street Centerline.
- Develop priorities for quality improvement of both the address points and street centerlines, so that over the next 18 months we develop authoritative statewide point address and road centerline GIS layers to provide statewide geocoding and routing web services built upon the best-available local data.
- Investigate the requirements and support national initiatives including USDOT Transportation for the Nation and the NAD (National Address Dataset), NG9-111, UP Postal Service and 2020 US Census requirements.
- Support NG9-1-1 Workgroup/Board with necessary modifications to Indiana Data Sharing Initiative.

Future Plans

Goals of the Streets and Addresses Workgroup are to provide a uniform seamless GIS coverage of centerline and point address data in a statewide format viewable on the IndianaMap and to provide the data necessary to create a geocoding service for visitors to the IndianaMap.

The IGIO is working with counties to host centerline, point address, county parcel, and other GIS layers on the IndianaMap. The goal is to have all Indiana counties share data consistently so the county data can stay reliable in a statewide view.

One goal is to harvest county data and identify alignment and attribute issues within all counties and develop quality control and standardization methodology for all attributes. Quality control processes are being used to identify changes that need to be made. First pass is to reveal where data is missing. The second process will be to identify where standard values are or not being used. The example would be where a suffix did not use the United States Postal Service (USPS) standard. The workgroup is also recommending the addition of several attribute fields, mainly to support routing. This routing support will require modification to how the counties create and maintain their data. Indiana Department of Transportation has adopted the ESRI transportation model and there is potential through their participation with the USDOT to support methodologies at the county level. USDOT is requesting that state agencies support all types of roads in USDOT's effort to support the NG9-1-1 requirements. USDOT will be responsible for the NAD. The NAD will require street names to be consistent with the street centerline street name. Creating a statewide MSAG is a goal. NG9-1-

1 will require up-to-date centerlines and addresses so the workgroup is looking at methods that can be used to support this effort. The importance of the centerline dataset to the 2020 Census is also being reviewed. A webinar is also being created to show how using an ESRI topology made from the centerlines can support a routing centerline.

A P P E N D I X - A
METADATA DOCUMENT FOR INDIANA DATA HARVEST

Use the following links to review metadata information for Address Points, Boundaries, County Boundary, Parcels, Street Centerlines, and Section Corners (starting in 2022) included within the 2021 and 2022 Indiana Data Harvest:

2021 Indiana Data Harvest Metadata
2022 Indiana GIS Data Harvest Metadata

Dashboard:
       2021 Indiana Data Sharing Dashboard
2022 Indiana Data Sharing Dashboard

A P P E N D I X - B
SUGGESTED DRAFT DATA ATTRIBUTES FOR SPATIAL DATA BASED ON FDGC STANDARDS

ATTRIBUTES FOR CADASTRAL, BOUNDARIES, PLSS, AND GEODETIC DATA (Initially developed for County Boundaries, but relevant for all framework layers)

FEDERAL ATTRIBUTE STANDARDS FROM FDGC STANDARDS FOR FRAMEWORK DATA FROM 2013-2014 (Still relevant)

A P P E N D I X - C
LIST OF STANDARDS AND MAPPING SITES HYPERLINKS

Here is a link accessing Lorraine Wright's research on standards and mapping sites.

The spreadsheet includes linking information for:

- Standards
- Mapping sites
- Data Hosting Sites
- Metadata
- GIO website
- Other

A P P E N D I X – D
IndianaMap Migration - Phase 1 Crosswalk Table (IndianaMap.org)

Expanded Crosswalk Table and Tracking Table correlating layer information.