Indiana Geographic Information Council

Indiana Statewide Data Integration Plan 2025

Developed by IGIC for the Indiana Geographic Information Office | Updated May 20, 2025

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INTRODUCTION

The Indiana Geographic Information Council (IGIC) plays an   important role in coordinating and advancing geospatial data initiatives across the state. In 2007, the Indiana General Assembly passed IC 4-23-7, "Indiana GIS Mapping Standards", establishing the State of Indiana Geographic Information Office (IGIO), creating the Indiana Mapping Data and Standards Fund, which requires IGIC to submit an annual Indiana Statewide Data Integration Plan to the IGIO.

The Indiana Statewide Data Integration Plan, maintained by IGIC's Data Sharing Committee, contains IGIC's formal recommendations to the IGIO on nine key framework layers identified in IC 4-23-7.3-12 as being necessary for effective geospatial analysis and decision-making. Once submitted, the IGIO will review and either accept the plan/recommendations or provide feedback to IGIC regarding their comments.

This plan addresses:

- Various aspects related to these framework data layers, including priorities and recommendations, current holdings, data stewards, data standards, data sharing, data distribution, interdependencies between framework layers, and current and future plans.

- The need for collaboration with geospatial data stakeholders across federal, state, and local government agencies to create statewide coverages.

- The need for ensuring seamless data integration and accessibility in building and maintaining the IndianaMap via the IGIO's Data Harvest program.

In summary, the Indiana Statewide Data Integration Plan serves as a roadmap for aggregating geospatial data, promoting data sharing, and enhancing the overall quality of spatial information in Indiana.

Plan Summary

The **2025 Indiana Statewide Data Integration Plan**, crafted by IGIC for the IGIO provides a roadmap to leveraging geospatial technology for the benefit of all Hoosiers. This plan outlines a unified approach to synthesizing, maintaining, and sharing geospatial data through nine critical framework layers, ensuring these resources meet the needs of decision-makers, public agencies, and communities across Indiana.

As a collaborative body, the IGIC continues to advance geospatial data integration through innovation, stakeholder engagement, and adherence to evolving best practices. By focusing on interoperability, accessibility, and quality, IGIC's work on this year's plan serves as a cornerstone for Indiana's geospatial future.

Key IGIC Priorities and Top 13 Recommendations for 2025

As a statewide geospatial community, IGIC remains steadfast in its mission to enhance best practices in geospatial. This plan addresses in detail all nine framework data layers, each critical to Indiana's geospatial system, including the following top recommendations for the IGIO:

Recommendations Affecting Framework Layers

(0.1) Geospatial Data Governance

➤ Improve Data Quality Assurance and Validation Procedures.

(0.2) GIS and ADA Compliance

➤ The IGIO Assists Indiana's Geospatial Community with ADA Compliance

Framework Layers

General Framework Data Recommendations

➤ Add data use disclaimer for all layers.

(1) Digital Orthophotography

➤ Advance Statewide Ortho-Lidar Resolution.
➤ Perform Education and Outreach on Digital Orthoimagery and LiDAR.

(2) Digital Cadastre

➤ Develop Parcel Governance Documents.

(3) Public Land Survey System (PLSS)

➤ Develop Statewide Section corner naming convention (unique ID).

(4) Elevation

➤ Align state workflows and products for the upcoming 2025 – 2028 Ortho-Lidar statewide data acquisition with the federal USGS 3D Elevation Program (3DEP) standards, program and federal resources to ensure seamless statewide, regional and national data compatibility and interoperability.

(5) Geodetic Control

➤ Support development and implementation of the Indiana Geospatial Coordinate System (INGCS).

(6) **Governmental Boundary Units**

➢ DNR County Boundary - update layer with section corner data (County Surveyor best quality).

(7) **Water Features**

➢ The IGIO must lead this effort, spearheading the state's planning and adoption of the USGS' 3DHP standards.

(8) **Addresses**

➢ Support the IGIO Framework Data Improvement Program.

(9) **Streets**

➢ Investigate Interoperability between INDOT and County Data Stewards.

Structure of this Plan

The nine framework data layers identified in the Indiana Code are included in this plan, with each layer being organized and discussed the same way for consistency and usability. We have included an Appendix to this document which provides additional information for each layer to ensure the main body of the plan remains concise. The topics discussed for each GIS framework data layer are as follows:

● **Overview—**This section provides a generalized overview of the framework data and identifies the IGIC committee or workgroup responsible

● **Recommendations—**This section lists the top priorities and recommendations proposed to the IGIO by the IGIC for the framework layer

● **Current Holdings—**This section describes the GIS data layers that are publicly available through the IndianaMap

● **Current Activities—**This section describes any current and/or ongoing plans to modify, add, or retire GIS layers in the current holdings

● **Future Activities—**This section describes plans for future maintenance, improvements, new applications, layer retirements, or new data layer acquisitions being planned to support framework data

● **Data Sharing, Interdependencies, and Supported Initiatives**—This section discusses how the framework layer interacts with other framework layers, projects, or initiatives, data sharing policies and data exchange agreements, and supported initiatives

- **Data Standards**—This section describes the data standards for current framework layer holdings

- **Data Stewards**—This section identifies each of the appropriate data stewards for the current framework layer holdings

- **Data Distribution**—This section describes how current framework layer holdings are distributed, including downloading, viewing, rest services, or other transfer mechanisms

Indiana GIS Mapping Standards

The full GIS Mapping Standards found in 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

IC 4-23-7.3 provides specific requirements for the Statewide Data Integration Plan. These requirements include: (1) integrate GIS data and framework data developed and maintained by different units of the federal, state, and local government into a 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, workflow, 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.

Additionally, IC 4-23-7.3-14 provides information regarding the duties of the State GIS Officer, which includes the "(2) 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 reasons for the veto."

Furthermore, IC 4-23-7.3-14 states that "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."

IC 4-23-7.3-3 identifies geospatial framework data, which include:

"(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. Framework data are those needed by the most people, most often, to support the most applications.
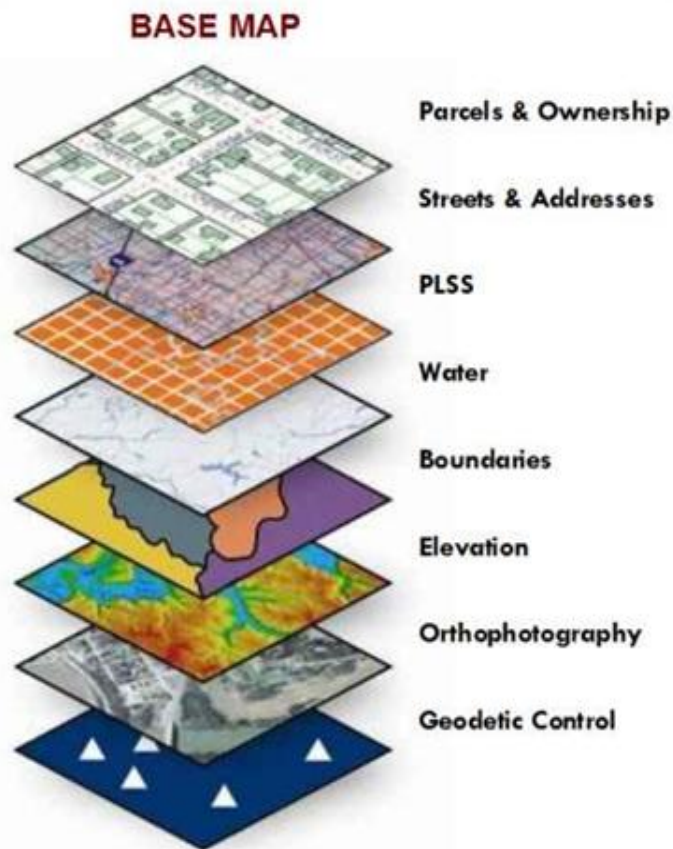
Source: *Investors – Capacity Power Group*

RECOMMENDATIONS AFFECTING FRAMEWORK LAYERS

This section presents new topics of interest affecting framework layers as recommended by the IGIC Orthoimagery Workgroup.

(0.1) Geospatial Data Governance

Geospatial Data Governance refers to the structured framework of policies, processes, standards, and responsibilities that guide the management, sharing, and utilization of geospatial data across organizations and jurisdictions. It ensures that geographic information is managed in a way that is **Findable, Accessible, Interoperable, and Reusable (FAIR),** which align with the Open Geospatial Consortium (OGC) principles to maximize the value and impact of geospatial data for all stakeholders. FAIR standards are as follows:

- **Findable:** Geospatial data is cataloged, indexed, and discoverable through metadata standards, ensuring stakeholders can easily locate the data they need via platforms like IndianaMap
- **Accessible:** Data is made available through interoperable web services and open data portals, while respecting privacy, security, and licensing agreements
- **Interoperable:** Standardized data formats and protocols, such as those defined by OGC and the Federal Geographic Data Committee (FGDC), enable seamless integration across different platforms and applications
- **Reusable:** Comprehensive metadata, licensing clarity, and adherence to best practices ensure that data can be effectively repurposed across multiple use cases and sectors

In Indiana, geospatial data governance supports critical statewide initiatives such as emergency response, infrastructure development, environmental sustainability, and economic growth. This governance framework provides a consistent approach to managing the nine framework data layers, and much more. Key objectives of Indiana's geospatial data governance include:

- **Standardization:** Establishing consistent data formats, schemas, and interoperability practices to enhance data utility
- **Stewardship:** Clearly defining roles and responsibilities for data creation, maintenance, and distribution across state, local, and federal entities
- **Collaboration:** Strengthening partnerships between public and private sectors to foster data sharing and innovation
- **Compliance:** Adhering to state regulations such as Indiana GIS Mapping Standards (IC 4-23-7.3) and national geospatial policies

By aligning with the FAIR principles and continuously refining its geospatial data governance framework, the IGIO ensures that geographic information remains a valuable and sustainable resource, empowering informed decision-making and fostering a data-driven future for the state. The recommendations outlined in the 2025 Indiana Statewide Data Integration Plan build upon existing governance practices while identifying strategic opportunities for future

improvements and collaboration. While Indiana has made significant progress in geospatial data governance, there are opportunities to further enhance collaboration, technology adoption, and policy development. Recommended areas of focus include:

➢ RECOMMENDATION 1: *Develop a Comprehensive Data Governance Framework.* This recommendation seeks to have the GIO establish a unified geospatial data governance framework that outlines policies, roles, responsibilities, and accountability mechanisms across all framework layers to ensure consistency and compliance.

➢ RECOMMENDATION 2: *Improve Data Quality Assurance and Validation Procedures.* For high-impact applications such as the annual County Data Harvest program, improve the existing quality control processes and automated validation tools to provide better feedback with added value (corrected) geospatial data back to the participating County governments (or their geospatial vendors to help improve the accuracy and reliability of these important geospatial datasets.

Additional details and recommendations for Indiana's Geospatial Data Governance can be found in the Appendix 0.2.

(0.2) GIS and ADA Compliance

Ensuring that state and local government geospatial data and web tools comply with the Americans with Disabilities Act (ADA) is essential for providing equitable access to information for all individuals, including those with disabilities. ADA compliance in the context of geospatial data and web tools primarily involves adhering to the Web Content Accessibility Guidelines (WCAG), which emphasize that content should be Perceivable, Operable, Understandable, and Robust (POUR).

➢ RECOMMENDATION 1: *The IGIO Assists Indiana's Geospatial Community with ADA Compliance.* The IGIO can play a pivotal role in helping Indiana's geospatial community and local governments understand and achieve ADA compliance by providing guidance, resources, and support. To ensure geospatial data and web tools are accessible to all individuals, including those with disabilities, IGIO can adopt the following strategies:

1. Education and Outreach Initiatives
2. Technical Assistance and Support
3. Development of ADA-Compliant Geospatial Solutions
4. Policy and Standardization Efforts
5. Online Resource Hub
6. Partnerships and Collaboration

By implementing these strategies, the IGIO can support Indiana's geospatial community and local governments in navigating the complexities of ADA compliance, ensuring that all residents, regardless of ability, can access and benefit from geospatial resources and tools.

Additional details and recommendations for GIS and ADA Compliance can be found in Appendix 0.3.

(0.3) Advancements in GeoAI

The IGIO has been instrumental in advancing the state's geospatial capabilities through various initiatives that align with the emergence of GeoAI (Geospatial Artificial Intelligence). Although specific GeoAI projects have not yet been explicitly detailed by the IGIO, its ongoing Cloud-based geospatial initiatives are well-positioned to take advantage of current and future advancements in GeoAI.

Additional details and recommendations for GIS and ADA Compliance can be found in Appendix 0.4.

FRAMEWORK DATA

Each of the framework data types listed in IC 4-23-7.3-3 are discussed in detail in this section. Framework Data layers are subject to various Federal, State, County, and local ordinance data standards. Please see the Appendix sections for each framework layer for further information.

➢ RECOMMENDATION 1: ***Add data use disclaimer for all layers.***

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

    b. GIS exemptions from "Practice of Surveying"

    c. (IC 25-21.5-1-7 and IC 6-1.1-6-9(c)" (excerpts 2021).

    d. Disclaimers of use clearly indicate that the data are not intended to be used as a survey product.

➢ RECOMMENDATION 2: ***Establish a Utilities Framework Layer.*** Develop a new framework layer focused on utilities and communications infrastructure, including water, waste systems, energy, and telecommunications data. This layer will address growing needs in public utilities management and planning.

(1) Digital Orthophotography

1.1 Overview

IGIC WORKGROUP RESPONSIBLE

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[1]." IGIC's Orthoimagery Workgroup (https://www.igic.org/orthoimagery) mission is to advise on plans, standards, technical implementation guidance, and training resources for the IndianaMap Orthoimagery framework data layers.

FRAMEWORK DESCRIPTION

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

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[1] Smith, Gary S. "Digital orthophotography and GIS." ESRI Conference. http://proceedings.esri.com/library/userconf/proc95/to150/p124.html

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 characterized by:

- Image characteristics (such as black and white, natural color (RGB), near-infrared (NIR), and 4-Band (RGBNIR combined)

- 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

- The amount of feature detail clarity that can be viewed (referred to as "pixel size/resolution")

- 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

Indiana's Digital Orthophotography framework data layers provide a foundational base map layer for all other mapping applications, including a base map layer for data visualization, urban and rural planning, engineering design, flood and disaster mapping, and infrastructure development just to name a few common applications.

1.2 Recommendations

Indiana's current and new framework Orthophotography GIS data products offer a unique opportunity to expand our research/development and applications of these modern data products beyond traditional imagery/data visualization. To help undertake this, our 2025 recommendations to the IGIO are as follows:

➢ RECOMMENDATION 1: ***Advance Statewide Ortho-Lidar Resolution.*** Secure funding to upgrade statewide Ortho-Lidar data acquisition from 6-inch pixel resolution to 3-inch resolution. This improvement will provide more detailed and accurate imagery, supporting applications in urban planning, disaster response, and environmental monitoring.

➢ RECOMMENDATION 2: ***Perform Education and Outreach on Digital Orthoimagery and LiDAR.*** Perform extensive education and outreach to promote the understanding and use of both our new statewide Digital Orthoimagery and LiDAR data product acquired in 2025-2028.

   a. Address existing and potential new applications and derivative products using modern Artificial Intelligence (AI)/Machine Learning (ML) image analysis, classification, and feature extraction techniques to support detailed land cover and impervious surface mapping applications.

b. Address applications that leverage the simultaneous collection of new high-resolution statewide Ortho and LiDAR data collections.

c. Address applications that leverage Indiana's previous legacy statewide Orthophotography collections to perform detailed AI/ML change detection mapping and analysis.

➢ RECOMMENDATION 3: ***Determine and implement best-in-class methods to access and distribute the state's new Digital Orthophotography.***

a. Enhance both the IndianaMap and AWS Cloud-Native Geospatial interface to support image analysis, classification, and feature extraction applications.

b. Leverage University research and development in Indiana to develop AI/ML powered processing for advanced image analysis, classification, feature extraction and 3D modeling.

c. Enhance the discovery, access, and use of Indiana's Digital Orthophotography Framework data by implementing a custom AI Assistant that uses Generative Pretrained Transform (GPT) technology to interact with the IndianaMap.com Esri HUB site and all its published geospatial data resources.

1.3 Current Holdings

Current digital imagery holdings include 4-band Digital Orthophotography starting in 2005 with regular updates currently available through 2025 produced at 1-foot to 3-inch pixel resolution. These data are publicly available through IndianaMap and its associated services. An inventory and detailed descriptions of all current holdings can be found here: https://imagery.gio.in.gov/

1.4 Current Activities

The IGIO, through the IOT are currently under contract with Woolpert to acquire new spring 2025-2028 statewide orthophotography imagery and LiDAR elevation data. Statewide 4-band digital Orthophotography will be produced at a base resolution of 6-inch pixel with 3-inch pixel buy-up options for County, City, State Agency and other project participants. Statewide LiDAR Quality Level 1 (QL1) accuracy standard at a 25 pulse per square meter (ppsm) density data will be simultaneously collected in accordance with the USGS 3D Elevation Program (3DEP).

Upcoming four-year 2025-2028 (3 Tier) Statewide Orthophotography and Lidar Acquisition Plan for all 92 Indiana Counties (Center—2025; East—2026; West—2027)

1.5 Future Activities

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, now that the current acquisition cycle is complete, a new contract is in place for the new cycle beginning in 2025.

1.6 Data Sharing, Interdependencies, and Supported Initiatives

DATA SHARING

Indiana's digital orthophotography framework data layers are openly available to the public, adhering to Indiana's data-sharing policies. These policies aim to maximize accessibility while maintaining data integrity and alignment with industry standards. The following mechanisms facilitate data sharing:

- **IndianaMap Hub Site**: Offers public access to orthophotography data through interactive viewers, downloadable formats, and web services. Users can explore datasets tailored to their specific geographic and thematic interests.

- **AWS Open Data Cloud-Platform**: Provides robust cloud-based access for large-scale analyses and downloads, ensuring high availability for research and operational needs.

- **Local Distribution**: County-specific orthophotography datasets are delivered to all 92 Indiana counties, ensuring local governments have access to the most current data for planning and development.

INTERDEPENDENCIES

The orthophotography framework layer is integral to various other statewide geospatial initiatives and framework layers. Notable interdependencies include:

- **Elevation Framework**: Simultaneously acquired LiDAR elevation data complements orthophotography, enabling detailed terrain modeling and hydrological analyses.

- **Hydrography and Infrastructure Layers**: Orthophotography provides a base map for updating and validating hydrography and infrastructure datasets, such as road networks and water bodies.

- **Land Cover and Cadastral Layers**: High-resolution imagery supports land-use classification and detailed property assessments, integrating seamlessly with statewide cadastral data.

The orthophotography framework supports numerous initiatives that leverage advanced geospatial technologies to enhance decision-making. Key initiatives include:

- **IndianaMap Enhancements**: Continuous development of interactive tools and advanced search features to improve data discovery and usability.

- **AI/ML Applications**: Utilizing modern AI/ML techniques for feature extraction, such as detecting changes in impervious surfaces or mapping urban vegetation.

- **Disaster Response and Resilience Planning**: High-resolution orthophotography aids emergency management agencies in disaster preparedness and recovery efforts.

- **USDA's National Agricultural Imagery Program (NAIP)**: Provides leaf-on imagery that complements Indiana's leaf-off orthophotography for agricultural and environmental applications.

Access to orthophotography framework data and resources ensures a strong foundation for statewide mapping and geospatial applications, fostering collaboration across public and private sectors.

1.7 Data Stewards

Data stewards manage, develop, and maintain GIS data layers to support users of these data within government organizations and throughout their communities. Two main stewards for orthophotography in Indiana include the IGIO which serves as the primary steward, collaborating with local and federal agencies to plan, maintain, and update Indiana's statewide Leaf-Off Orthophotography framework data products, and the US Department of Agriculture (USDA) through their Leaf-On NAIP [LINK].

1.8 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 as established by the American Society of Photogrammetry and Remote Sensing (ASPRS) Geospatial Data Accuracy Standards. FGDC Metadata is maintained to document resolution, accuracy, and source details for each framework data product.

1.9 Data Distribution

Framework Orthophotography data products are distributed via the IndianaMap[2] AWS Open Data Cloud-Platform, Purdue Digital Forestry, Indiana University Spatial Data Portal, plus County-specific data files are made available to all 92 Indiana Counties.

(2) Digital Cadastre

2.1 Overview

IGIC WORKGROUP RESPONSIBLE

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

The IGIO works with Counties through their Data Sharing Initiative to develop the Data Harvest of the Digital Cadastre. The Data Harvest includes address points, administrative boundaries, parcels and street centerlines. This program occurs every year and begins with a request from the IGIO in September.

FRAMEWORK DESCRIPTION

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.

- See Indiana administrative code reference 50 IAC 26-8-1 – Real Parcel numbering system for real property

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[2] The IndianaMap Hub site provides a data discovery catalog, interactive viewer, web data services, and optional downloadable formats to ensure data accessibility for diverse user needs.

- Each parcel, represented by the real parcel numbering system for real property, is formatted as such "00-00-00-000-000.000-000." Each part is defined below, reading from left to right:

  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, Tax Increment Financing (TIF)'s and Other/Special Assessments.

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 IGIO. For more details see:
https://iga.in.gov/legislative/laws/2017/ic/titles/006#6-1.1-4-25

2.2 Recommendations

➢ RECOMMENDATION 1: *Develop a Street Naming Guide.* Develop a guide for land developers (and/or other groups that are tasked with naming streets and/or subdivision plat info) to show how counties are allowed to name streets based on "Spillman" software, GIO – IndianaMap Street & address dataset", etc. This should help Counties eliminate some of county address issues they have and provide guidance to those providing data to the counties.

➢ RECOMMENDATION 2: *Develop Best Practices Parcel Guidance Documents.* Develop Guidance document(s) for local communities to help guide them through issues affecting parcels and providing best practices.

➢ RECOMMENDATION 3: *Develop Parcel Governance Documents.* Document all the software used across counties for parcels creation and list who updates data. Provide guidance to Consultants and Contractors that host parcel data and document processes for each county to know who is providing data and how it gets updated at the local, vendor, and state level. Determine the best workflow process to help make data consistent.

2.3 Current Holdings

- **Land Parcels—**Data Harvest datasets for download and feature service use.

- **Real Property Dataset—**(DLGF) ESRI geodatabase format

- **IndianaMap Viewer— https://viewer.indianamap.org/**

- **Parcels (2024)—**County Parcels are available from the IndianaMap through the previous Data Sharing agreement with the IGIO. In this latest version there are 3,677,261 parcels on IndianaMap and available for download. All 92 Counties provide updated parcel polygons to the IGIO, who provides a request for data in September of each year. Several processes are used to enhance the submitted data by the Polis Center. Through cooperation with the Department of Local Government Finance (DLGF) "Real Property 2024 - Pay 2025" data records are available. These data records can be joined with County Parcels. County Parcels 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.

  In 2024 a new program has been initiated to further enhance this dataset. It is the Framework Data Improvement Project. The Indiana GIO has been allocated funds for providing grants to participating counties for cleaning up approved GIS data layers. A quality control process involving a list of requirements is applied to parcels, address points, street centerlines, and boundaries features for making these datasets usable by other departments in the State government. Those departments are Department of Justice, Bureau of Motor Vehicles, 911 Board, Department of Local Government Finance, Department of Revenue and the Health Department.

  Legislation passed July 1, 2019, Indiana-2019-HB1427-Enrolled, SECTION 76. IC 6-8.1-3-26, (page 89) says,

  > "ec. 26. The department shall, before September 1 of each year, submit a report to the interim study committee on fiscal policy established by IC 2-5-1.3-4 summarizing the department's systems modifications concerning geographic information systems mapping of local income tax collection for purposes of allocating local income tax based on the residency of a taxpayer."

  In general, these datasets have attributes that need to be standardized. These being the location, taxid attributes ex: property address, address point address, street name, street address range, Parcel ID. NG911 Address Standard is being used as the authoritative method for this program.

See Appendix for schema and detailed information on the quality control program. No additional information is included within the Appendix for this section.

2.4 Current Activities

- Data Harvest and Pilot project to improve data sharing and improve on data consistency.

2.5 Future Activities

Below is a list of future activities. Please see the Future Activities Section in the Appendix for more details.

- Continue improving processes of data sharing from the county to the IGIO and to other agencies/departments (ex: Census Bureau).

- Utilize and improve the PLSS layer so that parcel information is referenced graphically to align with PLSS layer.

2.6 Data Sharing, Interdependencies, and Supported Initiatives

DATA SHARING

Counties share their parcel data via the Data Harvest, and these data are shared through the Data Harvest Portal and the IndianaMap. Statewide dataset feature services are being used by ArcGIS Online, ESRI Living Atlas, and the US Census.

INTERDEPENDENCIES

All GIS layers that involve describing land and real property are dependent on the PLSS Framework and should be aligned according to the PLSS layers (reference IN Title 32 see Appendix). PLSS descriptions of a parcel take precedence over coordinate locations.

Counties draw the parcel boundaries in various ways: 1) from legal description, 2) based on the Orthophotography (different photo years), 3) to align with the PLSS, and 4) other methods. Ideally all land/real property are dependent on the PLSS, grants, lot, and Indian boundaries.

Interdependent layers:

- PLSS (parcel descriptions are based on PLSS Township, Range, Section)
- Grants, Lots, and Indian boundaries
- Census Bureau
- Orthophotography
- Streets and Addresses
- Hydrography (property boundaries along streams, rivers, etc.)

- Floodplains (for water hazard/emergencies, evacuations)
- Local Transportation Layers (INDOT allocates local road funding based on road miles in local governmental units' (local parcel/cadastre boundaries, streets, addresses, and right of way are all sourced from local government and should align appropriately
- TIF (Tax Incremental Finance) Districts
- Taxing Districts
- Civil townships
- PSAP boundaries for NG911

SUPPORTED INITIATIVES

- Data Harvest
- Framework Improvement Program
- National Address Database (ParcelID, Property Class Code is populated to the address points as part of the Data Harvest QC process)

2.7 Data Stewards

Data Stewards for parcels are varied, including GIS professionals within municipal government, as well as private contractors. Planning commissions also have a role, as noted in Indiana Code IC 36-7-4-405 (Duties of plan commission).

Current list of GIS Contacts can be found at:
https://experience.arcgis.com/experience/4641f179b6b44d0683ffb14b6f7826e6

Please see the Data Stewards Section in the Appendix for additional information.

2.8 Data Standards

Please see the Data Standards Section in the Appendix for a detailed list of standards used.

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.

2.9 Data Distribution

IndianaMap

Parcel data is available via the IndianaMap for viewing and/or download.

Data Harvest Dashboard

The Data Harvest Dashboard details the progress of the state-wide data integration program at the County-scale. These data have been quality controlled and checked for completeness, accuracy or content. Current holdings can be found at this link. https://dataharvest.gio.in.gov/

ESRI ArcGIS Online

You may also access the IndianaMap content from ArcGIS Online and the Living Atlas. Regrid is an ESRI partner that has built a nationwide parcel dataset with attributes for purchase.

(3) Public Land Survey System (PLSS)

3.1 Overview

IGIC WORKGROUP RESPONSIBLE

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

FRAMEWORK DESCRIPTION

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."[3] 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

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[3] https://support.esri.com/en-us/gis-dictionary/plss

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 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.
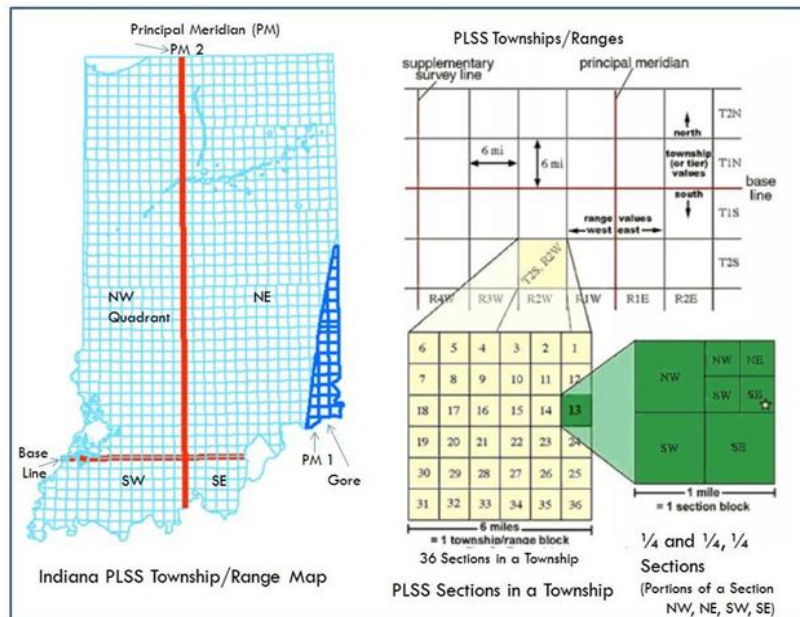
Indiana's PLSS Layout
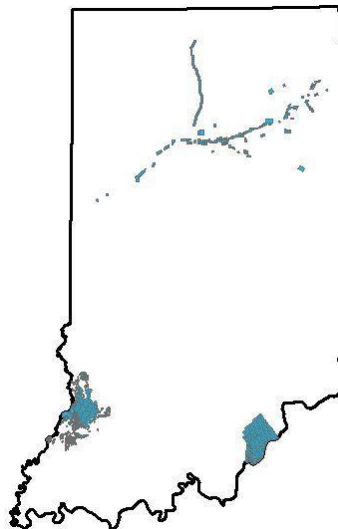
IndianaMap non-PLSS areas (found in subset of PLSS Section layer (Township 99, Range 99)

3.2 Recommendations

➢ RECOMMENDATION 1: *PLSS Section Corner data will not be currently downloadable to the public but will be utilized to improve PLSS layers.*

   a. The Data Harvest should show counties that are sharing section corners data to improve the PLSS.

   b. The County Surveyor Offices should be the public source of section corner data.

   c. Section corner data from the County Surveyors should be utilized for improving PLSS boundary lines, polygons and all appropriate land-based information including County Boundaries.

   d. All location information should be updated with the best PLSS information. Once updated, allow for public consumption.

   e. Include Data Use and Disclaimers for all IndianaMap layers with splash screens and in metadata.

➢ RECOMMENDATION 2: *Develop Statewide Section corner naming convention (unique ID).*

   a. Work with County Surveyors/IN County Surveyors Association/IGIC to develop Statewide Section Corner Naming Convention (unique ID).

   b. This would allow the development of a correlation table to link the Statewide corner naming convention (unique ID) and to the County's section corner data, so we could develop an improved statewide PLSS coverage of PLSS Township, range section data.

   c. The IGIC PLSS Workgroup has already developed a naming convention that could be utilized. (Ex: IN_PM01T12NR03E36_corner # or letter). It could be revisited and/or updated.

➢ RECOMMENDATION 3: *Provide Counties with education and outreach to support the Data Harvest data collection.*

➢ RECOMMENDATION 4: *Support four PLSS related IGIC Projects.*

   a. Historical Documents Project - Provide funding and/or support to continue efforts for hosting the Historical Documents Project (General Land Office-GLO notes) online.

   b. Continue providing basic GLO documents online as they become available.

   c. Request that the IGIO communicate their efforts in coordination with the IGIC (Board of directors, workgroups and committees) to move forward with the state's GIS needs.

    d.   Recommend funding sources to help promote IGIC projects.

➢ RECOMMENDATION 5: ***Recommend the IN_KY Boundary and Legal Drains layers be added to IndianaMap***.

    a.   <u>IN_KY Boundary determined by Court</u> - IDNR – digitized coordinates – Bob Wilkinson.

    b.   <u>Legal Drains</u> (add through data harvest – link from County website) – County Surveyors Office

3.3 Current Holdings

See the Appendix for this framework section for more information.

3.4 Current Activities

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).

- Improve county participation in the Data Harvest for submitting Section corner data.

3.5 Future Activities

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 and/or newly discovered documents are located.

- 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.

- 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 the PLSS. Continue working with counties and adding disclaimers and reassess new standards. Ideally an improved PLSS layer(s) should be utilized as the framework for all cadastral (cadastre and other tax related) GIS data.

- Develop a standard data disclaimer *(examples follow)*:

   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 is not approved by a County Surveyor for surveying purposes. Contact the County Surveyors' Office when conducting research for surveying.

   Data 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 for 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 the 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.).

- Provide resource(s) for collecting attribute information relating to the PLSS (Ex: *Attributes List based on Cadastral Boundaries, PLSS and Geodetic Data)*.

- Add the new Indiana-Michigan Boundary Line when 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.

3.6 Data Sharing & Supported Initiatives & Interdependencies

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.

SUPPORTED INITIATIVES

- Data Harvest - Request for County Township and Section corner locations to help improve PLSS framework.

- Historical Documents Projects – linking historical documents of original and transcribed Township and Section corner locations that were surveyed in Indiana from 1800s to 1850.

INTERDEPENDENCIES

All GIS layers that involve describing land and real property are interdependent on the PLSS Framework and should be aligned accordingly.

- Real property legal descriptions use the PLSS description to locate the property and are therefore dependent on the PLSS Framework. Parcel development and creating parcels are dependent on the PLSS.

- County boundary improvements are dependent on updated PLSS locational information and river boundary data.

- All boundaries that intersect or follow PLSS lines are interdependent (ex: Corporation line).

3.7 Data Stewards

See the Appendix for this framework section for more information.

3.8 Data Standards

See the Appendix for this framework section for more information.

3.9 Data Distribution

See the Appendix for this framework section for more information.

(4) Elevation

4.1 Overview

IGIC WORKGROUP RESPONSIBLE

The Elevation Workgroup of IGIC (https://www.igic.org/elevation-workgroup) mission is to advocate for the plans, standards, technical implementation guidance, and training resources for the IndianaMap Elevation framework data layers.

FRAMEWORK DESCRIPTION

Today's modern GIS elevation data products consist of data layers of LiDAR Point Cloud (LPC), Bare-Earth Digital Elevation Model (DEM), Digital Surface Model (DSM), Contours Topography (Contours), and more, with each layer horizontally and vertically aligned to support the measuring and modeling of the Earth's surface and the features on it. The IGIC Elevation Workgroup helps promote the development and applications of these framework data layers by helping ensure our statewide elevation data products follow established data standards, are current, accurate, accessible and align with our members' goals and the statewide goals of the Indiana Geographic Information Office (IGIO). These elevation framework data layers support critical applications such as urban and rural planning, engineering design, flood modeling, hydrography mapping and modeling, infrastructure development, and 3D visualization just to name a few common applications.

4.2 Recommendations

Indiana's current and new GIS framework elevation data products offer a unique opportunity to expand our research/development and applications of these modern data products beyond our traditional topographic mapping applications. To help undertake this, our 2025 recommendations to the IGIO are as follows:

➢ RECOMMENDATION 1: ***Align state workflows and products for the upcoming 2025 – 2028 Ortho-Lidar statewide data acquisition with the federal USGS 3D Elevation Program***

(3DEP) standards, program and federal resources to ensure seamless statewide, regional and national data compatibility and interoperability.

    a. Continue to partner with the USGS through their annual Data Collaboration Announcement (DCA) grant program to leverage national resources to support Indiana's 3DEP data development, data storage, data distribution, and data applications.

    b. In parallel with our DCA participation, develop and maintain enhanced elevation data and derivative products at higher resolutions (Original-Project Resolution (OPR)) to meet our state-specific needs.

➢ RECOMMENDATION 2: *Perform extensive education and outreach for our new statewide 3DEP QL1 25 pulse-per-square-meter (ppsm) LiDAR data acquisition in 2025-2028.*

    a. Address both existing and potential new applications and derivative products using the new statewide QL1 25 ppsm lidar collection.

    b. Address new applications, like digital twins, to leverage the simultaneous 2025-2028 collection of new high-resolution statewide Ortho and Lidar data.

    c. Address applications that leverage Indiana's previous QL3 and QL2 legacy statewide Lidar data collections to perform detailed AI/ML change detection mapping and analysis using the new statewide QL1 25 ppsm lidar collection.

➢ RECOMMENDATION 3: *Determine and implement best practice methods to access and distribute the state's new QL1 25 ppsm Lidar Point Cloud and 3-inch pixel orthoimagery.*

    a. Enhance both the IndianaMap and AWS Cloud-Native Geospatial interface to support Cloud-Native Geospatial (CNG) terrain analysis, modeling and applications.

    b. Leverage University research and development resources in Indiana to develop AI/ML powered processing for advanced 3D modeling, terrain analysis and automated feature extraction.

    c. Enhance the discovery, access, and use of Indiana's Elevation Framework data by documenting all IndianaMap Esri Hub resources following both Esri best practices [LINK] and IGIC's Minimum Standards for Indiana FGDC CSDGM Metadata [LINK].

    d. Enhance the discovery, access, and use of Indiana's Elevation Framework data by implementing a custom AI Assistant that uses Generative Pretrained Transform (GPT) technology to interact with the IndianaMap.com Esri HUB site and all its published geospatial data resources.

4.3 Current Holdings

Current elevation holdings include LiDAR Point Cloud data and LiDAR-derived DEMs at varying horizontal resolutions from 1-meter to 2-foot, contour datasets, and related hydro-enforced surface model products. These data are publicly available through IndianaMap and associated services. An inventory and detailed descriptions of all current holdings can be found at: https://elevation.gio.in.gov/

4.4 Current Activities

Completed this year:
- The IGIO has transitioned all legacy elevation data to modern IndianaMap services and CNG data resources.

- The IGIO completed the planning and RFP selection process for the new Statewide 2025-2028 Ortho-Lidar data project.

Ongoing:
- IGIO's Regional Roadshows to promote the 2025-2025 Ortho-Lidar project.

- IGIC's education sessions on the uses and applications of elevation framework data are held during the regular monthly IGIC Elevation Workgroup Meetings and recordings on IGIC's YouTube Channel.

- IGIO's development and maintenance of statewide elevation data resources on the IndianaMap Hub site.

4.5 Future Activities

- Continue to develop technical support, education, and outreach for the ongoing statewide acquisition and phased delivery plan by county of the new 3DEP QL1 lidar data in 2025-2028.

- Continued research and planning for the development of AI/ML/LLM/GPT powered processing for advanced elevation data products, 3D modeling and automated feature extraction.

4.6 Data Sharing, Interdependencies, and Supported Initiatives

- Continue to support IGIC's Waters Workgroup in the planning and development of Elevation-Derived Hydrography (EDH) data from the new statewide 3DEP QL1 Lidar data products.

- Support efforts to develop, share and use new co-collected ortho-LiDAR derivative products.

- Advance efforts in exploring how Indiana's Elevation data is interdependent with hydrography, infrastructure, cadastral layers, soils data, land cover, and more. These integrations can enable comprehensive flood risk assessments, urban planning models, and much more.

4.7 Data Stewards

The IGIO serves as the primary steward, collaborating with local and federal agencies to plan, maintain and update Indiana's statewide elevation framework data products.

4.8 Data Standards

Indiana's elevation framework data adheres to the USGS's 3DEP LiDAR Base Specifications, the American Society of Photogrammetry and Remote Sensing (ASPRS) Geospatial Data Accuracy Standards, plus State-Specific requirements for enhanced elevation data products, thereby ensuring consistent quality and usability. FGDC Metadata is maintained to document resolution, accuracy, and source details for each framework data product.

4.9 Data Distribution

Framework elevation data products are distributed via the USGS' National Map and 3DEP Program, the IndianaMap[4], AWS Open Data Cloud-Platform, Purdue Digital Forestry, Indiana University Spatial Data Portal, plus County-specific data files are made available to all 92 Indiana Counties.

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[4] The IndianaMap Hub site provides data discovery catalog, interactive viewer, web data services, and optional downloadable formats to ensure data accessibility for diverse user needs.

(5) Geodetic Control

5.1 Overview

IGIC WORKGROUP RESPONSIBLE

The Geodetic Control Workgroup (https://igic.memberclicks.net/igicispls-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 has also done work on the Height Modernization Project: https://geodesy.noaa.gov/heightmod/

FRAMEWORK DESCRIPTION

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

5.2 Recommendations

Below are the top recommendations for the Geodetic Control framework layer:

➢ RECOMMENDATION 1: *Support development and implementation of the Indiana Geospatial Coordinate System (INGCS).*

➢ RECOMMENDATION 2: *Promote participation in the GPSonBM program.*

➢ RECOMMENDATION 3: *Recommend that the second Indiana system be based on the low distortion county-based projections developed for the Indiana Geospatial Coordinate System.* This is in response to the Federal Register Notice regarding draft SPCS2022 policy and procedures.

5.3 Current Holdings

Please see the Geodetic Control Framework Appendix for a list of current holdings.

5.4 Current Activities

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 incorporation into INDOT Survey Manual and requiring use on state projects.

The Indiana state height modernization program submitted information for the final region of the State in September of 2023.

The workgroup promoted participation in the GPSonBM program to provide data to generate 2020.0 Reference Epoch Coordinates for benchmarks, improve the 2022 Transformation tools to enable more accurate transformations from current vertical datums to the North American-Pacific Geopotential Datum of 2022 (NAPGD2022), and update information about the status and description of passive control marks.

Working with INDOT and the NGS, the workgroup provided the statewide response to the Federal Register Notice regarding draft SPCS2022 policy and procedures. The NGS plans included providing a statewide coordinate zone as well as a second system selected by the state. We recommended that the second Indiana system be based on the low distortion county-based projections developed for the Indiana Geospatial Coordinate System, and if a third system was allowed, to also keep a system based on the current Indiana East and West Zones. NGS eventually decided to just support two state plane systems for each state so the East and West Zone option will not be developed.

5.5 Future Activities

The Geodetic Control Workgroup is continuing working toward quantifying and publicizing the benefits realized from current and ongoing projects.

NGS has been delayed in developing tools and processing data for the transition to the 2022 Reference Frame. As of September of 2024, the NGS expects to begin rolling out products for the 2022 reference frame at the end of the year. Data will follow and federal agencies are expected to vote on acceptance of the new system in late 2025 or early 2026. This will be followed by a comment period expected to be about a year long after a notice in the Federal Register.

The workgroup will assist and support the legislative changes needed to facilitate the use of new coordinate systems and proposed reference frame transitions, including documenting NGS deprecating use of the US Survey Foot. But it appears we do not need to act on this for a year or so.

5.6 Data Sharing, Interdependencies, and Supported Initiatives

DATA SHARING

All geodetic control datasets and products provided on IndianaMap are in the public domain, and there are no data sharing restrictions. On IndianaMap the shapefiles available for download were those specific to Indiana and specified as "GPS only" and "Any stability." See the Current Holdings Section within the Geodetic Control Appendix for more information.

Since the NGS is busy with work related to the transition to the 2022 datum, they are not proposing new projects to support that at this time but did note that one area we could look into is checking areas where there are known problems with the geoid model or where a more detailed geoid model would improve accuracy of geodetic survey measurements. Michigan has acquired both relative and absolute gravimeters to use to improve the geoid modeling in our northern neighbor and Indiana might want to consider this in the future.

5.7 Data Stewards

Please see the Data Stewards Section with the Geodetic Control Appendix for more information.

5.8 Data Standards

Please see the Data Standards Section with the Geodetic Control Appendix for more information.

5.9 Data Distribution

Please see the Data Distribution Section with the Geodetic Control Appendix for more information.

(6) Governmental Boundary Units

6.1 Overview

IGIC WORKGROUP RESPONSIBLE

The Cadastral-Boundaries-PLSS Workgroup of IGIC (https://igic.memberclicks.net/cadastre-boundaries-plss-workgroup) is focused on Governmental Boundary Units.

FRAMEWORK DESCRIPTION

Governmental Boundary Units Framework consists of Federal, State, local, and other types of governmental boundaries. Data can be found at both the Indiana GIS Data Harvest (multiple years) and the IndianaMap (ISO 19115 Topic Category - Boundaries).

IndianaMap Boundaries Category includes legal land descriptions, political and administrative boundaries, governmental units, marine boundaries, voting districts, school districts, and

international boundaries. The Governmental boundaries are a subset of the IndianaMap Boundaries data.

The GIO works with Counties, through the Data Sharing Initiative, to develop the Data Harvest of the Governmental Boundary data. The Data Harvest also includes address points, administrative boundaries, parcels (Cadastre), and street centerlines, as well as other layers.

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

- 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.

- 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.

- 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).

- 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.

6.2 Recommendations

➢ RECOMMENDATION 1: *DNR County Boundary - update layer with section corner data (County Surveyor best quality).* Should be used for the County Boundary line layer when appropriate.

  a. Determine how to evaluate GIS line conflicts between county boundaries/sources.

➢ RECOMMENDATION 2: *County Boundary and Rivers defining boundaries - determine what source(s) to use.*

  a. Start conversation between IGIO and County Surveyors as to where to draw the GIS rivers that define County Boundaries.

  b. Should River/county boundary lines be defined as the historic PLSS river (thalweg), County Boundaries Book, orthophoto river (date), local county river boundary when county established, HUC river, topo, or other?

➢ RECOMMENDATION 3: *State Boundary - Add the Indiana-Michigan State boundary line to IndianaMap when it becomes available as an individual layer and as an updated PLSS State boundary layer.*

➢ RECOMMENDATION 4: ***State Boundary - Add the <u>Indiana/Kentucky court case river boundary</u> (digitized by DNR, Survey Bob Wilkinson) as separate point and line layers to IndianaMap (includes coordinate values).***

➢ RECOMMENDATION 5: ***Ordinances -The GIO and/or DLGF should work with Counties and local governments to find a government website (or create one) that Counties can post links to their ordinances and the type of ordinance (on Ordinance website).*** Some Ordinances affect governmental boundary layers that impact: mapping, tax collection and tax reimbursement. <u>American Legal Publishing Co.</u> and <u>Library.Municode.com</u> websites post ordinances, but they may not be current. Examples of Ordinances that impact GIS layers: Right-of-Way, Center lines, Storm water, annexation, INDOT funding for local roads, affects fees and taxes (tax assessment based on soil type), tax distribution, etc. Find a site listing of types of ordinances and then determine their impact on GIS Layers. List that information on the Ordinance website.

6.3 Current Holdings

Please see the Current Holdings Section in the Governmental Boundary Units Appendix for a list of current holdings.

6.4 Current Activities

The current activities of the Cadastral-Boundaries-PLSS Workgroup include the following:

● The State Land Office worked with IGIC and the IGIO to create a County Boundary layer with no gaps or overlaps. This effort utilized parcel and boundary information from Data Harvest layers submitted by Counties.

● Continue to develop a County Boundary layer utilizing the best available County Surveyor data. County boundaries following Township/Range boundaries would utilize the County Surveyors' PLSS and non-PLSS information (best available information).

● County boundary data should contain Metadata about how it was created.

● The Tax and TIF Districts (sits on the Indiana Gateway with demographic data (different use case) layers need to be added to IndianaMap.

● Continue working with the IGIO on boundary layers and topics.

6.5 Future Activities

Future activities of the Cadastral-Boundaries-PLSS Workgroup include the following:

- To support Next Generation 9-1-1 (NG9-1-1) GIS efforts.

- Provide support for the IndianaMap Data Sharing Initiative as needed.

- Suggest that the IGIO create best practices, provide education and feedback to help local authoritative data owners improve data 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).

- Continued improvement on County Boundary layer with section corners and river boundaries.

- Determine archive schedule for when the County Boundary changes.

- Improve the new Historical Treaty Boundary layer – IGIC.

- Improve the new Historical General Land Office District layer – IGIC.

- Develop Data Governance of governmental boundaries. - IGIO.

6.6 Data Sharing, Interdependencies, and Supported Initiatives

DATA SHARING

The products listed in the Appendix - Current Holdings are in the public domain, and there are no data sharing restrictions. Data is shared through the Data Harvest Portal and IndianaMap.

INTERDEPENDENCIES

Governmental Boundaries sometimes overlap and are interdependent of each other. The governmental units' policies and procedures may adversely affect each other.

Data governance is important and should help in clarifying roles, responsibilities, and authority at every stage in the lifecycle of the data. Examples of some of the GIS layers with Interdependencies are: PLSS, Cadastre (parcels), governmental boundaries, right-of-ways, road center lines, storm water data, annexation data, INDOT data that results in funding for local roads, boundaries that affect fees and taxes (tax assessment based on soil boundaries/types, tax distribution based on locations.

Assessor tax units may depend on the river boundary when the civil township was created.

Data Sharing Initiative using the Data Harvest Portal - Counties and local governments are working with the IGIO utilizing the Data Harvest Portal to share data, improving data resources using common attributes, and allowing Counties to have input in Statewide data layers (made up of county and local government data).

DNR County Boundary Improvement Project – updating this layer with County section corner locations and improved river boundaries.

6.7 Data Stewards

Please see the Data Stewards Section in the Governmental Boundary Units Appendix for more information.

6.8 Data Standards

Please see the Data Standards Section in the Governmental Boundary Units Appendix for more information.

6.9 Data Distribution

Please see the Data Distribution Section in the Governmental Boundary Units Appendix for more information.

(7) Water Features

7.1 Overview

IGIC WORKGROUP RESPONSIBLE

The IGIC's Waters Workgroup (https://igic.memberclicks.net/waters-workgroup) advises on plans, standards, technical implementation guidance, and training resources for the IndianaMap's Water Features framework data layers.

FRAMEWORK DESCRIPTION

Water features across Indiana are currently mapped in the USGS's National Hydrography Dataset (NHD) and Watershed Boundary Dataset (WBD) feature-based databases modeling surface water drainage systems. These datasets include flowline, waterbody, and area features supported by network topology, which are critical for planning and analyzing Indiana's surface water resources.
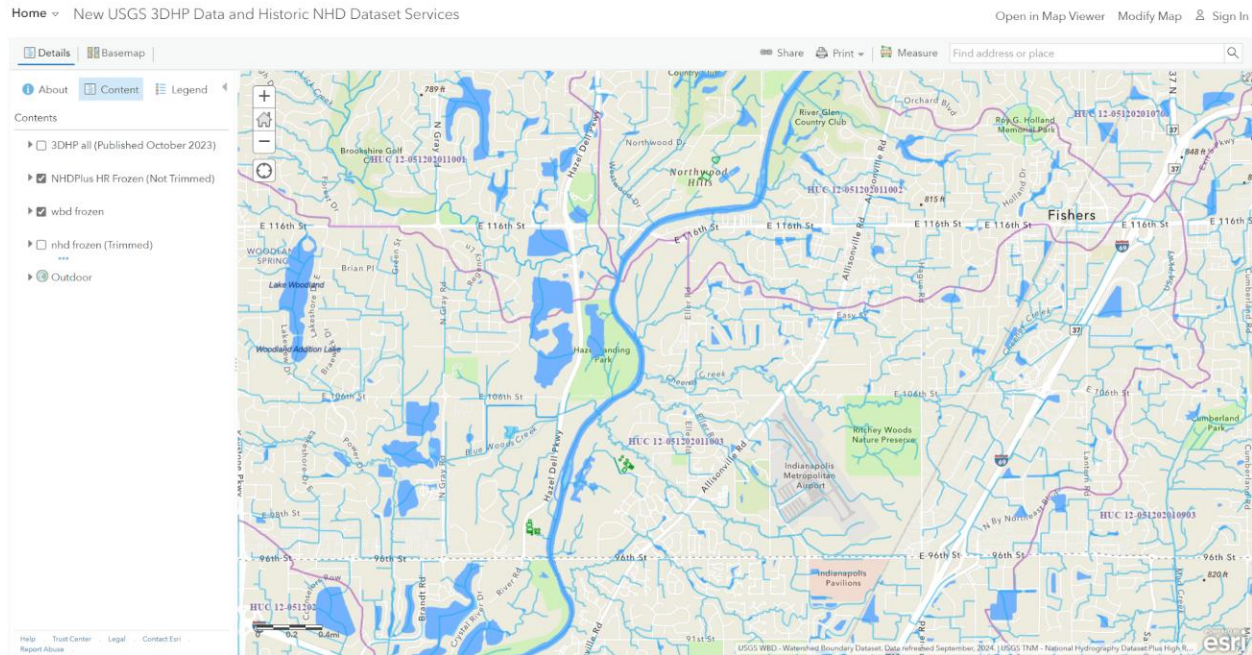
Indiana's Existing NHD and WBD Data

With advancements in geospatial technology and the availability of high-resolution elevation data from the USGS 3D Elevation Program (3DEP), the USGS froze development and maintenance (retired) the NHD and WBD datasets in 2023–2024. USGS's planning for the next generation of integrated elevation and hydrography data will be accomplished through the USGS's 3-Dimensional National Topography Model (3DNTM). As part of 3DNTM, the USGS has developed specifications for state and federal agencies to replace their existing NHD/WBD with new 3D Hydrography Program (3DHP) datasets, and this process is now well underway in several states. The new 3DHP is built on Elevation-Derived Hydrography (EDH), leveraging 3DEP source data to align hydrographic features both vertically and horizontally with the high-resolution 3DEP terrain data. This alignment provides a three-dimensional representation of water flow, connectivity, and topography.

The transition to 3DHP represents a significant evolution in hydrography data, utilizing advanced lidar-derived elevation models to create hydrography datasets with unprecedented accuracy and usability.

Key benefits of this transition include:

- Improved Data Accuracy: The 3DHP datasets offer superior positional and attribute accuracy by integrating LiDAR-derived elevation data with hydrographic features.

- Enhanced Decision-Making: Accurate, three-dimensional hydrography data supports more effective water resource management, disaster preparedness, and environmental planning.

- Streamlined Workflows: By integrating EDH with 3DEP elevation data, the 3DHP provides a seamless dataset for advanced modeling and analysis.

- Alignment with National Standards: The 3DHP ensures consistency with federal data standards and interoperability with other national datasets, such as the 3D National Topography Model and the Internet of Water.

For Indiana to fully realize these benefits, the state's Water Features Framework must undergo a significant transformation to align with the USGS 3D Hydrography Program (3DHP). This includes transitioning from Local-Resolution NHD and WBD datasets to new EDH data aligned with the state's newest high-resolution QL1 lidar.

Indiana's early investments in local-resolution hydrography and its ongoing efforts to upgrade its geospatial infrastructure provide a strong foundation for this transformation. This transition reflects Indiana's commitment to staying at the forefront of water data modernization, ensuring that state and local agencies, researchers, and private-sector stakeholders have access to the best possible data for managing water resources, addressing hydrological challenges, and planning for a sustainable future.

7.2 Recommendations

➢ RECOMMENDATION 1: ***The IGIO must lead this effort, spearheading the state's planning and adoption of the USGS' 3DHP standards.***

➢ RECOMMENDATION 2: ***Lead the planning effort by engaging stakeholders from across Indiana to ensure adoption of the new 3DHP Data across all levels of government and seamless statewide 3DHP hydrography accuracy, functionality, and consistency.***

➢ RECOMMENDATION 3: ***To help implement pilot studies for 3D Elevation-Derived Hydrography (EDH) data development, starting with Hamilton County.***

7.3 Current Holdings

Indiana's water features data include:

- National Hydrography Dataset (NHD) consisting of Indiana's local-resolution updates.

- Legacy USGS Watershed Boundary Dataset (WBD), currently not aligned to Indiana's local-resolution hydrography.

- Datasets available for download via IndianaMap and USGS portals.

7.4 Current Activities

The Indiana Department of Natural Resources (IDNR) is the designated data steward for the current USGS NHD & WBD data for Indiana. The Indiana Department of Environmental Management (IDEM) has also historically provided IDNR support for NHD/WBD maintenance, but since the USGS froze all data edits, there is no ongoing maintenance, just ongoing applications at IDNR and IDEM that utilize this legacy NHD/WBD data as a hydrography base map for Indiana.

In 2023-2024, the IGIC Waters Workgroup developed and submitted an initial planning document for the IGIO that outlines our vision to conduct pilot studies for 3DHP EDH data development that would meet the USGS's new 3DHP specifications.

7.5 Future Activities

Future plans for Indiana's hydrography framework include:

- Develop a comprehensive "State of Indiana 3DHP Plan" based on NSGIC's 3DNTM Planning and Maintenance Guide.

- Research and identify methods for developing integrated topographic and bathymetric modeling bathymetry for rivers, stream channels and waterbodies.

- Expanding 3DHP EDH pilot studies to develop a plan for statewide 3DHP HUC-8 watershed development.

- Research and identify automated processes for local-resolution hydrography refinement.

- Collaborate with Purdue University on QA/QC tools for hydrography data.

7.6 Data Sharing, Interdependencies, and Supported Initiatives

INTERDEPENDENCIES

The Water Features framework layer interacts closely with other statewide geospatial framework layers, including:

- Elevation Framework: The integration of hydrography datasets with elevation data enables more accurate floodplain mapping and watershed modeling.

- Land Cover and Soils: Land cover and soil layers enhance hydrological modeling and help determine flow rates and water storage capacity.

- Cadastre and Infrastructure: Hydrography datasets are critical for understanding the relationship between water features, property boundaries, and infrastructure, including bridges, roads, and culverts.

DATA SHARING

All existing water feature datasets, including the NHD and WBD, are in the public domain, with no restrictions on access or sharing. Data-sharing mechanisms include:

- **IndianaMap Hub**—Provides downloadable vector GIS data and interactive tools for accessing water features datasets.

- **USGS Hydrography Dataset**—Allows direct download of NHD and WBD datasets by HUC-4 or HUC-8 regions.

SUPPORTED INITIATIVES

The Water Features framework supports:

- **USGS 3D Hydrography Program (3DHP)**—transitioning Indiana's hydrography to meet 3DHP standards through elevation-derived hydrography pilot studies.

- **Flood Risk Management**—Collaboration with FEMA to enhance floodplain mapping.

- **Environmental Monitoring**—Partnerships with IDEM and IDNR to support water quality and quantity initiatives.

7.7 Data Stewards

The Indiana Department of Natural Resources (IDNR) is the primary steward of Indiana's local-resolution NHD and WBD datasets, but all current USGS NHD/WBD Maintenance activities have been halted.

We envision the next generation of State stewardship of 3DHP datasets will still be significantly different as the hydrography geometry edit/update process will no longer be the responsibility of the state.

We envision 3DHP stewardship activities to include:

- Monitoring crowd-sourced data corrections submitted via USGS Mark-up tools.

- Coordinating with Stakeholders and University Partners in the implementation of advanced applications using the new 3DHP hydrography datasets through the USGS's new 3DHP Infostructure and through the Internet of Water (IoW).

7.8 Data Standards

Indiana's water features framework adheres to:

- **Federal Standards**—NHD and WBD datasets follow the National Spatial Data Infrastructure (NSDI) framework and FGDC standards.

- **Metadata Standards**—All datasets are documented using FGDC-compliant metadata, detailing accuracy, resolution, and source information.

Additional standards adopted for local use include:

- Drainageway classifications for unclassified flowlines.

- Integration of ephemeral, perennial, and intermittent stream designations.

7.9 Data Distribution

Framework water feature datasets are accessible via multiple platforms:

- IndianaMap Hub: Interactive tools for downloading datasets, including NHD flowlines, waterbodies, and drainageways.

- USGS Hydrography Dataset Portal: Direct download of high-resolution NHD and WBD datasets, including network topology for HUC-4 and HUC-8 subregions.

(8) Addresses

8.1 Overview

IGIC WORKGROUP RESPONSIBLE

The Streets and Address Workgroup of IGIC (https://igic.memberclicks.net/streets-and-addresses-workgroup) is focused on address points.

FRAMEWORK DESCRIPTION

This framework layer consists of a yearly submittal from the data stewards to the IGIO through the Data Harvest Program. All 92 counties submit their address points and are processed to create a standardized address point dataset for the entire state. A major goal for the data stewards is to support address location geocoding with a secondary goal to support routing. Address location geocoding will also support future use by the Department of Revenue, 911

Board, Department of Local Government Finance, Bureau of Motor Vehicles, Department of Justice, and the Health Dept.

8.2 Recommendations

➢ RECOMMENDATION 1: *Develop Addressing Data Governance Best Practices Reference.*

➢ RECOMMENDATION 2: *Develop survey for current Addressing Authorities and Processes.*

➢ RECOMMENDATION 3: *Support the IGIO Framework Data Improvement Program.*

8.3 Current Holdings

Address Points—Data Harvest datasets for download and feature service use.

IndianaMap Viewer: https://www.indianamap.org/apps/indianamap-map-viewer-1/explore

Address Points (2023)—County Address Points are available from the IndianaMap through the previous Data Sharing agreement with the IGIO. In this latest version there are 3,291,699 Address Points on IndianaMap. Ninety-two Counties provided updated addresses. See Appendix for schema and detailed information.

Statewide Geocoder (2023)—Created by IGIO Office and hosted. Coming soon. See Appendix for data detail.

8.4 Current Activities

Below is a list of current framework layer activities:

- Create Addressing Best Practices Hub Site (Repository of all reference documents or links)

- Create a survey for identifying current policies for creating addresses and identifying existing authorities.

- Develop addressing data governance best practices for internal processes and policies.

- Encourage each County to create a 911 Addressing Board or Process and to create an Interlocal Agreement between County & Incorporated Areas.

  - Objective: To educate all Addressing Authorities on the importance of data creation regarding street and subdivision names and the accuracy of address numbers to a Radio Communications Link (RCL) transportation network for Emergency Services.

o Define Roles and Responsibilities: Addressing Creators and Data Dissemination

▪ Objective: Determine a Single Source of Truth for each County.

- Support the IGIO Framework Data Improvement Program by identifying sources of help.

- Submit Data Harvest Addresses to National Address Dataset (NAD) in NAD Schema.

8.5 Future Activities

Integration with NG911 data improvement identified a need for a GIS to Computer-Aided-Dispatch (CAD) standard. The Association of Public-Safety Communications Officials International (APCO) has a workgroup that is working on creating this standard. The purpose of the standard is to identify additional attributes that are needed by the CAD vendors and to support use of quality source data. Vendors will suggest paid services for these additional attributes instead of receiving them from the data steward. The Street & Addresses workgroup co-chair has joined the workgroup to contribute. It will be our recommendation that this standard be implemented in the future.

Increasingly the National Address Dataset (NAD) is being consumed by other geolocation service companies. Due to this, the workgroup is requesting that the Data Harvest datasets for addresses be converted into the NAD Schema. The NAD processes submittals quarterly so a second quarter submittal from Indiana would not adjust the Data Harvest Timeline.

Review other Geolocation services to determine if the statewide datasets should be submitted. An example is OpenAddresses[5] who is now also hosting parcel polygons and centerlines.

8.6 Data Sharing, Interdependencies, and Supported Initiatives

INTERDEPENDENCIES

This framework layer depends on other framework layers to accurately display their location. Orthophotography, Street, and Parcels framework layers are required to place an address point. Each data steward determines the method of placement. The NENA address point standard is being used for the list of attributes. A data improvement project is currently in progress to improve and standardize these attributes. The program is a 3-year project, 29 Counties are being evaluated in 2024. All 92 counties submit their address points and are processed to create a standardized statewide data set.

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[5] https://openaddresses.io/

DATA SHARING

The IGIO provides several methods of sharing the address point framework layer, including IndianaMap and the Statewide geocoder. The U.S. Department of Transportation also makes these data available via the NAD.

IndianaMap—the IGIO hosts the IndianaMap and offers an IndianaMap community account for those interested in viewing and creating IndianaMap Content. You may also access the IndianaMap content from ArcGIS Online. Using Map Viewer tools downloads can be location specific not the entire dataset. Historic datasets can also be accessed from this site. See the Data Gallery to access a complete list of datasets and methods to access them. These types include Feature Services, Web Maps, Map Services, Image Services, and Web Mapping applications. See this: https://www.indianamap.org/

Data Harvest Dashboard—Data Sharing Initiative program by IGIO from local government sources. These data have been completely quality control checked for completeness, accuracy or content. Current holdings can be found at this link. See this: https://dataharvest.gio.in.gov/

National Address Data (NAD) for the Nation—Special processing is made using this dataset to enhance it so that it could be submitted to the US Department of Transportation. This will be the 3rd 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 by adding it to a web lookup service it reduces the need for a paid service or using ArcGIS online credits.

See this for the geocoder using the 2022 Data Harvest, see Appendix for detail: https://gisdata.in.gov/server/rest/services/Geocode/State_Geocoder_WGS84/GeocodeServer

Modifications are being made with the move to ArcGIS Pro and availability of new types of locators. The IGIO has done extensive testing using new types of locators. The geocoder using the 2023 addresses will be available in September.

SUPPORTED INITIATIVES

- National Address Data (NAD) for the Nation:
  https://www.transportation.gov/gis/national-address-database

- ESRI ArcGIS Online: https://www.arcgis.com/index.html

- OpenStreetMaps: https://wiki.openstreetmap.org/wiki/Main_Page

- Tiger: https://tigerweb.geo.census.gov/tigerwebmain/TIGERweb_main.html

8.7 Data Stewards

Data stewards manage, develop, and maintain the GIS data layers to support users of these data within their government organizations and throughout their communities. Data stewards for the address point layer are varied. Currently most stewards are County government; however, the address point data maintainers may be city government. Data Harvest submittals are generally county government. A new initiative by this workgroup will be to identify the addressing workflow in each county. Interoperability between the systems that require standardized addresses are becoming important.

Current list of GIS Contacts can be found at:
https://experience.arcgis.com/experience/4641f179b6b44d0683ffb14b6f7826e6

See the Data Stewards Section within the Addresses Appendix for more information.

8.8 Data Standards

Standards for street names and addresses are continually evolving to support Next Generation 9-1-1. NENA National Emergency Number Association is the only non-profit professional organization solely focused on 9-1-1 operations, technology, education, and policy issues. The approved model can be found at NENA Standards: NENA-STA-006.2a-2022 at:
https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards/nena-sta-006.2a_ng9-1-1_gis_.pdf

A useful document that details address point placement is NENA-INF-014.1-2015_SSAP_INF at:
https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/NENA-INF-014.1-2015_SSAP_INF.pdf

APCO International is developing a GIS-CAD standard to support interoperability between systems. Go to: https://www.apcointl.org/
Specifically, the SDC Common CAD GIS Identifiers Working Group is developing CAD Minimum Functional Requirements.

Data Harvest Framework Improvement Program is requesting framework data validation and improvement by data stewards for future Data Harvests. See the Data Standards Section within the Addresses Appendix for more information.

8.9 Data Distribution

The State IGIO hosts the IndianaMap and provides current and historic datasets. See the Data Gallery to access a complete list of datasets and methods to access them. These types include Feature Services, Web Maps, Map Services, Image Services, and Web Mapping applications. Go to: https://www.indianamap.org/

(9) Streets

9.1 Overview

IGIC WORKGROUP RESPONSIBLE

The Streets and Address Workgroup of IGIC (http://www.igic.org/igic-indianamapworkgroups/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 workgroup is to support address location, geocoding and 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 has contributed quality improvement guidelines 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 steward. It is a goal of this workgroup to develop QA/QC processes that support the framework Improvement.

FRAMEWORK DESCRIPTION

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. All 92 counties have submitted GIS Centerlines with at minimum the street name. Many counties have included other attributes required by the NG911 Standard and are actively working toward full compliance with the adopted standard.

9.2 Recommendations

Below are the top recommendations for the Streets framework layer:

➢ RECOMMENDATION 1: *Develop Addressing Data Governance Best Practices Reference.*

➢ RECOMMENDATION 2: *Create a Master Street Guide for the State.*

➢ RECOMMENDATION 3: *Investigate Interoperability between INDOT and County Data Stewards.*

9.3 Current Holdings

Street Centerlines, Data Harvest datasets for download and feature service use.

IndianaMap Viewer https://www.indianamap.org/apps/indianamap-map-viewer-1/explore

> **Street Centerlines** (2023)—County Street Centerlines are available from the IndianaMap through the Data Sharing agreement with the IGIO. In the current layer on IndianaMap there are 550,093 Street Centerlines Segments.

> **Statewide Geocoder** (2023)—**Created by GIO Office and hosted. Coming soon.** See Appendix for detailed information.

9.4 Current Activities

Below is a list of current framework layer activities:

● Create Addressing Best Practices Hub Site (Repository of all reference documents or links)

● Create a survey to identify current policies for creating addresses and identify existing authorities.

● Develop Addressing Data Governance Best Practices for Internal Processes and Policies.

● Investigate programmatic method for creating a statewide MSAG from Data Harvest.

● Support Framework Improvement Program

9.5 Future Activities

Integration with NG911 data improvement identified a need for a GIS to CAD standard. APCO has a workgroup that is working on creating this standard. The purpose of the standard is to identify additional attributes that are needed by the CAD vendors and to support use of quality

source data. Using quality centerlines would allow more accurate routing. Vendors use paid services for these additional attributes instead of receiving them from the data steward. The Street & Addresses workgroup co-chair has joined the workgroup to contribute. It is our recommendation that this standard be implemented in the future.

The Federal Highway Administration, which receives a delivery of the state's centerlines from INDOT, is investigating a similar process to the NAD for the centerlines.

9.6 Data Sharing, Interdependencies, and Supported Initiatives

INTERDEPENDENCIES

This framework layer depends on other framework layers to accurately display their location. Orthophotography, and Parcels framework layers are required to place a street centerline. Housing subdivision projects are often the source of Street Centerlines. Each data steward determines the method of placement and the process with which the attributes are approval. The NENA centerline standard is being used for the list of attributes. A data improvement project is currently in progress to improve and standardize these attributes. The program is a 3-year project, 29 Counties are being evaluated in 2024. All 92 counties submit their address points and are processed to create a standardized statewide data set.

DATA SHARING

The IGIO provides several methods of sharing the address point framework layer.

IndianaMap—The IGIO hosts the IndianaMap and offers an IndianaMap community account for those interested in viewing and creating IndianaMap Content. You may also access the IndianaMap content from ArcGIS Online. Using Map Viewer tools downloads can be location specific not the entire dataset. Historic datasets can also be accessed from this site. See the Data Gallery to access a complete list of datasets and methods to access them. These types include Feature Services, Web Maps, Map Services, Image Services, and Web Mapping applications. Go to: https://www.indianamap.org/

Data Harvest Dashboard—Data Sharing Initiative program by IGIO from local government sources. These data have been completely quality control checked for completeness, accuracy or content. Current holdings can be found at this link: https://dataharvest.gio.in.gov/

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 by adding it to a web lookup service it reduces the need for a paid service or using ArcGIS online credits.

See this for the geocoder using the 2022 Data Harvest, see Appendix for detail:
https://gisdata.in.gov/server/rest/services/Geocode/State_Geocoder_WGS84/GeocodeServer

Modifications are being made with the move to ArcGIS Pro and availability of new types of locators. The IGIO has done extensive testing using new types of locators. The geocoder using the 2023 addresses will be available in September.

SUPPORTED INITIATIVES

ESRI ArcGIS Online: https://www.arcgis.com/index.html

OpenStreetMaps: https://wiki.openstreetmap.org/wiki/Main_Page

Tiger: https://tigerweb.geo.census.gov/tigerwebmain/TIGERweb_main.html

9.7 Data Stewards

Data stewards manage, develop, and maintain the GIS data layers to support the business uses of these data within their government organizations and throughout their communities. Data Stewards for the address point layer are varied. Currently most stewards are County government; however, the address point data maintainers may be city government. Data Harvest submittals are generally county government. A new initiative by this workgroup will be to identify the addressing workflow in each county. Interoperability between the systems that require standardized addresses are becoming important.

Current list of GIS Contacts can be found at:
https://experience.arcgis.com/experience/4641f179b6b44d0683ffb14b6f7826e6

9.8 Data Standards

Standards for street names and addresses are continually evolving to support Next Generation 9-1-1. NENA National Emergency Number Association is the only non-profit professional organization solely focused on 9-1-1 operations, technology, education, and policy issues. The approved model can be found at NENA Standards: NENA-STA-006.2a-2022 at:
https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards/nena-sta-006.2a_ng9-1-1_gis_.pdf

Also, check out the notes mentioned in the Appendix under this framework layer.

9.9 Data Distribution

The IndianaMap website provides the Street Centerlines dataset available for download or by connecting to Web Services at: https://www.indianamap.org/

Street Centerlines are also available through the IGIOs' Data Harvest Program: https://data-harvest-ingov.hub.arcgis.com/

End of Main Document

APPENDIX

(0.1) Summary of all IGIC Recommendations to the GIO

Table of Recommendations: 2025 Indiana Statewide Data Integration Plan

0.1 Framework Data

1. RECOMMENDATION 1: **Add data use disclaimer for all layers.**

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

   b. GIS exemptions from "Practice of Surveying"

   c. (IC 25-21.5-1-7 and IC 6-1.1-6-9(c)" (excerpts 2021).

   d. Disclaimers of use clearly indicating that the data are not intended to be used as a survey product.

2. RECOMMENDATION 2: **Establish a Utilities Framework Layer.** Develop a new framework layer focused on utilities and communications infrastructure, including water, waste systems, energy, and telecommunications data. This layer will address growing needs in public utilities management and planning.

0.2 Geospatial Data Governance

3. RECOMMENDATION 1: **Develop a Comprehensive Data Governance Framework.** Establish a unified geospatial data governance framework that outlines policies, roles, responsibilities, and accountability mechanisms across all framework layers to ensure consistency and compliance.

4. RECOMMENDATION 2: **Improve Data Quality Assurance and Validation Procedures.** For high-impact applications such as the annual County Data Harvest program, improve the existing quality control processes and automated validation tools to provide better feedback with added-value (corrected) geospatial data back to the participating County governments (or their geospatial vendors) to help improve the accuracy and reliability of these important geospatial datasets.

0.3 GIS and ADA Compliance

5. RECOMMENDATION 1: **The IGIO Assists Indiana's Geospatial Community with ADA Compliance.** The Indiana Geographic Information Office (IGIO) can play a pivotal role in helping Indiana's geospatial community and local governments understand and achieve

ADA compliance by providing guidance, resources, and support. To ensure geospatial data and web tools are accessible to all individuals, including those with disabilities, IGIO can adopt the following strategies:

1. Education and Outreach Initiatives
2. Technical Assistance and Support
3. Development of ADA-Compliant Geospatial Solutions
4. Policy and Standardization Efforts
5. Online Resource Hub
6. Partnerships and Collaboration

1. Digital Orthophotography

6. RECOMMENDATION 1: ***Advance Statewide Ortho-Lidar Resolution.*** Secure funding to upgrade statewide Ortho-Lidar data acquisition from 6-inch pixel resolution to 3-inch resolution. This improvement will provide more detailed and accurate imagery, supporting applications in urban planning, disaster response, and environmental monitoring.

7. RECOMMENDATION 2: ***Perform Education and Outreach on Digital Orthoimagery and LiDAR.*** Perform extensive education and outreach to promote the understanding and use of both our new statewide Digital Orthoimagery and Lidar data product acquired in 2025-2028.

    a. Address existing and potential new applications and derivative products using modern AI/ML image analysis, classification, and feature extraction techniques to support detailed land cover and impervious surface mapping applications.

    b. Address applications that leverage the simultaneous collection of new high-resolution statewide Ortho and Lidar data collections.

    c. Address applications that leverage Indiana's previous legacy statewide Orthophotography collections to perform detailed AI/ML change detection mapping and analysis.

8. RECOMMENDATION 3: ***Determine and implement best-in-class methods to access and distribute the state's new Digital Orthophotography.***

    a. Enhance both the IndianaMap and AWS Cloud-Native Geospatial interface to support image analysis, classification, and feature extraction applications.

    b. Leverage University research and development resources in Indiana to develop AI/ML powered processing for advanced image analysis, classification, feature extraction and 3D modeling.

    c. Enhance the discovery, access, and use of Indiana's Digital Orthophotography Framework data by implementing a custom AI Assistant that uses Generative Pretrained Transform (GPT) technology to interact with the IndianaMap.com Esri HUB site and all its published geospatial data resources.

2. Digital Cadastre

9. RECOMMENDATION 1: **Develop a Street Naming Guide.** Develop a guide for land developers (and/or other groups that are tasked with naming streets and/or subdivision plat info) to show how counties are allowed to name streets based on "Spillman" software, IGIO – IndianaMap Street & address dataset", etc. This should help Counties eliminate some of county address issues they have and provide guidance to those providing data to the counties.

10. RECOMMENDATION 2: **Develop Guidance document(s) for local communities to help guide them through issues affecting parcels and providing best practices.**

11. RECOMMENDATION 3: **Document all the software used across counties for parcels creation and list who updates data.** Provide guidance to Consultants and Contractors that host parcel data and document processes for each county to know who is providing data and how it gets updated at the local, vendor, and state level. Determine the best workflow process to help make data consistent.

3. Public Land Survey System (PLSS)

12. RECOMMENDATION 1: **PLSS Section Corner data will not be currently downloadable to the public but will be utilized to improve PLSS layers.**

    a. The Data Harvest should show counties that are sharing section corners data to improve the PLSS.

    b. The County Surveyor Offices should be the public source of section corner data.

    c. Section corner data from the County Surveyors should be utilized for improving PLSS boundary lines, polygons and all appropriate land-based information including County Boundaries.

    d. All location information should be updated with the best PLSS information. Once updated, allow for public consumption.

    e. Include Data Use and Disclaimers for all IndianaMap layers with splash screens and in metadata.

13. RECOMMENDATION 2: **Develop Statewide Section corner naming convention (unique ID).**

    a. Work with County Surveyors/IN County Surveyors Association/IGIC to develop Statewide Section Corner Naming Convention (unique ID).

    b. This would allow the development of a correlation table to link the Statewide corner naming convention (unique ID) and to the County's section corner data, so we could develop an improved statewide PLSS coverage of PLSS Township, range section data.

    c. The IGIC PLSS Workgroup has already developed a naming convention that could be utilized. (Ex: IN_PM01T12NR03E36_corner # or letter). It could be revisited and/or updated.

14. RECOMMENDATION 3: ***Provide Counties with education and outreach to support the Data Harvest data collection.***

15. RECOMMENDATION 4: ***Support four PLSS related IGIC Projects.***

    a. Historical Documents Project - Provide funding and/or support to continue efforts for hosting the Historical Documents Project (General Land Office-GLO notes) online.

    b. Continue providing basic GLO documents online as they become available.

    c. Request that the IGIO communicate their efforts in coordination with the IGIC (Board of directors, workgroups and committees) to move forward with the state's GIS needs.

    d. Recommend funding sources to help promote IGIC projects.

16. RECOMMENDATION 5: ***Recommend the IN_KY Boundary and Legal Drains layers be added to IndianaMap.***

    a. <u>IN_KY Boundary determined by Court</u> - IDNR – digitized coordinates - Bob Wilkinson.

    b. <u>Legal Drains</u> (add through data harvest – link from County website) – County Surveyors Office.

4. Elevation

17. RECOMMENDATION 1: ***Align state workflows and products for the upcoming 2025 – 2028 Ortho-Lidar statewide data acquisition with the federal USGS 3D Elevation Program (3DEP) standards, program and federal resources to ensure seamless statewide, regional and national data compatibility and interoperability.***

    a. Continue to partner with the USGS through their annual Data Collaboration Announcement (DCA) grant program to leverage national resources to support Indiana's 3DEP data development, data storage, data distribution, and data applications.

    b. In parallel with our DCA participation, develop and maintain enhanced elevation data and derivative products at higher resolutions (Original-Project Resolution (OPR)) to meet our state-specific needs.

18. RECOMMENDATION 2: ***Perform extensive education and outreach for our new statewide 3DEP QL1 25 pulse-per-square-meter (ppsm) LiDAR data acquisition in 2025-2028.***

    a. Address both existing and potential new applications and derivative products using the new statewide QL1 25 ppsm lidar collection.

    b. Address new applications, like digital twins, to leverage the simultaneous 2025-2028 collection of new high-resolution statewide Ortho and Lidar data.

    c. Address applications that leverage Indiana's previous QL3 and QL2 legacy statewide Lidar data collections to perform detailed AI/ML change detection mapping and analysis using the new statewide QL1 25 ppsm lidar collection.

19. RECOMMENDATION 3: ***Determine and implement best practice methods to access and distribute the state's new QL1 25 ppsm Lidar Point Cloud and 3-inch pixel orthoimagery.***

    a. Enhance both the IndianaMap and AWS Cloud-Native Geospatial interface to support Cloud-Native Geospatial (CNG) terrain analysis, modeling and applications.

    b. Leverage University research and development resources in Indiana to develop AI/ML powered processing for advanced 3D modeling, terrain analysis and automated feature extraction.

    c. Enhance the discovery, access, and use of Indiana's Elevation Framework data by documenting all IndianaMap Esri Hub resources following both Esri best practices [LINK] and IGIC's Minimum Standards for Indiana FGDC CSDGM Metadata [LINK].

    d. Enhance the discovery, access, and use of Indiana's Elevation Framework data by implementing a custom AI Assistant that uses Generative Pretrained Transform (GPT) technology to interact with the IndianaMap.com Esri HUB site and all its published geospatial data resources.

5. Geodetic Control

20. RECOMMENDATION 1: *Support development and implementation of the Indiana Geospatial Coordinate System (INGCS).*

21. RECOMMENDATION 2: *Promote participation in the GPSonBM program.*

22. RECOMMENDATION 3: *Recommend that the second Indiana system be based on the low distortion county-based projections developed for the Indiana Geospatial Coordinate System.* This is in response to the Federal Register Notice regarding draft SPCS2022 policy and procedures.

6. Governmental Boundary Units

23. RECOMMENDATION 1: *DNR County Boundary - update layer with section corner data (County Surveyor best quality). Should be used for the County Boundary line layer when appropriate.*

    a. Determine how to evaluate GIS line conflicts between county boundaries/sources.

24. RECOMMENDATION 2: *County Boundary and Rivers defining boundaries - determine what source(s) to use.*

    a. Start conversation between IGIO and County Surveyors as to where to draw the GIS rivers that define County Boundaries.

    b. Should River/county boundary lines be defined as the historic PLSS river (thalweg), County Boundaries Book, orthophoto river (date), local county river boundary when county established, HUC river, topo, or other?

25. RECOMMENDATION 3: *State Boundary - Add the <u>Indiana-Michigan State boundary line</u> to IndianaMap when it becomes available as an individual layer and as an updated PLSS State boundary layer.*

26. RECOMMENDATION 4: *State Boundary - Add the <u>Indiana/Kentucky court case river boundary</u> (digitized by DNR, Survey Bob Wilkinson) as separate point and line layers to IndianaMap (includes coordinate values).*

27. RECOMMENDATION 5: *Ordinances -The GIO and/or DLGF should work with Counties and local governments to find a government website (or create one) that Counties can post links to their ordinances and the type of ordinance (on Ordinance website).* Some Ordinances affect governmental boundary layers that impact: mapping, tax collection

and tax reimbursement. <u>American Legal Publishing Co.</u> and <u>Library.Municode.com</u> websites post ordinances, but they may not be current. Examples of Ordinances that impact GIS layers: Right-of-Way, Center lines, Storm water, annexation, INDOT funding for local roads, affects fees and taxes (tax assessment based on soil type), tax distribution, etc. Find a site listing of types of ordinances and then determine their impact on GIS Layers. List that information on the Ordinance website.

7. Water Features

28. RECOMMENDATION 1: **The IGIO must lead this effort, spearheading the state's planning and adoption of the USGS' 3DHP standards.**

29. RECOMMENDATION 2: **Lead the planning effort by engaging stakeholders from across Indiana to ensure adoption of the new 3DHP Data across all levels of government and seamless statewide 3DHP hydrography accuracy, functionality, and consistency.**

30. RECOMMENDATION 3: **To help implement pilot studies for 3D Elevation-Derived Hydrography (EDH) data development, starting with Hamilton County.**

8. Addresses

31. RECOMMENDATION 1: **Develop Addressing Data Governance Best Practices Reference.**

32. RECOMMENDATION 2: **Develop survey for current Addressing Authorities and Processes.**

33. RECOMMENDATION 3: **Support the IGIO Framework Data Improvement Program.**

9. Streets

34. RECOMMENDATION 1: **Develop Addressing Data Governance Best Practices Reference.**

35. RECOMMENDATION 2: **Create a Master Street Guide for the State.**

36. RECOMMENDATION 3: **Investigate Interoperability between INDOT and County Data Stewards.**

(0.2) Best Practices for Geospatial Data Governance in Indiana

Existing Geospatial Data Governance Best Practices in Indiana

Indiana has established a solid foundation for geospatial data governance through a series of structured initiatives and policies driven by the Indiana Geographic Information Office (IGIO) and the Indiana Geographic Information Council (IGIC). Some of the key best practices currently in place include:

1. **Statewide Data Integration Plan Compliance**
   - Ensuring all geospatial activities align with IC 4-23-7.3, which mandates the creation of the Indiana Statewide Data Integration Plan to support data standardization, governance, and accessibility.
2. **Framework Data Stewardship Model**
   - Designation of data stewards for each of the nine framework layers (e.g., Digital Orthophotography, Elevation, Addresses), providing clear responsibilities for data maintenance, updates, and distribution.
3. **IndianaMap and Data Harvest Program**
   - The IndianaMap serves as the centralized geospatial data repository, while the Data Harvest Program facilitates annual data collection from local, county, and state agencies, ensuring accuracy and completeness.
4. **Adherence to National Standards**
   - The IGIO follows national standards such as FGDC (Federal Geographic Data Committee) metadata guidelines and USGS 3D Elevation Program (3DEP) standards to maintain interoperability and data quality.
5. **Collaborative Governance Framework**
   - The IGIC fosters collaboration between federal, state, and local stakeholders, ensuring geospatial governance is inclusive and addresses multi-level needs through advisory workgroups and regular engagements.
6. **Transparency and Open Data Policies**
   - The adoption of open data policies promotes public access and transparency, enhancing the utility of geospatial data for various stakeholders, including government agencies, businesses, and the public.
7. **Defined Data Sharing Agreements**
   - Formal agreements and data exchange protocols have been established to facilitate seamless data integration across different jurisdictions while maintaining data security and compliance with state regulations.

Recommended Future Efforts for Enhanced Geospatial Data Governance

While Indiana has made significant progress in geospatial data governance, there are opportunities to further enhance collaboration, technology adoption, and policy development. Recommended areas of focus include:

1. **Develop a Comprehensive Data Governance Framework**
   - Establish a unified geospatial data governance framework that outlines policies, roles, responsibilities, and accountability mechanisms across all framework layers to ensure consistency and compliance.

2. **Improve Data Quality Assurance and Validation Procedures**
   - For high-impact applications such as the annual County Data Harvest program, improve the existing quality control processes and automated validation tools to provide better feedback with added-value (corrected) geospatial data back to the participating County governments (or their geospatial vendors) to help improve the accuracy and reliability of these important geospatial datasets.

3. **Expansion of Stakeholder Training and Capacity Building**
   - Increase outreach efforts to educate data stewards and users on geospatial data standards, interoperability best practices, and the effective use of available resources.

4. **Adoption of Emerging Technologies for Data Management**
   - Leverage technologies such as AI/ML for automated feature extraction, cloud-based storage solutions for scalability, and blockchain for secure data provenance tracking.

5. **Formalization of Data Lifecycle Management Policies**
   - Develop policies addressing data creation, storage, maintenance, and retirement to ensure sustainability and long-term usability of critical datasets.

6. **Enhanced Coordination with Emergency Services and Public Safety Agencies**
   - Strengthen geospatial support for NG911 initiatives and emergency management efforts by standardizing address and street datasets and ensuring real-time updates.

7. **Creation of a Utility Infrastructure Data Framework**
   - Establish a new geospatial framework layer dedicated to utility infrastructure (water, power, communications) to support infrastructure resilience and planning.

8. **Periodic Review and Update of GIS Standards**
   - Conduct regular assessments of Indiana's GIS standards to align with evolving technologies and federal mandates, ensuring relevance and compliance.

9. **Data Privacy and Security Enhancements**
   - Develop robust protocols for data privacy and security, balancing open data initiatives with protection of sensitive geospatial information.

10. **Strengthening Legislative Support for GIS Initiatives**
    - Work with policymakers to ensure sustained funding and legislative backing for statewide geospatial initiatives, supporting long-term data governance sustainability.

By implementing these recommended future efforts, IGIO and IGIC can continue to advance Indiana's geospatial data governance framework, enhancing its effectiveness, security, and accessibility for all stakeholders.

(0.3) GIS and ADA Compliance

Ensuring that state and local government geospatial data and web tools comply with the Americans with Disabilities Act (ADA) is essential for providing equitable access to information for all individuals, including those with disabilities. Details include:

Impact on Geospatial Data and Web Tools:

1. **Perceivable:**
   - **Color Contrast and Vision Deficiencies:** Maps often rely on color to convey information, which can be challenging for individuals with color vision deficiencies. Selecting appropriate color schemes and ensuring sufficient contrast are crucial. Tools like ColorBrewer can assist in choosing colorblind-friendly palettes.
     [Esri](#)
   - **Alternative Text for Images and Maps:** Providing descriptive alternative text for non-text elements ensures that screen readers can convey the information to users with visual impairments.
2. **Operable:**
   - **Keyboard Navigation:** Interactive maps and tools should be fully navigable using a keyboard, allowing users who cannot operate a mouse to access all features.
   - **Accessible Controls:** Buttons, sliders, and other interactive elements must be designed for ease of use, with clear labels and instructions.
3. **Understandable:**
   - **Clear Instructions and Labels:** All interactive elements should have concise and descriptive labels.
   - **Consistent Navigation:** Maintaining a predictable layout and navigation structure helps users understand and interact with the content more effectively.
4. **Robust:**
   - **Compatibility with Assistive Technologies:** Ensuring that geospatial web tools are compatible with various assistive technologies, such as screen readers and magnifiers, is vital for accessibility.

Implementing ADA Compliance in Geospatial Applications:

- **Use of Accessible Basemaps:** Choosing basemaps with appropriate contrast and minimal distractions can enhance readability. For instance, Esri's Enhanced Contrast basemaps are designed to improve visibility for users with visual impairments.
  [Esri](#)
- **Regular Accessibility Testing:** Employing web accessibility evaluation tools can help identify and rectify issues. The W3C provides a list of such tools to assist in evaluating
- web content against accessibility guidelines.
  [W3C](#)

- **Training and Awareness:** Educating developers and content creators about accessibility best practices ensures that ADA compliance is considered throughout the development process.

By integrating these practices, state and local governments can create geospatial data and web tools that are inclusive, ensuring equal access to information and services for all citizens.

The Indiana Geographic Information Office (IGIO) Role in ADA Compliance:

The Indiana Geographic Information Office (IGIO) can play a pivotal role in helping Indiana's geospatial community and local governments understand and achieve ADA compliance by providing guidance, resources, and support. To ensure geospatial data and web tools are accessible to all individuals, including those with disabilities, IGIO can adopt the following strategies:

1. Education and Outreach Initiatives

- **Workshops and Training Sessions:**
  - Conduct webinars and in-person workshops to educate GIS professionals, local government officials, and developers on the **Americans with Disabilities Act (ADA)** and **Web Content Accessibility Guidelines (WCAG)** specific to geospatial applications.
  - Topics could include designing accessible maps, selecting colorblind-friendly palettes, and ensuring keyboard navigation.
- **Best Practice Guides and Toolkits:**
  - Develop and distribute comprehensive guides that outline **ADA compliance requirements** for geospatial tools, including checklists and step-by-step implementation strategies.
  - Provide downloadable templates for accessible maps and dashboards.
- **Case Studies and Success Stories:**
  - Share examples of Indiana communities that have successfully implemented ADA-compliant geospatial applications to inspire and guide others.

2. Technical Assistance and Support

- **Accessibility Audits and Assessments:**
  - Offer assistance in conducting accessibility audits of local geospatial web applications using tools like **WAVE (Web Accessibility Evaluation Tool)** or Esri's accessibility evaluation tools.
  - Provide feedback and recommendations for improving compliance.
- **One-on-One Consultations:**
  - Establish a dedicated team or helpdesk that provides tailored support to local governments and agencies seeking to achieve compliance.
- **Collaborative ADA Compliance Working Group:**

○ Create a working group within the IGIC (Indiana Geographic Information Council) focused on accessibility, bringing together GIS professionals, accessibility experts, and stakeholders to discuss challenges and share solutions.

3. Development of ADA-Compliant Geospatial Solutions

- **Provide ADA-Compliant Templates:**
  ○ Offer pre-configured GIS templates (e.g., Esri Hub sites, web apps, and dashboards) that meet accessibility standards, ensuring users have a starting point for compliance.
- **Cloud-Based Accessible Solutions:**
  ○ Work with state agencies to deploy cloud-based solutions that offer accessibility features such as **screen reader compatibility, adjustable contrast, and alternative text options.**
- **Accessible Basemaps and Layers:**
  ○ Develop a repository of high-contrast, colorblind-friendly basemaps and encourage their adoption for public-facing geospatial applications.

4. Policy and Standardization Efforts

- **Statewide Accessibility Guidelines for Geospatial Data:**
  ○ Develop and promote standardized accessibility guidelines tailored for geospatial data within Indiana, aligning with federal WCAG 2.1 guidelines.
- **Incorporation into Data Sharing Agreements:**
  ○ Include accessibility requirements in data-sharing agreements and contracts to ensure compliance is a priority from the outset.
- **Legislative and Funding Advocacy:**
  ○ Work with state legislators to secure funding for local governments to implement ADA-compliant geospatial applications and infrastructure.

5. Online Resource Hub

- **Centralized Knowledge Base:**
  ○ Create a dedicated section on the IGIO website with resources, training materials, compliance checklists, and links to ADA-related policies.
  ○ Provide an FAQ section to address common concerns related to geospatial accessibility.
- **Self-Assessment Tools:**
  ○ Offer online self-assessment tools to help agencies evaluate their current compliance status and identify areas for improvement.

6. Partnerships and Collaboration

- **Engagement with Disability Advocacy Groups:**

○ Collaborate with organizations that represent people with disabilities to gain insights into their needs and ensure solutions are user-centered.
● **Partnership with Technology Vendors:**
   ○ Work with GIS technology providers (such as Esri, OpenStreetMap, and Google) to promote ADA-compliant features and solutions.
● **Interagency Collaboration:**
   ○ Coordinate with other state agencies to align GIS accessibility efforts with broader digital accessibility initiatives across the state.

Additional Resources:

➢ https://gis.stackexchange.com/questions/14471/set-of-standard-accessibility-guidelines-for-online-maps?utm_source=chatgpt.com

➢ https://www.esri.com/arcgis-blog/products/instant-apps/mapping/accessibility-essentials-for-gis-and-mapping/

➢ https://www.maplibrary.org/1173/best-gis-software-for-accessibility-mapping/

➢ https://hudgis-hud.opendata.arcgis.com/

(0.4) Advancements in GeoAI

The **Indiana Geographic Information Office (GIO)** has made significant strides in adopting **cloud-based geospatial technologies**, positioning itself to capitalize on current and future advancements in **Geospatial Artificial Intelligence (GeoAI).** By leveraging cloud computing infrastructure, the GIO ensures that Indiana's geospatial data is accessible, scalable, and interoperable—key elements necessary for implementing AI-driven geospatial analytics and solutions.

1. Existing Cloud-Based Geospatial Initiatives Supporting GeoAI

Through strategic investments and partnerships, the GIO has already established a strong cloud foundation that supports the adoption of GeoAI technologies. Some of the key cloud-based initiatives include:

● **IndianaMap Cloud Integration:**
   ○ The GIO has migrated Indiana's geospatial data to cloud platforms, such as **AWS and ArcGIS Online**, providing scalable access to critical datasets like high-resolution orthoimagery, LiDAR, and cadastral data.
   ○ This cloud infrastructure facilitates GeoAI applications, such as object detection, predictive analytics, and automated feature extraction.

- **Data Harvest Program with Cloud Storage Solutions:**
  - The **Data Harvest initiative**, which collects and aggregates county-level geospatial datasets (e.g., addresses, parcels, roads), utilizes cloud storage solutions to streamline data ingestion and processing.
  - AI algorithms can be easily applied to this comprehensive dataset for tasks like automated change detection and pattern recognition.
- **Cloud-Based GIS Tools and Web Services:**
  - Indiana's GIO has deployed web-based GIS applications on cloud platforms, providing access to geospatial tools and services that support real-time data analysis and visualization.
  - These cloud services enable seamless integration with GeoAI algorithms that analyze trends and provide insights for decision-making.
- **Collaboration with Federal and State Cloud Platforms:**
  - Through partnerships with the **USGS 3D Elevation Program (3DEP)** and FEMA's geospatial initiatives, Indiana has access to cloud-hosted national datasets that can enhance AI-powered applications for flood risk mapping, infrastructure planning, and environmental monitoring.

2. Advantages of Cloud-Based Infrastructure for GeoAI

By leveraging cloud-based solutions, the GIO is uniquely positioned to take advantage of GeoAI advancements in the following ways:

- **Scalability and Computational Power:**
  - Cloud infrastructure provides the computational resources needed to process vast geospatial datasets, such as high-resolution satellite imagery and point cloud data, with AI algorithms.
  - Scalable storage solutions allow for managing historical and real-time data essential for training AI models.
- **Integration with AI/ML Frameworks:**
  - Cloud platforms offer built-in AI and machine learning frameworks (e.g., Amazon SageMaker, Microsoft Azure AI, and Google AI) that can be applied to geospatial data for applications such as land cover classification and traffic pattern analysis.
- **Real-Time Analytics and Automation:**
  - The cloud enables real-time data processing and decision-making by integrating AI models with live geospatial feeds from IoT sensors, GPS tracking, and remote sensing platforms.
  - Automation of tasks such as anomaly detection in infrastructure networks and predictive maintenance for transportation assets is possible through cloud-based AI deployment.
- **Enhanced Data Security and Governance:**
  - Cloud platforms provide advanced security features, including role-based access control (RBAC) and encryption, ensuring compliance with federal and state regulations while safeguarding sensitive geospatial data.

○ Governance frameworks can leverage AI to monitor and enforce data integrity and access policies.

3. Future Opportunities for GIO in GeoAI Adoption

The GIO is well-positioned to expand its GeoAI capabilities to support the following opportunities:

- **Developing AI-Driven Smart City Solutions:**
  - ○ Using cloud-based geospatial data to support smart city initiatives, such as intelligent traffic management, automated zoning enforcement, and infrastructure planning powered by AI insights.
- **Predictive Analytics for Disaster Response and Planning:**
  - ○ Leveraging AI models to predict and mitigate natural disasters by analyzing cloud-hosted geospatial data related to flooding, wildfires, and climate change impacts.
- **AI-Powered Environmental Monitoring:**
  - ○ Utilizing cloud-stored remote sensing data to monitor environmental changes, such as deforestation, water quality, and pollution, using machine learning algorithms.
- **Automated Mapping and Feature Extraction:**
  - ○ Implementing AI techniques for automated mapping of transportation networks, vegetation coverage, and building footprints using cloud-based high-resolution imagery.
- **Collaborative AI Research and Innovation:**
  - ○ Partnering with universities and research institutions to develop cloud-hosted AI models that enhance geospatial decision-making and planning for state agencies and local governments.

4. Recommendations for Maximizing GeoAI Potential Through Cloud Initiatives

To fully harness the power of GeoAI through cloud-based initiatives, the GIO should:

1. **Invest in AI Talent and Training:**
   - ○ Provide training programs to state and local government GIS professionals on AI and cloud computing tools for geospatial applications.
2. **Expand Cloud-Based Data Sharing Initiatives:**
   - ○ Enhance IndianaMap and other platforms to allow for greater data integration, crowdsourcing, and AI model sharing across agencies.
3. **Adopt AI-Driven Quality Control Measures:**
   - ○ Use cloud-based AI models to automatically validate and enhance the accuracy of geospatial datasets collected from multiple sources.
4. **Leverage Funding Opportunities for AI Research:**

- Seek grants and funding opportunities to support AI-driven geospatial initiatives, ensuring continued innovation and adoption.

5. **Enhance Real-Time Data Processing Capabilities:**
   - Implement cloud-based geospatial analytics pipelines that enable near real-time AI-based insights for decision-making at state and local levels.

Conclusion

Through its **ongoing cloud-based geospatial initiatives**, the Indiana GIO is in a prime position to take advantage of **GeoAI advancements**, driving innovation and efficiency in public service delivery. By continuing to build on its cloud infrastructure, fostering collaboration, and promoting AI-driven solutions, the GIO can enhance geospatial capabilities and position Indiana as a leader in the geospatial technology landscape.

(1) Digital Orthophotography

1.10 Additional Information

All additional information on Indiana's Digital Orthophotography Framework data resources can be found here - https://imagery.gio.in.gov/ No content proposed for the Appendix at this time.

(2) Digital Cadastre

2.3 Current Holdings

- **IndianaMap Data layers—URL: Indiana Data Hub Planning and cadastre**

  o **Parcel Boundaries of Indiana Current, data – IndianaMap (Date Updated: December 2024)**

    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).

  o **Parcel Boundaries of Indiana 2024, data – Indiana GIO Data Harvest 2024**

    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). In 2024 29 counties are participating in Framework Data Improvement Project. Parcels, Address Points, and Street Centerlines are being modified to support the following validations:

- GIS Parcels state parcel number exist in CAMA data where appropriate
- CAMA Parcel Identifier exists in GIS Parcel where appropriate
- All SSAP fall within a GIS parcel feature
- All Street Centerlines have address range and streetname matching address point streetname.
- Location attributes follow NENA NG911 standard.

o **Parcel Boundaries of Indiana 2023, 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 (IGIO).

Metadata Pdf

o **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 (IGIO)

o **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

o **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).

- o **Parcel Boundaries of Indiana 2019, 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).

- o **Real Property geodatabase (can be downloaded from):**

  Summary

  2023 Indiana Data Sharing Dashboard

  - ▪ 2023 Department of Local Government Finance real property geodatabase (includes PARCEL, LAND, IMPROVE, DWELLING, BUILDING, and BUILDING DETAL table

  2022 Indiana Data Sharing Dashboard

  - ▪ 2022 Department of Local Government Finance real property geodatabase (includes PARCEL, LAND, IMPROVE, DWELLING, BUILDING, and BUILDING DETAL table

  2021 Indiana Data Sharing Dashboard

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

  2020 Indiana Data Sharing Dashboard

  - ▪ 2020 Department of Local Government Finance real property geodatabase (includes PARCEL, LAND, IMPROVE, DWELLING, BUILDING, and BUILDING DETAIL tables).

2.8 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 Standards & Other Documents - National Emergency Number Association

  o See NENA-STA-006.2a-2022 Approved 9/21/2022 NENA-STA-006, NENA Standard for NG9-1-1 GIS Data Model

- **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.

(3) Public Land Survey System (PLSS)

3.3 Current Holdings

IndianaMap structure and correlation of Framework layers/layers:

- Layers are grouped by categories (defined by the International Organization for Standardization's (ISO) 19115: Geographic Information - Metadata topic categories)
- Searches are done by categories, individual layers, and/or subject

- PLSS and Boundaries Framework Layers are grouped under the ISO 19115 Boundaries Category
- The Cadastre Framework Layer is listed under Planning, Cadastre Category

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

- [PLSS Boundaries](#) (IDNR)— Public Land Survey System of Indiana, provided by the Indiana Department of Natural Resources. Includes Ranges, Townships, Sections, Quarter Sections, Quarter-Quarter Sections, and Quarter-Quarter-Quarter Section polygons.
- [PLSS County Boundaries](#) (IDNR)— This shapefile was created as a framework layer defining the county boundaries of Indiana in polygon format. The information is intended for geographic display or analysis at a scale of 1:24,000 or smaller.
- [BLM CadNSDI PLSS Boundaries](#) (BLM (Federal GDB)—This dataset contains polygon features representing PLSS (and non-PLSS system in applicable areas) boundaries in Indiana. This is a subset of the United States Bureau of Land Management's CadNSDI PLSS dataset. This data was downloaded from maps.indiana.edu and republished by IGIO staff on 2/19/2024.
- [PLSS Indiana State Boundary](#) (IDNR)—This dataset contains a polygon feature representing the Indiana state boundary derived from digitized PLSS (Public Land Survey System) data by the Indiana Geological Survey in 1998. This data was created as a framework layer defining the state boundary of Indiana in polygon format. The information is intended for geographic display or analysis at a scale of 1:24,000 or smaller.
- [Historical Indiana PLSS Township Records](#) (Rachel Oser)— The purpose of this file is to assist in retrieving digitized PLSS notes and plats.
- [Historical Indiana PLSS Township Record Viewer](#) (Rachel Oser)— View and retrieve digitized PLSS notes and plats.

Archived PLSS layers from Indiana Geological and Water Survey:

- [PLSS_Sections.zip](#)
- [PLSS_State.zip](#)
- [PLSS_Townships.zip](#)
- [PLSS_Counties.zip](#)

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
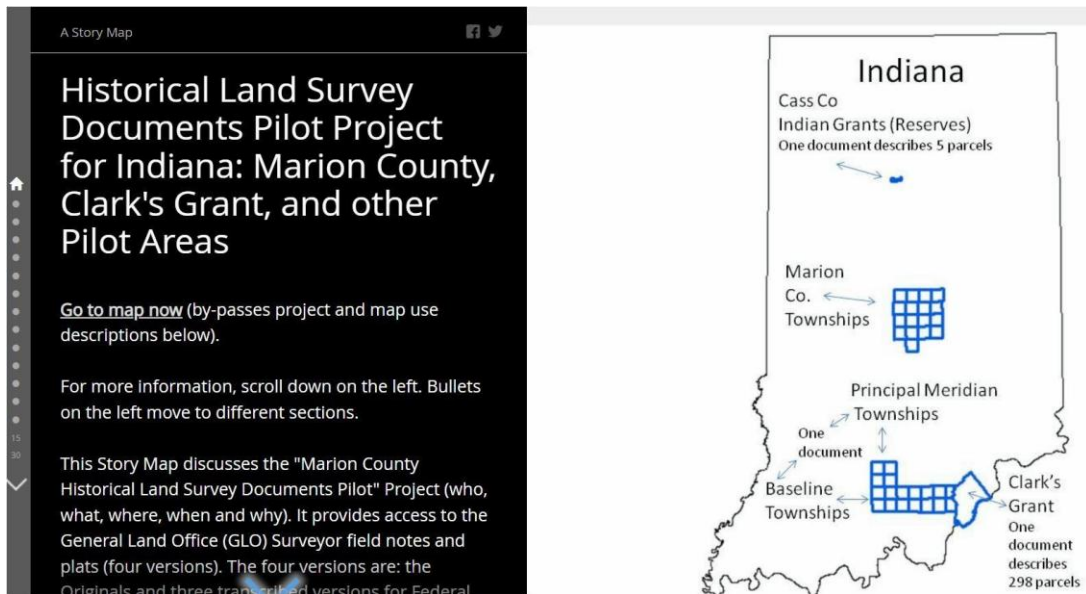
Historical PLSS and non-PLSS Framework layer - IGIC Story Map explains the "Historical Land Survey Documents Pilot Project for Indiana: Marion County, Clark's Grants, and other Pilot Areas (an Indian Reserve). Phase 1 Project
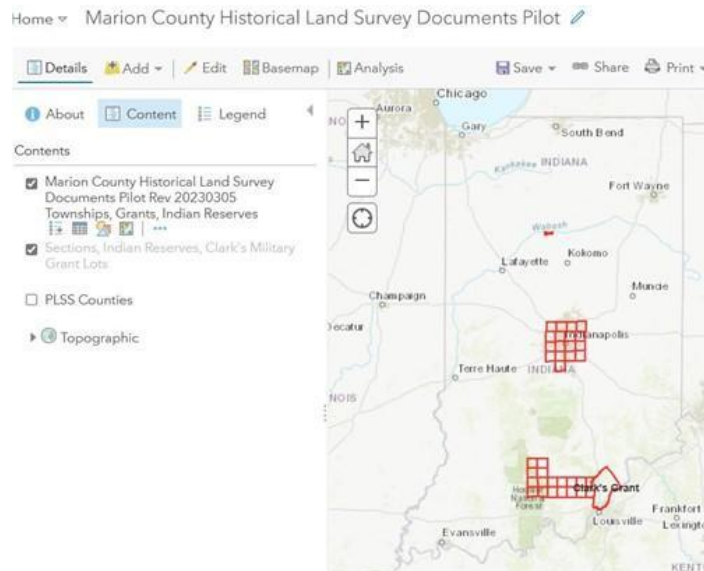
Historical PLSS Framework: IGIC ArcGIS Online — Marion County Project links a subset of General Land Office – Original Surveyor field notes to the PLSS and non-PLSS layers. Marion County has links to four sets of notes – original, and federal, state, and county transcribed versions). Phase 1 Project

20230120 Test Original demo
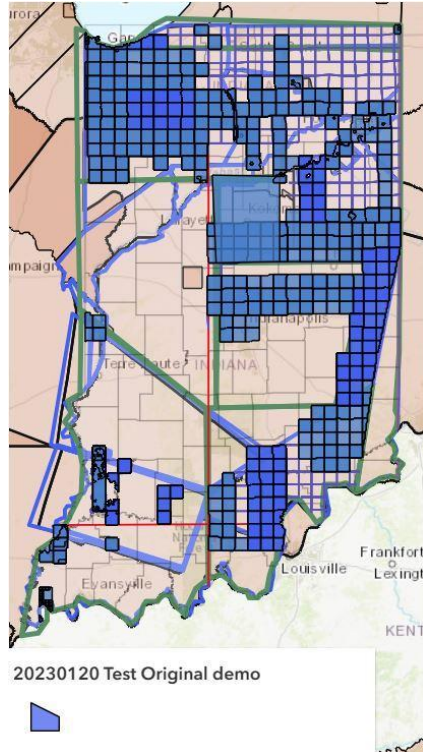
Draft Demonstration of History at your fingertips: A new way to access and use Historical Land Surveying Documents, Phase 2 Grant Project

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

Internet Archive:

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

3.7 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, Quarter, Quarter, Quarter Sections**
  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 or improved location data is acquired. Public Land Survey System of Indiana, provided by the Indiana Department of Natural Resources. Includes Ranges, Townships, Sections, Quarter Sections, Quarter-Quarter Sections, and Quarter-Quarter-Quarter Section polygons.

  This dataset was created as a framework layer defining the land survey lines of Indiana in polygon format. The information is intended for geographic display or analysis at a scale of 1:24,000 or smaller.

- **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 Wilkinson 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: Documents - Clayton Hogston, Viewer Rachel Oser

- **[Internet Archive:](#)** Internet Archive: View and retrieve digital copies of PLSS Notes and Plats: Clayton Hogston and Lorraine Wright, Rachel Oscer uploaded documents

3.8 Data Standards

Policies and Issues
- **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. DNR utilized the PLSS layers and created the quarter, quarter, quarter sections. 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. DNR is now the host of the layer (Indiana GIO).

- **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.

- **[Indiana- Michigan Boundary Line Commission](#)**—2023 Indiana Code, Title 1. General Provisions, Article 3. State Boundaries, Chapter 2.2

- 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.

- **Tiffin's instruction 1816**
  - Public Land Surveying Issues (Gary Kent 2007)
    - When were your original surveys?

- ▪ Tiffin's Instructions – 1816
- ▪ Instructions – 1833, 1850, 1855, 1871, 1881, 1890, 1894, 1902, 1930, 1947, 1973
- ▪ What were your original monuments?
- ▪ Wood Posts, Stones, mounds, etc.
- ▪ Closing Corners

- **BLM standards and policies may apply to the PLSS.**

- **County Legal Survey books at County Surveyors Office (process in state code relating to correcting surveys)**

- **Indian reserves that were later resurveyed by GLO (ex: Thorntown survey)**

3.9 Data Distribution

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

- ArcGIS Online - IGIC Historical Documents Project files can be viewed and downloaded (Marion County, Clarks' Grant, and other historical documents).
- IndianaMap - Historical Indiana PLSS Township Record Viewer

  o The records (field notes and plats) can be viewed and/or downloaded through this interactive map.

- Internet Archive

  o The combined PDF files (named by township and range) are available for download from our Internet Archive – Indiana Historical Land Records page.

- Indiana-Kentucky Boundary Line data can be downloaded (from Dropbox)

3.10 Additional Information

Resources
- *Attributes List based on Cadastral Boundaries, PLSS and Geodetic Data*

  o *Not a suggested standard—A Resource*—The attribute list is **not a suggested standard** but can be used as a resource for options.

  o Draft document identifying attributes following FGDC data standards from the Cadastral, Geodetic, and Boundary Standards. It can be used for other points, lines, area features, and Section Corners and PLSS County Boundaries. It was formerly

known as Appendix B in 2023 Data Integration Plan. The IGIC Cadastral, Boundaries, PLSS Workgroup developed the list when working on a County Boundary Project (initially used to develop a standardized attribute list).

o The following list of GIS County Boundary Field Attributes and Alias Names has been revised as of 3/17/2015.

o This document may be updated based on County Representative feedback.

o *Important Notes:*

- There is a Max number of eight (8) characters in a Shapefile Attribute Column Header.
- Do not use null values – If you must make a default field, make it NA (null value in some software will give a no value)

o GIS County Boundary Attributes (word version) examples of attributes:

ATTRIBUTE NAME   EXPLANATION AND POSSIBLE SELECTIONS (VALUES)

ID -- **Automatic number**

CountyID -- **County number (1-92)—(20-character field)—Point on the ground that lies on the County's boundary line or within that. County's PLSS descriptions. Replaces the alias of "CoOwner."** Examples of attribute values:
Gibson
Allen
Noble
Wayne
Marion
NA—use this when value is unknown.

LgllPtDesc -- **Legal point description from Law.** Examples of attribute values:
Point mentioned in legal description
Northeast Corner of Section 15, Township 17 North, Range 5 East
NA - If not mentioned in law, then the value of NA is suggested

LglSDesc -- **Source of legal description from law.** Examples of attribute values:
IAC 1851
Marion Co website legal description

LglCmts -- **Legal description comment from law—optional**
Examples of attribute values:
closing at
beginning at

ATTRIBUTE NAME	EXPLANATION AND POSSIBLE SELECTIONS (VALUES)

CollectedBy -- **(20-character field). County that collected the information about the point. Replaces Alias PtSourOr.** Examples of attribute values:
LaGrange
Ohio—? County
Marion
Noble
NA—use this when value is unknown.

GridPtN -- **Grid Point Name** (20-character field). Example attribute value:
IN02_T17NR05E15_08

BndryPt — **County Boundary Point.** (If using surveyor's data, can add this field so you can select out points along the boundary.) Examples of attribute values:
Yes
No

Datum — **Datum.** Examples of attribute values:
NAD 1927 (US Feet)
NAD 1983 of 1986 (US Feet)
NAD 1983 (CORS96) (Intel Feet)
NAD 1983 (CORS96) (Meters)
NAD 1983 (CORS96) (US Feet)
NAD 1983 (Intl Feet)
NAD 1983 (Meters)
NAD 1983 (US Feet)
NAD 1983 HARN (Intl Feet)
NAD 1983 HARN (US Feet)
NAD 1983 NSRS2007 (Intl Feet)
NAD 1983 NSRS2007 (Meters)
NAD 1983 NSRS2007 (US Feet)
NAD 1983 UTM Zone 16
Geographic Coordinate System (latitude, longitude)
Other
NA—use this when value is unknown.

CoordSys — **Coordinate System.** Examples of attribute values:
SPE
SPW
UTM
GCS

CoorType — **Coordinate Type.** Examples of attribute values:
Horizontal
Vertical
Horz/Vert

Y_North — **Northing (Y).**

X_East — **Easting (X).**

ATTRIBUTE NAME	EXPLANATION AND POSSIBLE SELECTIONS (VALUES)

Z_Elev – **Elevation (Z).**

Lat – **Latitude.**

Long – **Longitude.**

Units – **Units.** Examples of attribute values:
Decimal degrees
Degrees, Minutes, Seconds
Feet
Meters

PM – **Principal Meridian.** Examples of attribute values:
PM02
PM01

CoRule – **County Boundary Rule.** Examples of attribute values:
Center of Payment
Center of Right of Way
Center of Stream (Thalweg)
Stream chg overnight - Boundary doesn't change
Oxbow lake

Disclaimer – **Disclaimer for Country Boundary.** Example attribute value:
Location of the points in this GIS County Boundary Layer are approximate and should not be used for surveying and are NOT APPROVED by a COUNTY SURVEYOR for surveying purposes. Contact the County Surveyors' Office when conducting research for surveying.

PtType – **Point type.** Examples of attribute values:
Baseline corner point
Center pt of section
Court Order coordinate corner
Dug canal - ?straighten
Federal property corner
Greenville Treaty line corner
Indian Reservation corner/boundary
Indian Treaty Boundary corner
Land grant corner
Land grant boundary corner
Lost corner
Mile post
Military – (ex: Camp Atterbury)
Non-Corner
Non-Rectangular corner pt.
Other
Plat Lot Number
Principal Meridian corner point
PLSS Quarter corner
PLSS Quarter Quarter corner

ATTRIBUTE NAME	EXPLANATION AND POSSIBLE SELECTIONS (VALUES)

PLSS Section corner
River
River channel corner (don't use Meander Corner has GLO records significance)
Stream
Tract
Tributary
Undefined point – No field information in county collecting point
NA—use this when value is unknown.

SecCorType — **Section Corner Type.** Examples of attribute values:
Closing of neighboring County point
Standard
Township section corner

CoPtName — **Corner Name County Designation.** Examples of attribute values:
A1
A2

PtAccuracy — **Quality of the Point.** Examples of attribute values:
Approximate- Digitized or computer generated (Grid Point)
Calculated - interpreted between points
High Quality Field Location
Location plotted to unknown accuracy
Mapping Quality Field Location
Ortho-photo interpretation

AerialDa — **Aerial used date (digitized point on aerial), text.** Examples of attribute values:
2005 Orthophoto
2010
2011
2012
Other
NA—use this when value is unknown.

AerialReso — **Aerial used scale.** Examples of attribute values:
6" ft resolution
1" ft resolution
Other
Unknown
NA—use this when value is unknown.

AerialSour — **Aerial used source origin.** Examples of attribute values:
County IGIC
INDOT
Local County
NRCS
Other
State Library
USGS

ATTRIBUTE NAME	EXPLANATION AND POSSIBLE SELECTIONS (VALUES)
	Unknown NA—use this when value is unknown.
AerialScal –	**Aerial Scale.** Examples of attribute values: 100 feet 1,000 feet NA—use this when value is unknown.
SpaChgTy –	**Spatial Change Type of Boundary.** Examples of attribute values: Reshape—Change in digital representation of boundary of a geographic area to correspond to a more accurate or current survey information, where there has been no change to legal definition of boundary. Snapping or adjusting – County A to County B
SpaChgDa –	**Spatial Change Date (text).** Example attribute value: 20120112 – year/month/day
GovType –	**Governmental Unit Type.** Examples of attribute values: County - an independent, self-governing, political entity Federal Court Indian Tribal Other NA—use this when value is unknown.
DateCrea –	**Text Date point created.** Examples of attribute values: Date 01/02/13 Unknown
CreatedB –	**Created By.** Examples of attribute values: Name Unknown
EditDate –	**Date record was edited (date format).** Example attribute value: 1/13/2005
EditedBy –	**Person editing record.** Example attribute value: Name
CoGISCont –	**County GIS Contact.** Example attribute value: Name
FieldWkC –	**Field work contact** – (Used at counties discretion – doesn't have to be filled in).
MonType –	**Monument Type.**
BaseStatTy –	**Type of Base Station.** Examples of attribute values: INCorps Local base Other

ATTRIBUTE NAME	EXPLANATION AND POSSIBLE SELECTIONS (VALUES)
DigitScale	**Digitized Scale.**
FGovULeg	**Federal Government Unit and Legal Entity.** Examples of attribute values: American Indian reservations American Indian tribal subdivision Congressional District Counties and equivalent entities County subdivisions Federal, State, local or tribal owned and managed land Federally regulated area Incorporated places, including consolidated cities Minor Civil Division Nations School District Special district State, local and tribal Legislative Districts States and equivalent entities Voting District/Polling District
GovTyL	**Governmental Type Level.**
GovInstL	**Government Instance Level.**

(4) Elevation

4.10 Additional Information

All additional information on Indiana's Elevation Framework data resources can be found here - https://elevation.gio.in.gov/.

(5) Geodetic Control

5.3 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: https://viewer.indianamap.org/
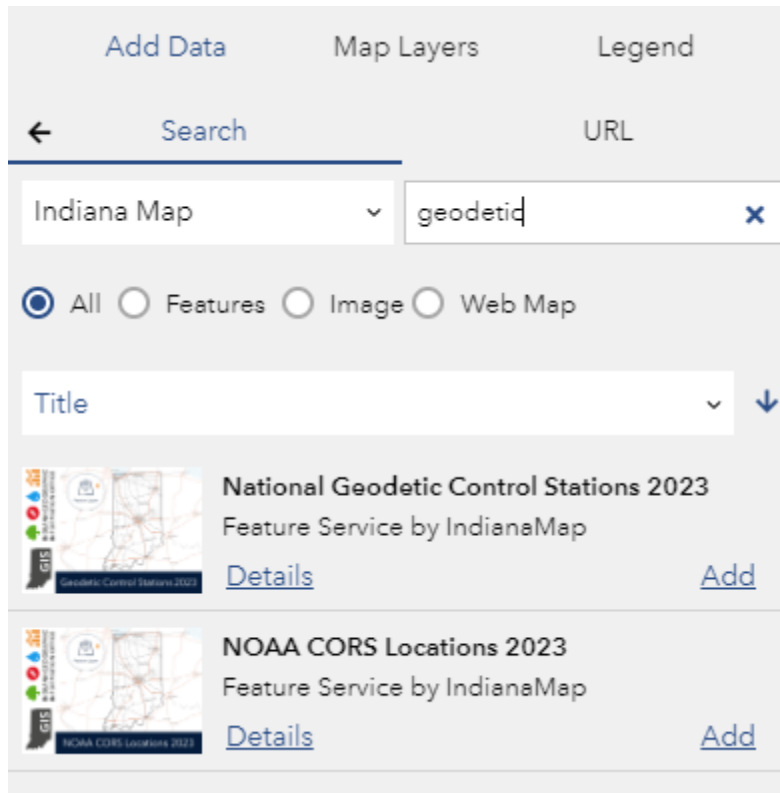
IndianaMap Geodetic Control (Benchmarks)

5.6 Data Sharing, Interdependencies, and Supported Initiatives

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

5.7 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."

5.8 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.

5.9 Data Distribution

Benchmark data is available for download at: https://geodesy.noaa.gov/datasheets/

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 interactive map - https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=190385f9aadb4cf1b0dd8759893032db

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.

(6) Governmental Boundary Units

6.3 Current Holdings

6.3.1. Data Harvest and IndianaMap History
- List of Boundaries: Identified as important at the 2021 Geospatial Summit, Data Harvest, and on IndianaMap. This table can be used to see our progress over time.

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			
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
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
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			
Zip Codes Tabulation Areas (ZCTA's) Census Tiger			x		2005
Zoning Boundaries	x				

- 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

6.3.2 Data Harvest – Administrative 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 tax 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.

- Statewide datasets:

  - Address Points
  - Street Centerlines
  - Parcels
  - County Boundaries
  - Other Boundaries
  - Section Corners
  - County datasets
  - Metadata
  - Geocoding geodatabase and statewide locators (2022)

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

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

2023 Data Harvest - Administrative Governmental Boundaries 2023—There were almost 12,000 Administrative boundary features collected in 2023.

2024 Data Harvest - Administrative Governmental Boundaries 2024—There were 11,911 features collected in 2024

Data Sharing Dashboards with Governmental Boundaries:

- [2020 Indiana Data Sharing Dashboard](): GIS Data Harvest Program
- [2021 Indiana Data Sharing Dashboard](): GIS Data Harvest Program
- [2022 Indiana Data Sharing Dashboard](): GIS Data Harvest Program
- [2023 Indiana Data Sharing Dashboard](): GIS Data Harvest Program
- [2024 Indiana Data Sharing Dashboard]**:** GIS Data Harvest Program

2024 Administrative Boundaries	2024 Data Harvest requested layers
Source: Data_Harvest_Template_2024_v3.xlsx	
Police	Address Points
PSAP	Street Centerlines
EMS Polygon	Street Name Alias Table
A1 Polygon State	Parcel Polygons
A2 Polygon Counties or equiv	PSAP Polygons
A3 Incorporated Municipalities	Provisioning Polygons
A4 Unincorporated Municipal	Police Polygons
A5 Neighborhood Community	Fire Polygons
County Commissioners	EMS Polygons
County Council	A2 Polygons (Counties)
Library District	A3 Polygons (Incorporated Municipalities)
School District	A4 Polygons (Unincorporated Communities)
Tax District	A5 Polygons (Neighborhood Communities)
TIF District	County Commissioner Polygons
CAMA table State Parcl ID	County Council Polygons
	Library District Polygons
	School District Polygons
	Tax District Polygons
	TIF District Polygons

6.3.3 IndianaMap

IndianaMap structure and correlation of Framework layers:

- Layers are grouped by categories (defined by the International Organization for Standardization's (ISO) 19115: Geographic Information - Metadata topic categories)
- Searches are done by categories, individual layers, and/or subject.
- PLSS and Boundaries Framework Layers are group under the ISO 19115 Boundaries Category
- Cadastre Framework Layers are listed under the Planning, Cadastre Category

The IndianaMap provides access to a variety of administrative governmental boundary units.

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

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/Feature Server/5 (requires login and password).

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

https://gisdata.in.gov/portal/home/item.html?id=ced4032e27a44731ab5ca42e7127d5fd
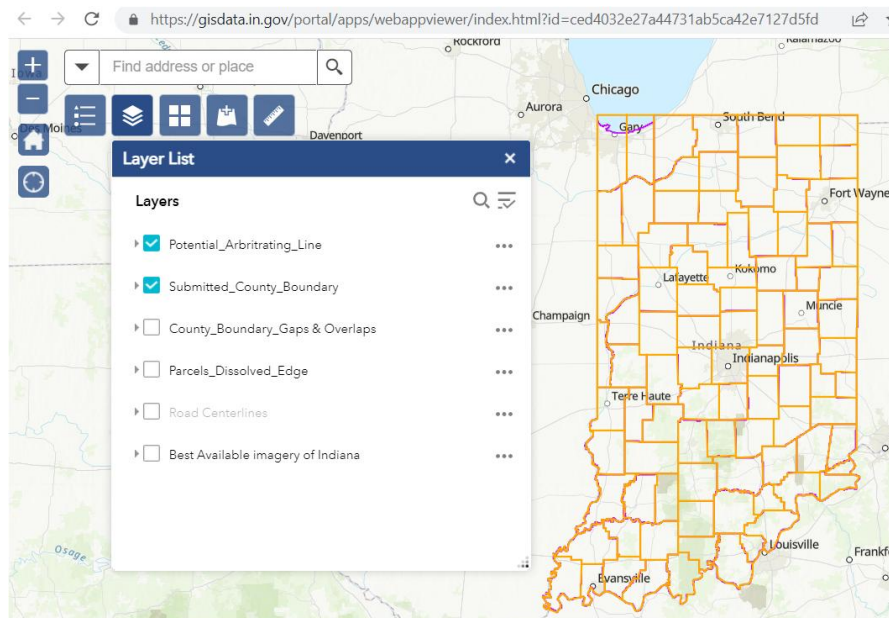
6.3.4 Governmental Boundaries—2024 (Under IndianaMap Boundaries Category)

IndianaMap Dataset-Governmental Boundaries	Source
Indiana State Boundary 2020	US Census Bureau
Census Municipal Boundaries 2021	US Census Bureau
Civil Township Boundaries 2021	IndianaMap
Census Tract Boundaries 2010	IndianaMap

Census Tract Boundaries 2000	IndianaMap
Census Tract Boundaries 2020	IndianaMap
Administrative Boundaries of Indiana 2020	IndianaMap
Protected Area Database Boundaries 2022	USGS Science Analytics and Synthesis (SAS)
Administrative Boundaries of Indiana 2021	IndianaMap
Parcel Boundaries of Indiana 2023	IndianaMap
County Boundaries of Indiana 2023	Indiana Office of Technology
Administrative Boundaries of Indiana Current	IndianaMap
Parcel Boundaries of Indiana 2024	Indiana Geographic Information Office (IGIO)
Parcel Boundaries of Indiana 2020	IndianaMap
Parcel Boundaries of Indiana 2019	IndianaMap
NRCS Easement Boundaries 2023	IndianaMap
State Land Office Parcels	IndianaMap

Other Governmental Boundary unit sources	Source - website
School & District Navigator	NCES Education - CCD School Map

_____

NOTE: There are multiple other layers that could be considered governmental boundaries, but they were not found when searching by governmental boundary categories. See IndianaMap Comprehensive Crosswalk Table "New Name" for more Governmental Boundaries.

6.7 Data Stewards

- See IndianaMap Comprehensive Crosswalk Table for listing of archived layers and correlations to the "New Names" for the IndianaMap Layers. The link to the new name has a tab to access the metadata (source).
- Governmental Boundaries County/IGIO—These governmental boundaries are provided by the individual counties and local governments sent to the GIO and are available from the IndianaMap through the previously described Data Sharing agreement with the Indiana GIO.
- Data Stewards are listed in the metadata of the layers hosted on IndianaMap.
- 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.'
- 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.
- Governmental Boundaries for 2020, 2021, 2022, 2023, & 2024 are in the Data Harvest layers provided by 92 different counties and local governments, Geographic Information Office/POLIS.

6.8 Data Standards

Policies
- Federal Geographic Data Committee Standard, Part 5 – Governmental unit and other geographic area boundaries (FGDC-STD-014.5-2008). https://www.fgdc.gov/standards/projects/framework-data-standard/GI_FrameworkDataStandard_Part5_GovernmentalUnitBoundaries.pdf/at_download/file

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

- Census Bureau Standards

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

  NENA standards used for Data Harvest unique ID. The [NENA Globally Unique ID (NGUID)](#) The NGUID is a unique ID applied to every feature in the NENA/NG911 standard. For the Data Harvest, this applies to Address Points, Street Centerlines, Parcel Boundaries, and Administrative Boundary datasets. This page has some information on how the NGUID is built in the most recent NENA standard as well as a list of acceptable layer indicators that make up a portion of the NGUID.

  For more information on the NGUID and the NENA standard, click [here](#) to view a .pdf file outlining the NENA Standard for GIS data.

- **Data Harvest Standards**—listed in the Data Harvest Metadata document.

- **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.

- **Strategic Plan** - Indiana Geographic Information Office Strategic Plan - GIS

6.9 Data Distribution

IndianaMap and Data Harvest:
- Indiana Data Harvest (2020, 2021, and 2022, 2023, 2024-coming soon) (arcgis.com): https://www.arcgis.com/apps/dashboards/a2268a22b8764c9eadca1fe32dfa25e9

- IndianaMap—search by boundaries, categories or by layers: https://www.indianamap.org/.

- The IndianaMap Comprehensive Crosswalk Table lists the "New Names" of Layers (and links) indicating other boundary layers that could be identified as governmental boundaries.

6.10 Additional Information

Boundary Definitions and Citations:
Below is a list compiled by Lorraine Wright documenting boundary definitions and citations from State code,

Boundary - State
- Indiana Constitution Article 14 - Boundaries
  ARTICLE 14. Boundaries. **Section 1**. In order that the boundaries of the State may be known and established, it is hereby ordained and declared, that the State of Indiana is

bounded, on the East, by the meridian line, which forms the western boundary of the State of Ohio; on the South, by the Ohio river, from the mouth of the Great Miami river to the mouth of the Wabash river; on the West, by a line drawn along the middle of the Wabash river, from its mouth to a point where a due north line, drawn from the town of Vincennes, would last touch the north-western shore of said Wabash river; and, thence, by a due north line, until the same shall intersect an east and west line, drawn through a point ten miles north of the southern extreme of Lake Michigan; on the North, by said east and west line, until the same shall intersect the first mentioned meridian line, which forms the western boundary of the State of Ohio.   **Section 2.** The State of Indiana shall possess jurisdiction and sovereignty co-extensive with the boundaries declared in the preceding section; and shall have concurrent jurisdiction, in civil and criminal cases, with the State of Kentucky on the Ohio river, and with the State of Illinois on the Wabash River, so far as said rivers form the common boundary between this State and said States respectively.

Boundary - Boundary line dispute
- 2018 Boundary - Boundary line dispute; Surveying profession
- **IC 36-7-3-7 Professional surveyor;** completion of survey and plat; requirements; boundary line dispute procedures; subdivision of tracts; report; statement of costs and expenses; filing
- https://iga.in.gov/legislative/laws/2018/ic/titles/036/#36-7-3-7

Political subdivision
- 2019 Political subdivision IC 36-1-2-13
- **IC 36-1-2-13"Political subdivision"**   Sec. 13. "Political subdivision" means municipal corporation or special taxing district. [Local Government Recodification Citation: New.] As added by Acts 1980, P.L.211, SEC.1.
- Indiana Code 2019 - Indiana General Assembly, 2023 Session

School Corporation
- 2019 School corporation
- **IC 36-1-2-17"School corporation" Sec.** 17. "School corporation" means a local public-school corporation established under state law. The term includes a school city, school town, metropolitan school district, consolidated school corporation, county school corporation, township school corporation, community school corporation, or united school corporation. [Local Government Recodification Citation: New.] As added by Acts 1980, P.L.211, SEC.1. Amended by P.L.233-2015, SEC.325.
- Indiana Code 2019 - Indiana General Assembly, 2023 Session
- Census Bureau tracks info
- Does Education Demographic and Geographic Estimates (EDGE) program work with the U.S. Census Bureau?
  - The U.S. Census Bureau is the largest statistical agency in the federal statistical system, and it conducts regular surveys and censuses to measure social,

economic, and geographic conditions throughout the U.S. National Center for Education Statistics (NCES) is a much smaller statistical agency, so it collaborates with the Census Bureau and uses existing survey and census data to help measure social and economic conditions facing local school systems. NCES initially worked with the Census Bureau in 1990 to collect a comprehensive set of school district boundaries and used them to create a custom set of school district characteristics from the 1990 decennial census. That effort resulted in additional collaboration in the mid-1990s to create annually updated school district poverty estimates for the Department of Education's Title I program. NCES worked with the Census Bureau again to create school district characteristics from the 2000 decennial census and began producing annually updated school district demographic and economic characteristics from the American Community Survey (ACS) when it was introduced in 2005. In addition to helping NCES produce updated school district boundaries and demographic characteristics, NCES also relies on the Census Bureau's definitions of urban and rural to help create locale indicators that identify the type of geographic area where schools and school districts are located. The Census Bureau shares NCES's interest in developing data for school districts and school-age children, and it includes district characteristics in many standard Census data products. It also uses school district boundaries to help with ACS sampling operations.
https://nces.ed.gov/programs/edge/About#d

- U.S. National Center for Education Statistics (**NCES**):   **School and District Navigator** - The educational Agency Type code specifics the classifications within the geographic boundaries of a state according to the level of administrative and operational control. School categories: All, Regular, Component, Supervisory Union ID, Regional, State, Federal, Charter, Other. https://nces.ed.gov/ccd/schoolmap/

Civil taxing unit
- 2021   Civil taxing unit - IC 6-1.1-18.5 Chapter 18.5. Civil Government Property Tax Controls
- IC 6-1.1-18.5-1Definitions   "Civil taxing unit" means any taxing unit except a school corporation.
- https://iga.in.gov/legislative/laws/2021/ic/titles/006#6-1.1-18.5-1

CAMA
- CAMA Vendors (map)
- https://www.in.gov/dlgf/files/CAMA.pdf

DLGF
- **Mission:** The mission of the Department is to ensure a fair and equitable property tax system for Indiana taxpayers. The site has **Lookup of City, County, (civil) Townships, Tax Districts, and tax codes (for City, County and Tax District)**

- https://www.in.gov/dlgf/about-us/
- Official list and links: Assessors, Auditors, Treasurers, County Council Members, County Commissioners, City Town and Township Officials, School Business Officials, & Special District Officials

Home Rule
- 2023 Indiana General Assembly
- IC 36-1-3   Chapter 3. **Home Rule.** IC 36-1-3-2 Policy -   Sec. 2. The policy of the state is to grant units all the powers that they need for the effective operation of government as to local affairs. [Pre-Local Government Recodification Citations: 17-2-2.5-6 part; 18-1-1.5-23 part; 18-4-2-36 part.] As added by Acts 1980, P.L.211, SEC.1. **Applies to Rule of Law and Powers of Units**
- https://iga.in.gov/legislative/laws/2019/ic/titles/036/#36-1-3
- Indiana's Home Rule statute grants local government units "all the powers that they need for the effective operation of government as to local affairs."3 The Home Rule statute gives local government broad authority, stating that "any doubt as to the existence of a power of a [county, municipality, or township]4 shall be resolved in favor of its existence."5 Despite the broad authority given to local governments, there are several exceptions in the Home Rule statute that set forth limitations. One of these exceptions involves local regulations that affect existing state regulations. The Home Rule statute specifies that local governments do not have "the power to regulate conduct that is regulated by a state agency, except as expressly granted by statute."6 Under this provision, state regulatory authority preempts local zoning authority in Indiana unless a statute expressly delegates the regulatory authority to the local government unit.
- Example: Confined feeding

City
- IC 36-1-2-3 "City"
- **IC 36-1-2-3 "City"**   Sec. 3. "City" refers to a consolidated city or other incorporated city of any class unless the reference is to a school city. [Local Government Recodification Citation: New. As added by Acts 1980, P.L.211, SEC.1.]

Environmental restrictive ordinance
- 2023 Indiana General Assembly
- IC 36-1-2-4.7 "**Environmental restrictive ordinance"**   Sec. 4.7. "Environmental restrictive ordinance" means, with respect to land, any ordinance that: (1) is adopted by a municipal corporation; and (2) seeks to control the use of groundwater in a manner and to a degree that protects human health and the environment against unacceptable exposure to a release of hazardous substances or petroleum, or both. As added by P.L.78-2009, SEC.21. Amended by P.L.159-2011, SEC.42.

Municipal corporation
- 2023 Indiana General Assembly
- IC 36-1-2-10 "**Municipal corporation"** Sec. 10. "Municipal corporation" means unit, school corporation, library district, local housing authority, fire protection district, public transportation corporation, local building authority, local hospital authority or corporation, local airport authority, special service district, or other separate local governmental entity that may sue and be sued. The term does not include special taxing district. [Local Government Recodification Citation: New.] As added by Acts 1980, P.L.211, SEC.1.
- https://iga.in.gov/legislative/laws/2019/ic/titles/036/#36-1-2-10
- SCHOOL ATTENDANCE BOUNDARY
- SCHOOL DISTRICT
- LIBRARY DISTRICT
- FIRE DISTRICT

Political subdivision
- IC 36-1-2-13"Political subdivision"
- **IC 36-1-2-13"Political subdivision"** Sec. 13. "Political subdivision" means municipal corporation or special taxing district. [Local Government Recodification Citation: New.] As added by Acts 1980, P.L.211, SEC.1.

Tax Increment Finance Districts
- 2023 May Indiana Gateway for Government Units
- TIF data and maps, all in one place for every authorizing county and city that has submitted their annually required data to DLGF. (2021 data)
- http://gateway.ifionline.org/TIFviewer/

Federal and State officials
- 2023 Find your legislator - Link from Indiana General Assembly (also has senate and House district maps on a tabs)
- Senator, Representative, Congressional Legislators -Senator and Representative
- https://iga.in.gov/legislative/find-legislators/

Change of boundaries
- IC 36-1.5-4-37 Change of boundaries
- **IC 36-1.5-4-37 Change of boundaries** Sec. 37. The legislative bodies of the reorganizing political subdivisions and an adjacent political subdivision may change the boundaries of the reorganized political subdivision by adopting substantially identical resolutions clearly describing the boundary changes. The resolutions must be filed as required by law for a boundary change for the reorganized political subdivision and may not provide for a territory that is smaller than the territory permitted by law for any of the political subdivisions. If the law establishes additional procedures for the annexation or disannexation of the territory of a political subdivision, the political subdivisions

changing boundaries must comply with the annexation or disannexation procedures required by law. As added by P.L.186-2006, SEC.4.

Law
- IC 36-1-2-8 Law.
- **IC 36-1-2-8"Law"** Sec. 8. "Law" includes the Constitution of Indiana, statutes, and ordinances. [Local Government Recodification Citation: New.] As added by Acts 1980, P.L.211, SEC.1.

Municipality = city or town
- IC 36-1-2-11"Municipality"
- **IC 36-1-2-11"Municipality"** Sec. 11. "Municipality" means city or town. [Local Government Recodification Citation: New.] As added by Acts 1980, P.L.211, SEC.1.

Political subdivision
- IC 36-1-2-13 "Political subdivision"
- IC 36-1-2-13 Sec. 13. "Political subdivision" means municipal corporation or special taxing district. [Local Government Recodification Citation: New.] As added by Acts 1980, P.L.211, SEC.1.
- IC 36-1.5-2-4 "Political subdivision"
- **IC 36-1.5 2-4 Sec. 4. "Political subdivision"** has the meaning set forth in IC 36-1-2, except that the term does not include a local hospital authority or corporation. As added by P.L.186-2006, SEC.4.

Legislative body
- IC 36-1-2-9 "Legislative body"
- **IC 36-1-2-9"Legislative body"** Sec. 9. "Legislative body" means the following: (1) The **board of county commissioners**, for a county not subject to IC 36-3-1. (2) The **city-county council**, for a consolidated city or county having a consolidated city. (3) The **common council**, for a city other than a consolidated city. (4) The **town counci**l, for a town. (5) The **township board**, for a township. (6) The **governing body** of any other political subdivision that has a governing body. (7) The **chief executive officer** of any other political subdivision that does not have a governing body. [Pre-Local Government Recodification Citation: 18-5-1.5-2(b).] As added by Acts 1980, P.L.211, SEC.1. Amended by Acts 1982, P.L.33, SEC.15; P.L.213-1986, SEC.1; P.L.8-1987, SEC.82; P.L.8-1989, SEC.95; P.L.186-2006, SEC.3; P.L.77-2014, SEC.10; P.L.278-2019, SEC.179.

Safety board
- IC 36-1-2-16"Safety board"
- **IC 36-1-2-16"Safety board"** Sec. 16. "Safety board" means the board of public safety or board of public works and safety of a city. [Pre-Local Government Recodification Citation: 18-4-12-1(e). As added by Acts 1980, P.L.211, SEC.1. Amended by Acts 1981, P.L.309, SEC.39.]

Special taxing district
- IC 36-1-2-18 "Special taxing district"
- **IC 36-1-2-18 "Special taxing district"**   Sec. 18. "Special taxing district" means a geographic area within which a special tax may be levied and collected on an ad valorem basis on property for the purpose of financing local public improvements that are: (1) not political or governmental in nature; and (2) of special benefit to the residents and property of the area. [Local Government Recodification Citation: New.]   As added by Acts 1980, P.L.211, SEC.1.

Taxing district
- IC 36-1-2-20"Taxing district"
- **IC 36-1-2-20"Taxing district"**   Sec. 20. "Taxing district" means a geographic area within which property is taxed by the same taxing entities and at the same total rate. [Local Government Recodification Citation: New.]   As added by Acts 1980, P.L.211, SEC.1.

Town
- IC 36-1-2-21 "Town"
- **IC 36-1-2-21 "Town"**   Sec. 21. "Town" refers to an incorporated town, unless the reference is to a school town [Local Government Recodification Citation: New.]. As added by Acts 1980, P.L.211, SEC.1.

Township
- IC 36-1-2-22"Township"
- **IC 36-1-2-22"Township"**   Sec. 22. "Township" refers to a civil township unless the reference is to a congressional township. [Local Government Recodification Citation: New.]   As added by Acts 1980, P.L.211, SEC.1. Amended by P.L.233-2015, SEC.326.

Unit
- IC 36-1-2-23"Unit"
- **IC 36-1-2-23"Unit"**   Sec. 23. "Unit" means county, municipality, or township. [Local Government Recodification Citation: New.]   As added by Acts 1980, P.L.211, SEC.1.

Works board
- IC 36-1-2-24"Works board"
- **IC 36-1-2-24"Works board"**   Sec. 24. "Works board" means the following: (1) The board of commissioners, for a county not having a consolidated city. (2) The board of public works or board of public works and safety, for a city. (3) The town council, for a town. [Local Government Recodification Citation: New.]   As added by Acts 1980, P.L.211, SEC.1. Amended by Acts 1981, P.L.11, SEC.133; P.L.8-1989, SEC.96; P.L.77-2014, SEC.11; P.L.278-2019, SEC.180.

Powers of unit; exercise; township exception
- IC 36-1-3-5 Powers of unit; exercise; township exception
- **IC 36-1-3-5 Powers of unit; exercise; township exception**   Sec. 5. (a) Except as provided in subsection (b), a unit may exercise any power it has to the extent that the power: (1) is not expressly denied by the Indiana Constitution or by statute; and (2) is not expressly granted to another entity.   (b) A township may not exercise power the township has if another unit in which all or part of the township is located exercises that same power. [Pre-Local Government Recodification Citations: 17-2-2.5-1 part; 17-2-2.5-3 part; 18-1-1.5-1 part; 18-1-1.5-16 part; 18-1-1.5-19 part; 18-4-2-33 part; 18-5-10-2.] As added by Acts 1980, P.L.211, SEC.1. Amended by P.L.251-1993, SEC.2.

Special
Specific manner for exercising a power; constitutional or statutory provision; ordinance; resolution
- IC 36-1-3-6 Specific manner for exercising a power; constitutional or statutory provision; ordinance; resolution
- **IC 36-1-3-6 Specific manner for exercising a power; constitutional or statutory provision; ordinance; resolution**   Sec. 6. (a) If there is a constitutional or statutory provision requiring a specific manner for exercising a power, a unit wanting to exercise the power must do so in that manner.   (b) If there is no constitutional or statutory provision requiring a specific manner for exercising a power, a unit wanting to exercise the power must either: (1) if the unit is a county or municipality, adopt an ordinance prescribing a specific manner for exercising the power;   (2) if the unit is a township, adopt a resolution prescribing a specific manner for exercising the power; or   (3) comply with a statutory provision permitting a specific manner for exercising the power.   (c) An ordinance under subsection (b)(1) must be adopted as follows: (1) In a municipality, by the legislative body of the municipality. (2) In a county subject to IC 36-3-1, by the legislative body of the county.   (3) In any other county, by the executive of the county.   (d) A resolution under subsection (b)(2) must be adopted by the legislative body of the township. [Pre-Local Government Recodification Citations: 17-2-2.5-2 part; 17-2-2.5-7 part; 18-1-1.5-17; 18-4-2-32.6 part; 18-4-4-2(2); 18-4-5- 5.]   As added by Acts 1980, P.L.211, SEC.1. Amended by Acts 1981, P.L.17, SEC.2; P.L.251-1993, SEC.3; P.L.77-2014, SEC.12; P.L.278-2019, SEC.181.

Ordinances
IC 36-1-4-11 Ordinances
IC 36-1-4-11 Ordinances   Sec. 11. A unit may adopt, codify, and enforce ordinances. [Pre-Local Government Recodification Citations: 18-1-1.5-2(9); 18-3-1-48 part.]   As added by Acts 1980, P.L.211, SEC.1.
IC 36-1-5-4
IC 36-1-5-4 Incorporation of material into ordinance or code by reference; procedure

Planning and Development
2023 Indiana Code
Title 36. Local Government
Article 7. Planning and Development
Planning and Zoning
2023 Indiana Code
Chapter 4. Local Planning and Zoning
36-7-4-405. Duties of Plan Commission; Street Names and Numbers; Areas Not Subject to Plan Commission; Notice; Development Plans

(7) Water Features

7.10 Additional Information

- **Future Opportunities**:

    o Cost-saving potential from leveraging existing Local-Resolution NHD datasets.

    o Using EDH data for regulatory compliance, flood management, and disaster preparedness.

- **Stakeholder Coordination**:

    o Multi-agency partnerships include IDNR, IDEM, FEMA, and USGS.

    o Local organizations, utilities, and academic institutions support the adoption of EDH and 3DHP data.

- **Pilot Study Justifications**:

    o Hamilton County's role as a pilot area provides insights into workflow scalability and accuracy improvements.

    o Initial studies focus on evaluating the integration of QL1 lidar and NHD data.

- **Pilot Studies for EDH:**

    o Phase 1 (2025):

        ▪ Hamilton County: Develop and test EDH workflows, integrating QL1 lidar and 3-inch orthoimagery.

- Phase 2 (2026-2027):

  ▪ Expand to 24 HUC-12 areas overlapping Hamilton County (550 square miles).

- Phase 3 (2028):

  ▪ Finalize EDH datasets for the remaining Upper White River HUC-8 region (1,997 square miles).

(8) Addresses

8.3 Current Holdings

Addresses are collected through the data harvest program for the entire state. Data Harvest Resources are provided by the GIO at this link https://dataharvest.gio.in.gov/pages/resources and the data harvest hub site. The program requests submittals from Data Stewards by August 16. The QA/QC process adds several attributes to allow the data harvest to be used for other purposes.

Addresses Schema 2023

Field Name	Definition	Source
DateUpdate	The date and time that the record was created or last modified. This value MUST be populated upon modifications to attributes, geometry, or both.	NG911
NGUID	The NENA Globally Unique ID (Primary Key) for each record in a GIS data layer. Each record in the GIS data layer MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. Additional detail on how to construct the NGUID can be found in section 3.6 NENA Globally Unique IDs (NGUID).	NG911/Data Harvest

County	The name of a County or County-equivalent where the address is located. A county (or its equivalent) is the primary legal division of a state or territory.	NG911/Data Harvest
Inc_Muni	The name of the Incorporated Municipality or other general-purpose local governmental unit (if any) where the address is located.	NG911/Data Harvest
Uninc_Comm	The name of an Unincorporated Community, either within an incorporated municipality or in an unincorporated portion of a county, or both, where the address is located	NG911/Data Harvest
Nbrhd_Comm	The name of an unincorporated neighborhood, subdivision, or area, either within an incorporated municipality or in an unincorporated portion of a county or both, where the address is located.	NG911/Data Harvest
AddNum_Pre	An extension of the Address Number that precedes it and further identifies a location along a thoroughfare or within a defined area.	NG911/Data Harvest
Add_Number	The numeric identifier of a location along a thoroughfare or within a defined community.	NG911/Data Harvest
AddNum_Suf	An extension of the Address number that follows it and further identifies a location along a thoroughfare or within a defined area.	NG911/Data Harvest
St_PreMod	A word or phrase that precedes and modifies the Street Name element but is separated from it by a Street Name Pre Type or a Street Name Pre Directional or both.	NG911/Data Harvest

St_PreDir	A word preceding the Street Name element that indicates the direction taken by the road from an arbitrary starting point or line, or the sector where it is located.	NG911/Data Harvest
St_PreTyp	A word or phrase that precedes the Street Name element and identifies a type of thoroughfare in a complete street name.	NG911/Data Harvest
St_PreSep	A preposition or prepositional phrase between the Street Name Pre Type and the Street Name. This element is defined in the CLDXF Standard, NENA-STA-004 [4], as a US specific extension of PIDF-LO per RFC 6848 [7].	NG911/Data Harvest
St_Name	The official name of the road, usually defined by the lowest jurisdictional authority (e.g., city). The street name does not include any street types, directionals, or modifiers.	NG911/Data Harvest
St_PosTyp	A word or phrase that follows the Street Name element and identifies a type of thoroughfare in a complete street name.	NG911/Data Harvest
St_PosDir	A word following the Street Name element that indicates the direction taken by the road from an arbitrary starting point or line, or the sector where it is located	NG911/Data Harvest
St_PosMod	A word or phrase that follows and modifies the Street Name element, but is separated from it by a Street Name Post Type or a Street Name Post Directional or both.	NG911/Data Harvest

Post_Comm	A city name for the Postal Code of an address. Domain: Restricted to city names given in the USPS City State Product for a given ZIP Code. The USPS City State Product is a comprehensive list of ZIP Codes with corresponding USPS city and county names.	NG911/Data Harvest
Post_Code	A system of 5-digit (US) or 7-character codes (Canada) that identify the individual USPS or Canadian Post Office or metropolitan area delivery station associated with an address.	NG911/Data Harvest
Unit_Type	(NOT FROM NENA) The type of unit a unit ID or number represents for a given address.	Data Harvest
Unit_Id	(NOT FROM NENA) The unit ID or number of a given address.	Data Harvest
SOURCE_DATADESC	Data description (Address Points)	QA/QC Process
SOURCE_DATASETID	The name of the layer provided by the county	QA/QC Process
SOURCE_FEATUREID	The internal identifier of each feature in the layer provided by the county	QA/QC Process
SOURCE_ORIGINATOR	The name of the county that provided the data	QA/QC Process
LOADDATE	The data of the county's data extract	Data Harvest
COUNTY_FIPS	The county's FIPS (Federal Information Processing System) code	QA/QC Process
COUNTY_ID	The county's identifying number	QA/QC Process
ESRI_ZIP	The address point's ZIP code	QA/QC Process
ESRI_PONAME	The address point's post office name	QA/QC Process

DLGF_PROP_ADDRESS	The address of the parcel in which the address point is located	DLGF
DLGF_PROP_ADDRESS_CITY	The city associated with the parcel in which the address point is located	DLGF
DLGF_PROP_ADDRESS_ZIP	The ZIP code associated with the parcel in which the address point is located	DLGF
DLGF_PROP_CLASS_CODE	The Indiana Department of Local Government Finance property classification code for the parcel in which the address point is located.	DLGF
JOIN_STATE_PARCEL_ID	The state parcel identifier	
ORIG_ADDR	The address of the address point as provided by the county	Data Harvest
GEOFULLADDRESS	The concatenated street address after cleanup.	QA/QC Process
GEOHOUSENUM	The point address house number, which is a concatenation of the following fields: AddNum_Pre, Add_Number, AddNum_Suf. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOPREDIR	The point address street name prefix direction, which is a copy of the St_PreDir field. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOPRETYPE	The point address prefix type, which is a concatenation of the following fields: St_PreMod, St_PreTyp, St_PreSep. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOSTREETNAME	The point address street name, which is a copy of the St_Name field. This field was created for the purpose of creating a	QA/QC Process

	geocoding locator.	
GEOSTREETTYPE	The point address street type, which is a copy of the St_PostTyp field. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOUNIT	The point address unit information, which is a copy of the Unit field. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOCITY	The point address city, which is a copy of the Post_Comm field. In cases when that field had a NULL value, or an invalid value (ex: "COUNTY"), the ESRI_PONAME value was used. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOZIP	The point address ZIP code, which is a copy of the Post_Code field. In cases when that field had a NULL value, or an invalid value (ex: "0"), the ESRI_ZIP value was used. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOSTATE	The point address state abbreviation, set to "IN" for all features. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOBG10	The Census Bureau's 2010 Census Block Group GEOID value in which the address point is located. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOBG20	The Census Bureau's 2020 Census Block Group GEOID value in which the address point is located. This field was created for the purpose of creating a geocoding locator.	QA/QC Process

GEOCOUNTY	The point address county, which is a copy of the SOURCE_ORIGINATOR value, except that " COUNTY" was removedThis field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOSUFDIR	The point address street suffix direction, which is a copy of the St_PosDir field. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
User_fld	A concatenation of the following fields: SOURCE_ORIGINATOR (with " COUNTY" taken out), COUNTY_FIPS, GEOBG10, GEOBG20, and JOIN_STATE_PARCEL_ID. These values are separated by semi-colons. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
TAXDISTRICT	TAXDISTRICT	QA/QC Process

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.

Statewide Geocoder, 2022—Address points, Centerlines are used to create geocoder for use by anyone. 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

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, 2020—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.

8.8 Data Standards

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/standards

Data Harvest Framework Improvement Program is requesting framework data validation and improvement for future Data Harvests. Mandatory validations include the following for address points.

"The service must assess and validate GIS data to the NENA Standard for NG9-1-1 GIS Data Model and other GIS standards and best practices. Validations must identify schema, attribute, and spatial issues that could affect location validation, emergency call routing, and/or provisioning of GIS data to NG9-1-1 systems.

- NENA Standard for NG9-1-1 GIS Data Model (NENA-STA-006.1.1-2020, or the most current NENA-approved and State-adopted version) compliance:
  - Field formats are compliant (types, lengths, etc.).
  - Required fields present and populated.
  - Values within domain of values, where applicable.
- ALI/MSAG to GIS validations
  - ALI maps to road centerline (RCL).
  - ALI maps to site/structure address point (SSAP).
    - Including sub addresses.
  - MSAG ranges contained RCL.
- Cross-dataset validations:
  - SSAP outside of county boundary.
  - SSAP not in RCL.
  - SSAP maps to multiple RCLs.
  - SSAP mis-ordered along RCL and/or on wrong side of RCL (parity).
    - Fishbone analysis.
  - RCL outside of county boundary.
  - RCL not split at boundary (state, county, incorporated municipality, service boundary, and any boundary that may affect location validation or call routing).
  - GIS parcel identifier must exist in CAMA parcel table.
  - CAMA parcel identifier must exist in GIS parcel layer.
  - Last 3 digits of GIS parcel identifier must exist in provided tax district code list.
  - All identifiers in the tax district code list must be present as the last 3 digits of the GIS parcel identifier.

      o   SSAP must fall within GIS parcel feature.

8.9 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 Map Viewer or Data Gallery https://www.indianamap.org/
  - o 2020, 2021, 2022 and 2023—Address Points, Street Centerlines, Parcels, County Boundaries, Administrative Boundaries

- Dashboard for 2020, 2021, 2022, 2023 Data Harvest features:
  Indiana Data Sharing Dashboard: GIS Data Harvest Program
  https://dataharvest.gio.in.gov/

- ArcGIS Online search Indiana Address Points

- Download NAD for the Nation: Current version is Release 16 and includes data from 2022 Data Harvest. Release 17 is coming and will include address points from the 2023 data harvest:
  https://www.transportation.gov/gis/national-address-database

(9) Streets

9.3 Current Holdings

Streets are collected through the Data Harvest program for the entire state. Data Harvest Resources are provided by the GIO at this link https://dataharvest.gio.in.gov/pages/resources and the data harvest hub site. The program requests submittals from Data Stewards by August 16th. The QA/QC process adds several attributes to allow the data harvest to be used for other purposes.

Streets Schema 2023

Field Name	Definition	Source
DateUpdate	The date and time that the record was created or last modified. This value MUST be populated upon modifications to attributes, geometry, or both.	NG911

NGUID	The NENA Globally Unique ID (Primary Key) for each record in a GIS data layer. Each record in the GIS data layer MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. Additional detail on how to construct the NGUID can be found in section 3.6 NENA Globally Unique IDs (NGUID).	NG911/Data Harvest
AdNumPre_L	An extension of the Address Number that precedes it and further identifies a location along a thoroughfare or within a defined area, on the Left side of the road segment relative to the FROM Node. It contains any alphanumeric characters, punctuation, and spaces preceding the Left FROM Address and Left TO Address.	NG911/Data Harvest
AdNumPre_R	An extension of the Address Number that precedes it and further identifies a location along a thoroughfare or within a defined area, on the Right side of the road segment relative to the FROM Node. It contains any alphanumeric characters, punctuation, and spaces preceding the Right FROM Address and Right TO Address.	NG911/Data Harvest
FromAddr_L	In the RoadCenterLine layer, each feature has a begin point and an endpoint. The FROM Node is the begin point while the TO Node is the endpoint. Each has a left side and a right side relative to a begin node and an end node. The Left FROM address is the address number on the Left side of the road segment relative to the FROM Node.	NG911/Data Harvest
ToAddr_L	In the RoadCenterLine layer, each feature has a begin point and an endpoint. The FROM Node is the begin point while the TO Node is the endpoint. Each has a left side and a right side relative to a begin node and an end node. The Left TO address is the address number on the Left side of the road segment relative to the TO Node.	NG911/Data Harvest

FromAddr_R	In the RoadCenterLine layer, each feature has a begin point and an endpoint. The FROM Node is the begin point while the TO node is the endpoint. Each has a left side and a right side relative to a begin node and an end node. The Right FROM address number is the address number on the Right side of the road segment relative to the FROM Node.	NG911/Data Harvest
ToAddr_R	In the RoadCenterLine layer, each feature has a begin point and an endpoint. The FROM Node is the begin point while the TO node is the endpoint. Each has a left side and a right side relative to a begin node and an end node. The Right TO address number is the address number on the Right side of the road segment relative to the TO Node	NG911/Data Harvest
Parity_L	The even or odd property of the address number range on the Left side of the road segment relative to the FROM Node.	NG911/Data Harvest
Parity_R	The even or odd property of the address number range on the Right side of the road segment relative to the FROM Node.	NG911/Data Harvest
St_PreMod	A word or phrase that precedes and modifies the Street Name element but is separated from it by a Street Name Pre Type or a Street Name Pre Directional or both.	NG911/Data Harvest
St_PreDir	A word preceding the Street Name element that indicates the direction taken by the road from an arbitrary starting point or line, or the sector where it is located.	NG911/Data Harvest
St_PreTyp	A word or phrase that precedes the Street Name element and identifies a type of thoroughfare in a complete street name.	NG911/Data Harvest
St_PreSep	A preposition or prepositional phrase between the Street Name Pre Type and the Street Name. This element is defined in the CLDXF Standard, NENA-STA-004 [4], as a US specific extension of PIDF-LO per RFC 6848 [7].	NG911/Data Harvest

St_Name	The official name of the road, usually defined by the lowest jurisdictional authority (e.g., city). The street name does not include any street types, directionals, or modifiers.	NG911/Data Harvest
St_PosTyp	A word or phrase that follows the Street Name element and identifies a type of thoroughfare in a complete street name.	NG911/Data Harvest
St_PosDir	A word following the Street Name element that indicates the direction taken by the road from an arbitrary starting point or line, or the sector where it is located.	NG911/Data Harvest
St_PosMod	A word or phrase that follows and modifies the Street Name element, but is separated from it by a Street Name Post Type or a Street Name Post Directional or both.	NG911/Data Harvest
County_L	The name of a County or County-equivalent on the Left side of the road segment relative to the FROM Node. A county (or its equivalent) is the primary legal division of a state or territory.	NG911/Data Harvest
County_R	The name of a County or County-equivalent on the Right side of the road segment relative to the FROM Node. A county (or its equivalent) is the primary legal division of a state or territory.	NG911/Data Harvest
IncMuni_L	The name of the Incorporated Municipality or other general-purpose local governmental unit (if any), on the Left side of the road segment relative to the FROM Node.	NG911/Data Harvest
IncMuni_R	The name of the Incorporated Municipality or other general-purpose local governmental unit (if any), on the Right side of the road segment relative to the FROM Node.	NG911/Data Harvest
UnincCom_L	The Unincorporated Community, either within an incorporated municipality or in an unincorporated portion of a county, or both, on the Left side of the road segment relative to the FROM Node.	NG911/Data Harvest
UnincCom_R	The Unincorporated Community, either within an incorporated municipality or in an unincorporated portion of a county, or both, on the Right side of the road segment relative to the FROM Node.	NG911/Data Harvest

NbrhdCom_L	The name of an unincorporated neighborhood, subdivision or area, either within an incorporated municipality or in an unincorporated portion of a county or both, on the Left side of the road segment relative to the FROM Node.	NG911/Data Harvest
NbrhdCom_R	The name of an unincorporated neighborhood, subdivision or area, either within an incorporated municipality or in an unincorporated portion of a county or both, on the Right side of the road segment relative to the FROM Node.	NG911/Data Harvest
PostCode_L	The Postal Code on the Left side of the road segment relative to the FROM Node.	NG911/Data Harvest
PostCode_R	The Postal Code on the Right side of the road segment relative to the FROM Node.	NG911/Data Harvest
PostComm_L	A city name for the Postal Code of an address, as given in the USPS City State Product on the Left side of the road segment relative to the FROM Node.	NG911/Data Harvest
PostComm_R	A city name for the Postal Code of an address, as given in the USPS City State Product on the Right side of the road segment relative to the FROM Node.	NG911/Data Harvest
OneWay	The direction of traffic movement along a road in relation to the FROM node and TO node of the line segment representing the road in the GIS data. The one-way field has three possible designations: B (Both), FT (From-To), and TF (To-From).	NG911/Data Harvest
SpeedLimit	Posted Speed Limit in MPH in US or Km/h in Canada.	NG911/Data Harvest
St_Full	The full street name of the street segment.	QA/QC Process
NGUID	Road Centerline NENA Globally Unique ID	QA/QC Process
SOURCE_DATADESC	Data description (Roads)	QA/QC Process
SOURCE_DATASETID	The name of the layer provided by the county	QA/QC Process
SOURCE_FEATUREID	The internal identifier of each feature in the layer provided by the county	QA/QC Process

SOURCE_ORIGIN ATOR	The name of the county that provided the data	QA/QC Process
LOADDATE	The data of the county's data extract	Data Harvest
COUNTY_FIPS	The county's FIPS (Federal Information Processing System) code	QA/QC Process
COUNTY_ID	The county's identifying number	QA/QC Process
ORIG_ADDR	The street name as provided by the county	Data Harvest
TIGER_LINEARID	Linear feature identifier	QA/QC Process
TIGER_TLID	Topological Line Identifier	QA/QC Process
TIGER_FULLNAM E	Concatenation of expanded text for prefix qualifier, prefix direction, prefix type, base name, suffix type, suffix direction, and suffix qualifier (as available) with a space between each expanded text field	QA/QC Process
TIGER_LFROMH N	From House Number associated with the address range on the left side of the edge (SIDE=L)	QA/QC Process
TIGER_RFROMH N	From House Number associated with the address range on the right side of the edge (SIDE=R)	QA/QC Process
TIGER_LTOHN	To House Number associated with the address range on the left side of the edge (SIDE=L)	QA/QC Process
TIGER_RTOHN	To House Number associated with the address range on the right side of the edge (SIDE=R)	QA/QC Process
TIGER_ROAD_M TFCC	MAF/TIGER Feature Class Code of related linear feature record	QA/QC Process
TIGER_ZIPL	ZIP code associated with the left address range	QA/QC Process
TIGER_ZIPR	ZIP code associated with the right address range	QA/QC Process
ESRI_PONAMEL	Post office name from Esri dataset (https://www.arcgis.com/home/item.html?id=8d2012a2016e4 84dafaac0451f9aea24) corresponding to the TIGER_ZIPL value.	QA/QC Process
ESRI_PONAMER	Post office name from Esri dataset (https://www.arcgis.com/home/item.html?id=8d2012a2016e4 84dafaac0451f9aea24) corresponding to the TIGER_ZIPR value.	QA/QC Process
ESRI_ZIP	ESRI_ZIP	QA/QC Process
ESRI_PONAME	ESRI_PONAME	QA/QC Process

GEOFULLADDRESS	The concatenated street name after cleanup.	QA/QC Process
GEOPREDIR	The centerline's street name prefix direction, which is a copy of the St_PreDir field. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOPRETYPE	The centerline's street name prefix type, which is a concatenation of the following fields: St_PreMod, St_PreTyp, St_PreSep. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOSTREETNAME	The centerline's street name, which is a copy of the St_Name field. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOSUFDIR	The centerline's street suffix direction, which is a copy of the St_PosDir field. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOSTREETTYPE	The centerline's street type, which is a copy of the St_PostTyp field. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOCITYLEFT	The city name to the left of the street centerline, which is a copy of the PostComm_L field. In cases when that field had a NULL value, or an invalid value, the ESRI_PONAMEL value was used. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOCITYRIGHT	The city name to the right of the street centerline, which is a copy of the PostComm_R field. In cases when that field had a NULL value, or an invalid value, the ESRI_PONAMER value was used. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
GEOZIPLEFT	The ZIP code to the left of the street centerline, which is a copy of the PostCode_L field. In cases when that field had a NULL value, or an invalid value (ex: "0"), the TIGER_ZIPL value was used. This field was created for the purpose of creating a geocoding locator.	QA/QC Process

GEOZIPRIGHT	The ZIP code to the right of the street centerline, which is a copy of the PostCode_R field. In cases when that field had a NULL value, or an invalid value (ex: "0"), the TIGER_ZIPR value was used. This field was created for the purpose of creating a geocoding locator.	QA/QC Process
FromAddr_L_PA	Left FROM Address Potential Address	Data Harvest Future
ToAddr_L_PA	Left TO Address Potential Address	Data Harvest Future
FromAddr_R_PA	Right FROM Address Potential Address	Data Harvest Future
ToAddr_R_PA	Right TO Address Potential Address	Data Harvest Future
MSAG_NGUID	MSAG NENA Globally Unique ID	Data Harvest Future
LMSAG_NGUID	Local MSAG NENA Globally Unique ID	Data Harvest Future

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.

Statewide Geocoder, 2022— Address points, Centerlines are used to create geocoder for use by anyone. See Appendix for detailed information
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

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

Street Centerlines, 2020: County Street Centerlines are available from the IndianaMap through the previous Data Sharing agreement with the Indiana GIO. In this year's layer on IndianaMap there are 512,501 Street Centerlines Segments.

9.8 Data Standards

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

Data Harvest Framework Improvement Program is requesting framework data validation and improvement for future Data Harvests. Mandatory validations include the following for address points.

End of Appendix