OFFICE OF
INSPECTOR GENERAL
U.S. DEPARTMENT OF THE INTERIOR

Audit

The U.S. Department of the Interior Is Making Progress in Its Management of Geospatial Data but Improvements Are Needed

Report No. 2024-ER-003

September 2024

OFFICE OF
INSPECTOR GENERAL
U.S. DEPARTMENT OF THE INTERIOR

SEP 17 2024

Memorandum

To: Michael Brain
Principal Deputy Assistant Secretary for Water and Science

Darren Ash
Chief Information Officer

From: Nicki Miller
Acting Assistant Inspector General for Audits, Inspections, and Evaluations

Subject: Final Audit Report – *The U.S. Department of the Interior Is Making Progress in Its Management of Geospatial Data but Improvements Are Needed*
Report No. 2024-ER-003

This memorandum transmits our audit report on the U.S. Department of the Interior's progress in implementing the objectives of the Geospatial Data Act of 2018.

We will track open recommendations for resolution and implementation. We will notify Congress about our findings, and we will report semiannually, as required by law, on actions you have taken to implement the recommendations and on recommendations that have not been implemented. We will also post a public version of this report on our website.

If you have any questions about this report, please contact me at aie_reports@doioig.gov.

Contents

Results in Brief 1
Introduction 3
Objective 3
Background 4
Federal Government's Role and Use of Geospatial Data 4
DOI's Role in Geospatial Data 5
Prior Review of the Geospatial Data Act 7
Results of Audit 8
DOI's National Geospatial Data Assets Were Not Consistently Available on GeoPlatform 9
DOI's Bureaus Did Not Know How Much They Spent on Geospatial Data 11
DOI's National Geospatial Data Assets Did Not Include Important Data Fields 14
Other Matters 15
Conclusion and Recommendations 17
Conclusion 17
Recommendations Summary 17
Appendix 1: Scope and Methodology 20
Scope 20
Scope Limitation 20
Methodology 20
Appendix 2: Description of the U.S. Department of the Interior's NGDA Themes 21
Appendix 3: The U.S. Department of the Interior's Status in Meeting the Requirements of the Geospatial Data Act of 2018 22
Appendix 4: Availability of U.S. Department of the Interior Datasets on GeoPlatform 26
Appendix 5: Analysis of U.S. Department of the Interior NGDA Dataset Data Fields 29
Appendix 6: Responses to Draft Report 30
Appendix 7: Status of Recommendations 36

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Results in Brief

Objective

Our objective was to review the status of the U.S. Department of the Interior's (DOI's) compliance with geospatial data management in accordance with Geospatial Data Act of 2018 requirements for a biennial audit.[1]

Findings

We found that DOI continued to make progress in complying with 9 of the 13 agency responsibilities outlined in the Geospatial Data Act. However, we found deficiencies impacting 4 of the 13 responsibilities. Specifically:

- Collecting, maintaining, disseminating, and preserving geospatial data so that it can be readily shared with other Federal agencies and non-Federal users.
- Allocating resources to fulfill DOI's responsibilities and as necessary to support the Federal Geographic Data Committee activities.
- Using the geospatial data standards, including those for metadata, and other appropriate standards, as well as documenting geospatial data with the relevant metadata and making metadata available through GeoPlatform, the online geospatial data portal.
- Using geospatial information to make Federal geospatial information and services more useful to the public, enhance operations, support decision making, and enhance reporting to the public and to Congress.

DOI's progress to date has been hindered by several factors, including:

- DOI's National Geospatial Data Assets (NGDAs) were not consistently available on GeoPlatform.
- DOI's bureaus did not know how much they spent on geospatial data.
- DOI's NGDAs did not include important data fields.

We also noted that some of DOI's bureaus have geospatial datasets that could potentially be designated as NGDAs but are not. Specifically, we found that three of DOI's nine bureaus—the Bureau of Indian Affairs, Bureau of Reclamation, and Office of Surface Mining Reclamation and Enforcement—have geospatial datasets, but none are designated as NGDAs. Further, dataset managers may be reluctant to have their datasets added to the NGDA portfolio because it could potentially expose them and their respective bureaus to additional scrutiny and administrative burden.

Impact

DOI uses geospatial data to support its varied missions and to make decisions and direct resources when responding to disasters, tracking endangered species habitats, and promoting the health and welfare of Tribal communities. In addition, the Geospatial Data Act supports the goal of creating a National Spatial Data

[1] 43 U.S.C. § 2808(c).

Infrastructure (NSDI) with greater access and use of Government information and data. The Act notes that improved access to this information has spurred economic growth in many sectors, advanced scientific research, and promoted public access to federally funded services and data. The usefulness of the NSDI among the many activities that can depend on geospatial data is severely diminished if the content is not complete and maintained Nationwide. The issues we found with DOI's compliance with the Geospatial Data Act may prevent Federal agencies and non-Federal users from (1) accessing these datasets on GeoPlatform, (2) easily comparing DOI's allocation of resources to geospatial data responsibilities over time, and (3) using trusted analysis-ready data[2] to make decisions.

Recommendations

We make six recommendations to address DOI's deficiencies related to its Geospatial Data Act responsibilities.

[2] Analysis-ready data are datasets that have been responsibly collected, consistently processed to scientific standards, and reviewed so that analysis of the data yields clear, consistent, and error-free results to the greatest extent possible.

Introduction

Objective

The objective of our audit was to review the status of the U.S. Department of the Interior's (DOI's) compliance with geospatial data management in accordance with Geospatial Data Act of 2018 requirements for a biennial audit.[3] Specifically, § 2808(c) of the Act mandates that, not less than once every two years, the Office of Inspector General submit to Congress an audit of its agency's "collection, production, acquisition, maintenance, distribution, use, and preservation of geospatial data." To execute this requirement, we reviewed whether DOI fulfilled its 13 responsibilities as a covered agency:[4]

1. Preparing, maintaining, publishing, and implementing a strategy for advancing geographic information and related geospatial data and activities appropriate to agency mission, in support of National Spatial Data Infrastructure's (NSDI's) strategic plan prepared under 43 U.S.C. § 2804.

2. Collecting, maintaining, disseminating, and preserving geospatial data, such that the resulting data, information, or products can be readily shared with other Federal agencies and non-Federal users.

3. Promoting the integration of geospatial data from all sources.

4. Ensuring that data information products and other records created in geospatial data and activities are included on agency record schedules that have been approved by the National Archives and Records Administration.

5. Allocating resources to fulfill the responsibilities of effective geospatial data collection, production, and stewardship regarding related agency activities, and as necessary to support the Federal Geographic Data Committee (FGDC) activities.

6. Using the geospatial data standards, including those for metadata, and other appropriate standards, as well as documenting geospatial data with the relevant metadata and making metadata available through GeoPlatform.

7. Coordinating and working with other Federal agencies; agencies of State, Tribal, and local governments; institutions of higher education; and the private sector to efficiently and cost-effectively collect, integrate, maintain, disseminate, and preserve geospatial data, building on existing non-Federal geospatial data to the extent possible.

8. Using geospatial information to make Federal geospatial information and services more useful to the public, enhance operations, support decision making, and enhance reporting to the public and to Congress.

9. Protecting personal privacy and maintaining confidentiality according to Federal policy and law.

10. Determining, when applicable, whether declassified data can contribute to and become a part of the NSDI.

[3] 43 U.S.C. §§ 2801-2811.

[4] 43 U.S.C. § 2808(c)(2) requires review of compliance with the items listed in § 2808(a)(1-13). As discussed in Appendix 1, the Council of the Inspectors General on Integrity and Efficiency issued guidance that limited the scope of Geospatial Act audits. We adhered to this guidance.

11. Searching all sources, including GeoPlatform, to determine if existing Federal, State, local, or private geospatial data meet agency needs before expending funds for geospatial data collection.

12. Ensuring, to the maximum extent practicable, that a person receiving Federal funds for geospatial data collection provides high-quality data.

13. Appointing a contact to coordinate with the lead covered agencies for collection, acquisition, maintenance, and dissemination of the National Geospatial Data Asset (NGDA) themes the agency uses.

See Appendix 1 for our audit scope and methodology.

Background

Federal Government's Role and Use of Geospatial Data

According to the testimony of a DOI official at a 2009 congressional hearing[5] and a 2015 Government Accountability Office (GAO) report,[6] geospatial data—that is, data linked to specific geographic locations—play a critical role in decision making and ensure the United States can quickly and effectively respond to national priorities, including disaster and national security events; lead the world in global spatial infrastructure; and provide transparency and accountability to its citizens. The Federal Government collects, maintains, and uses geospatial data to support homeland security, respond to natural disasters, and track outbreaks of pandemics such as COVID-19.

Geospatial data are information tied to a location on the Earth, including the geographic location and characteristics of natural or constructed features and boundaries on the Earth, and are generally represented in vector datasets by points, lines, polygons, or other complex geographic features or phenomena.

A **dataset** is a structured collection of data generally associated with a unique body of work.

Geospatial data and technology are major Federal Government investments. The same GAO report noted that it is estimated that more than 80 percent of the data produced by Federal agencies have a geospatial component.

80

percent of data produced by Federal agencies have a geospatial component.

In addition, multiple Federal agencies provide services at the same geographic locations and may independently collect similar geospatial data about those locations, raising the question of how well the Federal Government coordinates its investments in geospatial data. Accordingly, in 1994, the President issued Executive Order No. 12906 to address concerns regarding wasteful duplication and incompatibility of geospatial data and to develop the NSDI.[7]

The **NSDI** includes the technology, policies, criteria, standards, and employees necessary to promote geospatial data sharing throughout the Federal Government; State, Tribal, and local governments; and the private sector.

[5] *Oversight Hearing on Fed. Geospatial Data Mgmt. Before the H.R. Comm. on Nat. Res., Subcomm. On Energy and Mineral Res.*, 111th Cong. 29 (2009) (Testimony of Karen C. Siderelis, U.S. Dep't of the Interior Geospatial Info. Officer and Acting Chair of the Fed. Geographic Data). Available at https://www.doi.gov/ocl/hearings/111/GeospatialDataManagement_072309.

[6] *Geospatial Data: Progress Needed on Identifying Expenditures, Building and Utilizing a Data Infrastructure, and Reducing Duplicative Efforts* (Report No. GAO-15-193), issued February 12, 2015. Available at https://www.gao.gov/assets/gao-15-193.pdf.

[7] Executive Order No. 12906, *Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure*, issued April 11, 1994.

The NSDI provides a structure to facilitate the efficient collection, sharing, and dissemination of geospatial data among all levels of government, the private sector, and the public. The NSDI consists of NGDA themes, standards, metadata, a clearinghouse (referred to as GeoPlatform or GeoPlatform.gov), and partnerships. The U.S. Office of Management and Budget (OMB) revised OMB Circular No. A-16, *Coordination of Geographic Information and Related Spatial Data Activities*, on August 19, 2002, to further describe the components of the NSDI and agency responsibilities for acquiring, maintaining, distributing, using, and preserving geospatial data.

In 2010, OMB provided supplemental guidance that further defined and clarified Circular A-16, focused on managing geospatial data as a capital asset, and established the concept of NGDAs, which are significant geospatial datasets designated by the FGDC Steering Committee. The guidance states that while there are many Federal geospatial datasets that are useful to Federal agencies, their business partners, stakeholders, and the public to varying degrees, only a select subset of these will rise to the significance required for NGDA dataset designation. The process of designating geospatial datasets as NGDAs starts with a recommendation by the relevant NGDA theme lead and progresses when the FGDC Coordination Group concurs. Finally, the FGDC Steering Committee designates geospatial datasets as NGDAs if they meet at least one of the following criteria: the dataset (1) is used by multiple agencies or agency partners such as State, Tribal and local governments; (2) supports Presidential priorities as expressed by an Executive Order or by OMB; (3) supports mission goals of multiple Federal agencies; or (4) is statutorily mandated.

The five components of the NSDI are:

NGDA themes: Topics of national significance as listed in OMB Circular No. A-16. Each data theme has a designated lead agency or agencies and consists of one or more NGDAs.

Standards: Common and repeatable rules or guidelines for the development, documentation, and exchange of NGDAs and other geospatial datasets.

Metadata: Information about datasets, such as content, source, accuracy, method of collection, and point of contact. Metadata are used to facilitate the search of and access to datasets within a data library or clearinghouse and enable potential users to determine the data's applicability for their use.

GeoPlatform: The searchable catalog of Federal and non-Federal geospatial data providing access to NGDAs and other geospatial datasets. It is the authoritative source for NGDAs. Executive Order No. 12906 and OMB Circular No. A-16 require Federal agencies to identify their existing and planned geospatial investments and to search GeoPlatform to see if the data exists before expending funds on new geospatial data.

Partnerships: All stakeholders (e.g., Federal, Tribal, State, and local governments, as well as academic institutions) should be involved in the development of the NSDI.

DOI's Role in Geospatial Data

DOI has a unique role, both as a leader and contributor, in the Federal collection, maintenance, and management of geospatial data.

DOI was designated as a leader in Federal geospatial data management when, in 1990, OMB Circular No. A-16 established DOI as chair of the FGDC, the interagency committee created to promote the coordinated development, use, sharing, and dissemination of surveying, mapping, and related geospatial data. Currently, the FGDC has 32 members, who are representatives from the Executive Office of the President and Cabinet-level and independent Federal agencies. The FGDC's responsibilities include:

- Leading the development and management of and operational decision making for the NSDI strategic plan and Federal geospatial data policy.
- Establishing additional cross-government policies and guidelines on how FGDC agencies collaboratively implement Federal geospatial policies.
- Engaging with other coordinating bodies responsible for implementing Federal data laws and policies.
- Engaging in ongoing strategic planning to ensure continued investment of resources in high-value programs, activities, and technologies for the advancement of the NSDI.

Example of DOI's Use of Geospatial Data

The National Park Service (NPS) has been using terrestrial light detection and ranging (LiDAR) scanning technology to noninvasively measure the volume, length, height, and girth of wild bears at the Katmai National Park and Preserve in Alaska to help determine the state of the bears' preparation for the coming winter hibernation. Every fall, the park hosts "Fat Bear Week," to celebrate bear weights and involve the public. Figure 1 shows Holly, a perennial Fat Bear Week favorite and 2019 winner, and her weight gain through the summer season.

Figure 1: Examples of Bear Weight Tracking

Source: NPS.

In addition, both OMB Circular No. A-16 and the Geospatial Data Act designate the Secretary of the Interior as the Chairperson of the FGDC, who in 2023 delegated the role to DOI's Principal Deputy Assistant Secretary for Water and Science. The Act also requires that the FGDC operate GeoPlatform, and the FGDC Chair designated DOI as the managing partner for GeoPlatform. Additionally, DOI's U.S. Geological Survey (USGS) houses the FGDC Office of the Secretariat, which provides administrative, strategic planning, funding, and technical support to the FGDC.

DOI is also a contributor of Federal geospatial data, as the Geospatial Data Act designates it as a "covered agency," which is an executive department that collects, produces, acquires, maintains, distributes, uses, or preserves geospatial data on paper or in electronic form to fulfill its mission, either directly or through a relationship with another organization. DOI is responsible for 59 NGDAs (or 35 percent of the NGDA portfolio) and 9 NGDA themes, representing 50 percent of the NGDA portfolio (see Appendix 2). Geospatial data supports critical missions across DOI, including:

- Managing and protecting lands and natural resources.
- Overseeing wildland fire and post-fire Burned Area Emergency Response.
- Monitoring hurricane recovery and land changes.
- Conducting computational modeling of topography-influenced volcano hazards, such as lahars (volcanic mudflows) that can travel downstream and affect nearby populated areas.
- Completing emergency management planning for dam-break scenarios.
- Providing habitat information in support of the Endangered Species Act.
- Locating and recording historic properties, such as archeological sites and historic structures.
- Generating maps for studies and special projects, such as reservoir operations pilot projects, feasibility studies, and planning studies.

Prior Review of the Geospatial Data Act

In September 2022, we issued our second report[8] on DOI's progress implementing the Geospatial Data Act's objectives. We found DOI made progress in meeting 10 of the 13 Geospatial Data Act requirements we evaluated. However, we found the process of populating DOI's NGDA left some datasets with no metadata or inaccurate metadata, and bureaus were not ensuring datasets were properly harvested and accurate on Data.gov and GeoPlatform. Further, we found that the Office of the Chief Information Officer's (OCIO's) senior agency official for geospatial information did not ensure that bureaus implemented policies for acquisition and management of geospatial data; some bureaus did not have policies, procedures, or controls in place to ensure they complied with the Act's requirement to search all sources for geospatial data, including GeoPlatform; and one bureau did not require staff to check the quality of all geospatial data provided by a third party.

We made nine recommendations to DOI to promote compliance with the requirements of the Geospatial Data Act. In response to our recommendations, DOI updated the financial assistance policy on geospatial data in March 2023, issued an internal control memorandum in July 2023, and issued a memorandum in December 2023 directing the bureaus and offices to verify that data contain appropriate metadata. As a result, we closed all nine recommendations.

[8] *The U.S. Department of the Interior Needs To Continue To Strengthen Governance Practices To Improve Its Management of Geospatial Data* (Report No. 2022-CGD-026), issued September 26, 2022. Available at https://www.doioig.gov/sites/default/files/2021-migration/Final Audit Report_GeospatialData_Public.pdf.

Results of Audit

We found that DOI has continued to make progress in complying with 9 of the 13 agency responsibilities outlined in the Geospatial Data Act. Specifically, we found that DOI has made progress in fulfilling the following covered agency responsibilities:

- Preparing, maintaining, publishing, and implementing a strategy for advancing geographic information.
- Promoting the integration of geospatial data from all sources.
- Ensuring that data information products and other records created in geospatial data and activities are included on agency record schedules.
- Coordinating with other Federal agencies; agencies of State, Tribal, and local governments; institutions of higher education; and the private sector.
- Protecting personal privacy and maintaining confidentiality.
- Determining, when applicable, whether declassified data can contribute to and become a part of the NSDI.
- Searching all sources to determine if existing geospatial data meet DOI needs before expending funds for geospatial data collection.
- Ensuring, to the maximum extent practicable, that a person receiving Federal funds for geospatial data collection provides high-quality data.
- Appointing a contact to coordinate with the lead covered agencies for collection, acquisition, maintenance, and dissemination of the NGDA themes used by DOI.

However, we found deficiencies impacting 4 of the 13 responsibilities. Specifically, the following covered agency responsibilities:

- Collecting, maintaining, disseminating, and preserving geospatial data so that it can be readily shared with other Federal agencies and non-Federal users.
- Allocating resources to fulfill DOI's responsibilities and as necessary to support the FGDC activities.
- Using the geospatial data standards, including those for metadata, and other appropriate standards, as well as documenting geospatial data with the relevant metadata and making metadata available through GeoPlatform, the online geospatial data portal.
- Using geospatial information to make Federal geospatial information and services more useful to the public, enhance operations, support decision making, and enhance reporting to the public and to Congress.

DOI's progress to date has been hindered by several factors, including:

- DOI's NGDAs were not consistently available on GeoPlatform.
- DOI's bureaus did not know how much they spent on geospatial data.
- DOI's NGDAs did not include important data fields.

We also noted that some of DOI's bureaus have geospatial datasets that could potentially be designated as NGDAs but are not. Specifically, we found that three of DOI's nine bureaus—the Bureau of Indian Affairs (BIA), Bureau of Reclamation (BOR), and Office of Surface Mining Reclamation and Enforcement (OSMRE)—have geospatial datasets, but none are designated as NGDAs. In its April 2023 report,[9] the National Geospatial Advisory Committee concluded that "the process for identifying NGDAs resulted in a number of datasets that are not truly foundational." DOI OCIO's senior agency official for geospatial information told us that dataset managers may be reluctant to have their datasets added to the NGDA portfolio because it could potentially expose them and their respective bureaus to additional scrutiny and administrative burden. The usefulness of the National Spatial Data Infrastructure (NSDI) relies on a portfolio of foundational NGDAs, which are high-priority and considered critical for meeting the needs of government and stakeholders. It may be beneficial for DOI to reexamine its process for identifying potential significant datasets and bringing them to the NGDA theme leads and FGDC Steering Committee to maximize the utility and benefits of the NSDI. Appendix 3 provides a summary of DOI's status in meeting the responsibilities.

DOI's National Geospatial Data Assets Were Not Consistently Available on GeoPlatform

One of DOI's responsibilities as a leader in the management of geospatial data and in its role as Chair of the FGDC and managing partner of GeoPlatform is to ensure that GeoPlatform provides access to NGDAs.

Additionally, the Geospatial Data Act includes several responsibilities for DOI in its role as a "covered agency" to promote the coordinated use, sharing, and dissemination of geospatial data Nationwide, including requiring:

- Collecting, maintaining, disseminating, and preserving geospatial data, such that the resulting data, information, or products can be readily shared with other Federal agencies and non-Federal users.[10]
- Making metadata available through GeoPlatform.[11]
- Using geospatial information to make Federal geospatial information and services more useful to the public, enhance operations, support decision making, and enhance reporting to the public and to Congress.[12]

NGDAs are geospatial datasets that are designated by the FGDC Steering Committee and meet certain criteria. They are **managed as the Federal NGDA portfolio**. Within the portfolio, NGDAs are organized by NGDA themes.[13] According to the FGDC, as of March 2024, the Federal Government's NGDA portfolio consisted of 18 NGDA themes (and approximately 171 associated NGDAs). **DOI is responsible for 59 NGDAs and 9 NGDA themes**.

DOI's bureaus are responsible for ensuring NGDAs are available on DOI's data inventory website, which flows automatically to Data.gov[14] on a weekly basis, and then finally on to GeoPlatform each day (see Figure 2).

[9] National Geospatial Advisory Committee, *Evaluation of Geospatial Data Act Implementation High Level Summary* (April 2023), https://www.fgdc.gov/ngac/meetings/april-2023/ngac-paper-evaluation-of-gda-implementation-april.pdf.

[10] 43 U.S.C. § 2808(a)(2).

[11] *Id.* § 2808(a)(6).

[12] *Id.* § 2808(a)(8).

[13] According to the FGDC website, the NGDA Management Plan implemented the portfolio management process and was approved in 2014. Available at https://www.fgdc.gov/initiatives/ngda-management-plan.

[14] Data.gov is the Federal Government's open data site managed and hosted by the U.S. General Services Administration.

Figure 2: Data Flow from DOI to GeoPlatform

We found DOI's NGDAs were not consistently available on GeoPlatform. Specifically, in February 2024, we identified a total of 59 NGDAs across 6 bureaus—the Bureau of Land Management (BLM), Bureau of Ocean Energy Management (BOEM), Bureau of Safety and Environmental Enforcement (BSEE), U.S. Fish and Wildlife Service (FWS), NPS, and USGS. We found that more than half of the datasets were not available on GeoPlatform. Our team tried to locate them by using the NGDA portfolio[15] link to GeoPlatform and searching GeoPlatform by the NGDA's title (the name of that dataset). (The results of our testing are described in more detail in Appendix 4.) Specifically, during our first test in February 2024, 32 of the 59 NGDAs (or 54 percent) were unavailable on GeoPlatform when we searched for them.

We performed a second test in April 2024 and found that NGDA availability improved to only 12 percent of datasets unavailable; our work indicated that this is a persistent issue. For example, we noted similar issues in our fiscal year (FY) 2022 report[16] when we found at that time that 11 of DOI's NGDAs (18 percent) were not available on GeoPlatform. Additionally, an OCIO official told us during our audit that it is not uncommon for datasets to be available on GeoPlatform "one day and gone the next."

The issues with NGDA availability occurred due to technical issues with the automated flow of DOI's data. Our testing appears to confirm issues with the flow of data from Data.gov to GeoPlatform as most (84 percent) of the 31 NGDAs that were unavailable on GeoPlatform were available on both DOI's data inventory and Data.gov.

OCIO's senior agency official for geospatial information told us that the automated data flow from Data.gov to GeoPlatform "is more fragile than anticipated and has never been consistent for a multitude of reasons." Additionally, representatives from the FGDC told us that broken links to metadata through GeoPlatform and Data.gov are a systemic issue. They provided some examples of issues that can occur that prevent NGDAs from being found on GeoPlatform:

- Changes to NGDA titles when they are published in Data.gov, which causes Data.gov to republish the metadata with a new URL (or web address).
- Errors during the ingestion process, which is the process of capturing the current state of the original dataset source and making additions, updates, and deletions accordingly.
- Data inconsistencies.
- Differences between the Data.gov and GeoPlatform systems (such as system schedules, requirements and upgrades, and security patching).

FGDC representatives told us that, in the past, GeoPlatform technical staff would work with agencies to identify issues with their datasets and correct the links; however, it was a manual process that required significant

[15] A website with the official list of NGDAs endorsed by the FGDC with links to each dataset's metadata in Data.gov and GeoPlatform.gov. Available at https://ngda-portfolio-community-geoplatform.hub.arcgis.com/pages/portfolio.

[16] Report No. 2022-CGD-026.

personnel resources. FGDC told us that this approach was not beneficial because the level of effort required was beyond the resources available to address the issues.

The Federal Government spends millions of dollars each year to operate GeoPlatform, but issues with the flow of data may prevent Federal agencies and non-Federal users from accessing these datasets, thereby hindering the FGDC's goal of providing access to geospatial data and metadata for geospatial data to the general public. If DOI's NGDAs are not consistently available on the GeoPlatform, users of geospatial data may be unable to determine if DOI's geospatial data meet their needs before expending funds for geospatial data collection. Further, this may result in the misdirection of resources, which may in turn adversely affect mission outcomes.

Recommendations

We recommend that the Principal Deputy Assistant Secretary for Water and Science, as the delegated Federal Geographic Data Committee Chair:

1. Conduct an analysis to identify the root cause(s) of the geospatial dataset unavailability on GeoPlatform.
2. Conduct an analysis to determine the costs, benefits, and feasibility of resolving the root causes identified with GeoPlatform.
3. Implement appropriate changes based on the root cause and cost benefit analyses to address dataset availability issues.

DOI's Bureaus Did Not Know How Much They Spent on Geospatial Data

The Geospatial Data Act requires DOI to allocate resources to fulfill the responsibilities of effective geospatial data collection, production, and stewardship with regard to related DOI activities and as necessary to support FGDC activities.[17]

DOI cannot be assured that resources are allocated in a way that most effectively meets the responsibilities established by the Geospatial Data Act without expenditure data on the collection, production, and stewardship of geospatial data. We found DOI's bureaus were unable to report how much they have spent on geospatial data. Specifically, out of the nine bureaus we reviewed, six bureaus (BIA, BOEM, BOR, BSEE, NPS, and USGS) were unable to provide us an estimate of their total expenditures related to geospatial data collection, production, and stewardship. The other three bureaus (BLM, FWS, and OSMRE) provided estimates but stated that identifying these expenditures was extremely challenging or expenditure information was not readily available. We summarize the bureaus' responses to our questionnaires in Figure 3.

[17] 43 U.S.C. § 2808(a)(5).

Figure 3: Bureau Responses on Geospatial Data Spending

Bureau	Information on Estimated Expenditures	Examples of Geospatial Activities
BIA	No estimate given.	Managing aerial imagery and LiDAR to support orphaned well projects.
BLM	Provided estimate but stated that identifying geospatial expenditures is extremely challenging.	Developing and maintaining BLM's Geospatial Business Platform, enterprise geographic information systems (GIS), and data management staff.
BOEM	No estimate given, as total expenditures for audit period could not be produced. In FY 2022, BOEM consolidated its process for categorizing expenditures to include a code to capture Geospatial Data Act activities and costs. Implementation of the codes began in mid-FY 2023, so FY 2024 will be the fiscal year where they are used fully.	Managing BSEE/BOEM Technical Information Management System GIS and Alaska Office GIS Portal and custom applications.
BOR	No estimate given. Resources allocated to support geospatial data at multiple levels, including field, regional, and national.	Managing enterprise GIS systems, specifically BORGIS and BORGIS Cloud.
BSEE	No estimate given. Resources not allocated or tracked specifically for geospatial functions but rather as part of regular mission duties.	Managing datasets for Outer Continental Shelf oil and natural gas wells, pipelines, and platforms.
NPS	No estimate given.	Managing one NGDA theme.
OSMRE	Provided an estimate but reported it needed more time to collect information on geospatial expenditures.	Managing contracts for aerial imagery and LiDAR.
FWS	Provided an estimate and stated staff at the field level perform most of the geospatial work (usually as other duties as assigned).	Managing enterprise GIS systems, national geospatial staff, and other shared costs.
USGS	No estimate given. Resources not collected or reported by NGDA themes.	Managing 6 NGDA themes and 24 NGDAs.

The issue of identifying geospatial-related expenditures is a longstanding problem as evidenced by a 2015 GAO report on geospatial data[18] that stated, "identifying the cost of geospatial data has been an ongoing problem for the Federal government." It further stated that "OMB and Interior have tried to estimate the amount spent on geospatial data and systems, but the estimates are either old or not comprehensive." The GAO report identified three mechanisms agencies use to collect geospatial cost information: (1) individual agency estimates, (2) agency IT investment and planning data provided to OMB as part of the budget process, and (3) data from USAspending.gov.[19] However, GAO concluded that each of these mechanisms had limitations and understated geospatial investment costs.

[18] Report No. GAO-15-193.

[19] A website that includes data on Federal contract, grant, and assistance awards.

Based on bureau responses to our questionnaire, we determined that DOI's bureaus do not know how much is spent on geospatial data because they do not collect, track, or report on resources specifically for geospatial functions (see summary of responses in Figure 3, column titled "Information on Estimated Expenditures"). Bureaus reported that the capture, management, and usage of geospatial data is often done by multiple people as part of regular mission duties or other duties as assigned in various program offices.

The Federal IT Dashboard[20] collects data on Federal agency IT investments, including geospatial data and planning data to provide to OMB as part of the budget process, which allows agencies and the public to view these details online and to track their progress over time. Based on our search of the dashboard, DOI reported about $160 million in spending for geospatial investments in FY 2023. We asked OCIO about the completeness and reliability of this amount, and officials responsible for managing DOI's IT portfolio told us that geospatial-related investment information may be grouped with other investments, which could inadvertently hide the geospatial investment costs. The same officials also told us the cost of acquiring geospatial data is not included in the investment costs presented on the dashboard. In addition, these officials told us the data on the dashboard generally represent estimated (not actual) planning and budget amounts, and bureaus are responsible for manually reporting and updating cost information. However, as we previously discussed, the bureaus do not collect, track, or report on resources specifically for geospatial functions. Additionally, GAO's report[21] on geospatial data concluded that the data on the Federal IT Dashboard were not comprehensive because agencies did not categorize all applicable investments as geospatial investments.

In addition to the Federal IT Dashboard reporting, Federal agencies are required by law to disclose each contract, cooperative agreement, grant, or other transaction that deals with geospatial data, which may include posting the information on USAspending.gov.[22] In our prior review, we searched USAspending.gov for geospatial-related costs and reported that DOI had obligated approximately $100 million a year from 2020 through 2022 to purchase geospatial data and services from third-party contractors. We concluded that this figure also is not comprehensive because it includes only contracts for geospatial data and not DOI's internal costs for geospatial data and programs.

The bureaus, therefore, were unable to provide the information necessary for us to review DOI's compliance with the requirement to allocate resources to fulfill geospatial data responsibilities. Further, we were unable to compare DOI's allocation of resources to geospatial data responsibilities over time. Incomplete and unreliable information on the cost of investments in geospatial data may lead to misdirection of resources, which may in turn adversely affect mission outcomes.

Recommendations

We recommend that the Office of the Chief Information Officer:

4. Develop and implement a methodology for the bureaus to identify all DOI geospatial-related costs to ensure consistency.

5. Direct the bureaus to track all geospatial-related costs using the methodology developed in Recommendation 4 and report these costs to the Office of the Chief Information Officer annually.

[20] The IT Dashboard is a public, Federal Government website administered by the General Services Administration for Federal agencies to better plan and manage IT investments and for the public to better understand these investments. Available at https://itdashboard.gov.

[21] Report No. GAO-15-193.

[22] 43 U.S.C. § 2808(b)(3).

DOI's National Geospatial Data Assets Did Not Include Important Data Fields

The Geospatial Data Act requires DOI to use geospatial data standards, including those for metadata, and other appropriate standards, as well as document geospatial data with the relevant metadata and make metadata available through GeoPlatform.[23]

Metadata is information about datasets, such as content, source, accuracy, method of collection, and point of contact that is used to facilitate the search of and access to datasets and enable potential users to determine the data's applicability for their use.

The FGDC has not yet published or endorsed geospatial data standards but has outlined best practices for creating geospatial metadata and specifies metadata content recommendations in the document, *FGDC Technical Guidance: Data.gov and The GeoPlatform Metadata Recommendations, Including Guidelines for National Geospatial Data Assets (NGDA)*. The guidance is designed to support implementation of the Geospatial Data Act and support metadata publishers in developing rich metadata content that will enhance the discovery of resources within Data.gov and GeoPlatform and enable the utility of the results within GeoPlatform. The technical guidance document includes a checklist meant to facilitate integration of datasets into Data.gov and GeoPlatform. The checklist summarizes the NGDA metadata content best practices for data fields such as the NGDA's title, important dates (citation, metadata), point of contact information, URLs, and keywords (see Figure 4).

Figure 4: Descriptions of Metadata Data Fields From FGDC's Technical Guidance

Field	Description
Title	A good title is descriptive and distinctive. It provides users a good sense of the resource content and context and enables them to distinguish among similar resources.
Dates	Dates enable machines to improve search results and users to determine the relevancy and "fitness for use" of the resource. There are numerous options within the metadata record to record different date values.
Keywords	Keywords identify resources of highest interest to users. Users and machines are best able to discern, differentiate, and distinguish the resources when presented with a rich set of accurate keywords. Additionally, NGDA keywords facilitate the identification of the data as an NGDA resource.
Contact Info	Point of contact information directs users to a single point of inquiry regarding the dataset.
Links	Direct links (or URLs) to datasets provide users access to available resources and associated information.

We found that DOI's NGDA data fields annotated on GeoPlatform were inconsistent with the guidance. For each DOI NGDA, we performed 12 tests related to the 5 metadata data fields above and found that approximately 61 percent of the NGDAs were missing important data fields that could improve users' ability to find and access them. For example, some of these NGDAs were missing keywords that identified them as NGDAs, such as "National Geospatial Data Asset" and the NGDA ID ("NGDA###") (see Appendix 5).

This occurred because the FGDC has not published or endorsed geospatial data standards, including those for metadata, since the passage of the Geospatial Data Act in 2018. Further, the most recent revision of the technical guidance document (December 2022) included a statement that the document provides best

[23] 43 U.S.C. § 2808(a)(6).

practices only and is not intended as policy that agencies must comply with or use for audit purposes. The FGDC told us it previously had an active review and approval process for geospatial data standards, but it implemented a pause in 2018 in relation to policy endorsement to assess the Act's requirements and to coordinate with Federal and non-Federal organizations to develop plans and actions that align with the requirements. Although the FGDC stated that many geospatial data standards it had approved prior to the passage of the Geospatial Data Act remain in use and continue to provide value and improve interoperability, the FGDC noted that it "has not established standards since the enactment of the Geospatial Data Act." The FGDC provided us with a draft timeline showing that it intends to endorse initial Federal standards by September 2024 with additional refinements, reviews, and endorsements continuing into April 2025.

To achieve the maximum return on investment and impact, Federal geospatial data and services must be easily accessible to all users. Documenting geospatial data resources robustly is also a data management and stewardship best practice based on the principles of FAIR (Findable, Accessible, Interoperable, and Reusable).[24] According to the FGDC, following these principles allows data users to proceed directly from raw data discovery to analysis-ready data to decision-ready information in a reproducible, trusted fashion. Until DOI ensures it supplies all metadata in a format consistent with the existing guidance, users may be unable to uniquely identify each NGDA and obtain relevant search results on desired geospatial themes, topics, features, and locations. This is critical in emergency situations where data needs to be discovered, trusted, integrated, analyzed, visualized, and shared—usually with little notice—to save lives, to preserve the environment, and to expend money wisely.

Recommendation
We recommend that the Office of the Chief Information Officer: 6. In the absence of Federal Geographic Data Committee standards, identify relevant best practices and develop requirements for specific data fields for National Geospatial Data Assets in alignment with best practices.

Other Matters

During the course of our review, we also noted that some of DOI's bureaus have geospatial datasets that could potentially be designated as NGDAs but are not. Specifically, we found that three of DOI's nine bureaus (BIA, BOR, and OSMRE) have geospatial datasets, but none are designated as NGDAs. For example, BOR reported to us that it allocates resources to support geospatial data management activities and the BOR Geographic Information System (BORGIS), a geospatial data management system used to create, store, maintain, analyze, retrieve, and deliver geospatial data required by BOR programs and offices to conduct and support its mission. Although BOR reported it had this system and a database to enable BOR staff to find and use GIS applications, sites, and information, none of BOR's geospatial datasets are designated as an NGDA. Additionally, the DOI OCIO's Geospatial Information Officer told us that dataset managers may be reluctant to have their datasets added to the NGDA portfolio because it could potentially expose them and their respective bureaus to additional scrutiny and administrative burden.

As noted previously, the process of designating geospatial datasets as NGDAs starts with a recommendation by the relevant NGDA theme lead and progresses until the FGDC Steering Committee designates the dataset

[24] A consortium of scientists and organization defined the FAIR principles in a March 2016 paper in *Scientific Data*—a peer-reviewed open-access journal for descriptions of datasets and research that advances the sharing and reuse of research data. GeoPlatform provides a conformance checklist that assesses metadata records' compliance with FAIR rules (available at https://kb.geoplatform.gov/gp-faq/fair-insights.html).

as an NGDA. The National Geospatial Advisory Committee[25] recommended in its April 2023 report[26] that the FGDC reexamine the process for identifying NGDAs citing that "the process for identifying NGDAs resulted in a number of datasets that are not truly foundational and cannot be maintained across all stakeholders."

The usefulness of the NSDI is severely diminished if the content is not complete and maintained Nationwide. Quickly responding to natural disasters (e.g., floods, hurricanes, and fires) is one of the many activities that can depend on geospatial data. In its report, the National Geospatial Advisory Committee noted that critical gaps in data coverage go unfulfilled across the Nation, and in some cases, the data are misaligned and do not answer the pressing questions that need to be answered. It may be beneficial for DOI to reexamine its process for identifying potential significant datasets and bringing them to the NGDA theme leads and FGDC Steering Committee to maximize the NSDI's usefulness.

[25] The National Geospatial Advisory Committee was established by the Geospatial Data Act to provide advice and recommendations to the FGDC.

[26] *Evaluation of Geospatial Data Act Implementation High Level Summary*.

Conclusion and Recommendations

Conclusion

DOI is a major user, producer, provider, and buyer of geospatial data. DOI uses geospatial data to support its many missions and to make decisions and direct resources when responding to disasters, tracking endangered species habitats, and promoting the health and welfare of Tribal communities. DOI also manages GeoPlatform, an online portal providing access to available geospatial data from Federal and non-Federal sources.

In addition, the Geospatial Data Act supports the goal of creating an NSDI and notes that greater access and use of Government information and data has spurred economic growth in many sectors, advanced scientific research, and promoted public access to federally funded services and data. The usefulness of the NSDI among the many activities that can depend on geospatial data is severely diminished if the content is not complete and maintained Nationwide.

Although we found that DOI has continued to make progress in fulfilling the Geospatial Data Act responsibilities we reviewed, we also found that DOI's NGDAs were not consistently available on GeoPlatform, DOI's bureaus did not know how much they spent on geospatial data, and DOI's NGDAs did not include important data fields. The issues we found with DOI's progress in fulfilling the Geospatial Data Act's responsibilities may prevent Federal agencies and non-Federal users from accessing these datasets on GeoPlatform, easily comparing DOI's allocation of resources to geospatial data responsibilities over time, and using trusted analysis-ready data to make decisions. To achieve the maximum benefit and return on investment, Federal geospatial activities and data must be easily accessible to all users.

Recommendations Summary

We provided a draft of this report to DOI's Principal Deputy Assistant Secretary for Water and Science and DOI's OCIO for review. DOI and OCIO concurred with all six recommendations. We consider all recommendations resolved. We determined that Recommendations 1 through 5 are significant and will be reported as such in our semiannual report to Congress in accordance with the Inspector General Act.[27] Below we summarize DOI's responses to our recommendations, as well as our comments on its responses. See Appendix 6 for the full text of DOI's responses; Appendix 7 lists the status of each recommendation.

We recommend that the Principal Deputy Assistant Secretary for Water and Science, as the delegated Federal Geographic Data Committee Chair:

1. Conduct an analysis to identify the root cause(s) of the geospatial dataset unavailability on GeoPlatform.

   DOI Response: DOI concurred with our recommendation and stated that the FGDC "will work with DOI, who is the GeoPlatform Managing Partner, to conduct an analysis and identify the root cause(s) of the DOI National Geospatial Data Assets dataset unavailability on GeoPlatform." DOI identified the FGDC Executive Director as the official responsible for recommendation implementation. The target date for implementation is May 31, 2025.

[27] The Inspector General Act of 1978, 5 U.S.C. § 405(b), requires inspectors general to prepare semiannual reports summarizing OIG activities during the immediately preceding six-month periods ending March 31 and September 30. It also states that these semiannual reports should include an identification of each "significant recommendation" described in previous semiannual reports on which corrective action has not been completed.

OIG Comment: Based on DOI's response, we consider this recommendation resolved. It will be implemented when DOI provides us with documentation showing that it has conducted analysis to identify the root cause(s) of the geospatial dataset unavailability on GeoPlatform.

2. Conduct an analysis to determine the costs, benefits, and feasibility of resolving the root causes identified with GeoPlatform.

   DOI Response: DOI concurred with our recommendation and stated that the "FGDC will work with DOI, who is the GeoPlatform Managing Partner, to determine the costs, benefits, and feasibility of resolving the root causes identified with GeoPlatform." DOI identified the FGDC Executive Director as the official responsible for recommendation implementation. The target date for implementation is July 30, 2025.

   OIG Comment: Based on DOI's response, we consider this recommendation resolved. It will be implemented when DOI provides us with documentation showing that it has conducted analysis to determine the costs, benefits, and feasibility of resolving the root causes identified with GeoPlatform.

3. Implement appropriate changes based on the root cause and cost benefit analyses to address dataset availability issues.

   DOI Response: DOI concurred with our recommendation and stated that the "FGDC will work with DOI, who is the GeoPlatform Managing Partner, to implement appropriate changes based on the root cause, cost benefit analyses, and feasibility to address dataset availability issues pending availability of funding." DOI identified the FGDC Executive Director as the official responsible for recommendation implementation. The target date for implementation is September 30, 2025.

   OIG Comment: Based on DOI's response, we consider this recommendation resolved. It will be implemented when DOI provides us with documentation showing that dataset availability issues on GeoPlatform have been addressed.

We recommend that the Office of the Chief Information Officer:

4. Develop and implement a methodology for the bureaus to identify all DOI geospatial-related costs to ensure consistency.

   OCIO Response: OCIO concurred with our recommendation and stated that it "will adapt the current IT portfolio management process to accommodate the identification of investments in geospatial capabilities. The updated IT portfolio management process will annually report geospatial capabilities spending across [DOI]." OCIO identified the Chief Data Officer and the Deputy Chief Information Officer for the Program Management Division as the officials responsible for recommendation implementation. The target date for implementation is April 25, 2025.

   OIG Comment: Based on OCIO's response, we consider this recommendation resolved. It will be implemented when OCIO provides us with documentation showing that it developed and implemented a methodology for the bureaus to identify DOI geospatial-related costs.

5. Direct the bureaus to track all geospatial-related costs using the methodology developed in Recommendation 4 and report these costs to the Office of the Chief Information Officer annually.

   OCIO Response: OCIO concurred with our recommendation and stated that it "will issue direction to [DOI] bureaus and offices to report geospatial spending through the process identified in Recommendation 4." OCIO identified the Chief Data Officer and the Deputy Chief Information Officer for the Program Management Division as the officials responsible for recommendation implementation. The target date for implementation is June 2, 2025.

OIG Comment: Based on OCIO's response, we consider this recommendation resolved. It will be implemented when OCIO provides us with documentation showing that it directed the bureaus to use its methodology to track DOI geospatial-related costs.

6. In the absence of Federal Geographic Data Committee standards, identify relevant best practices and develop requirements for specific data fields for National Geospatial Data Assets in alignment with best practices.

   OCIO Response: OCIO concurred with our recommendation and stated that the "Office of the Chief Data Officer will update the Enterprise Data Inventory (EDI) Metadata Standard Documentation to address NGDAs" and that the update will address standardization of keywords to assist in identifying geospatial data records through the EDI and other Federal data catalogs including GeoPlatform. OCIO identified the Chief Data Officer as the official responsible for recommendation implementation. The target date for implementation is June 2, 2025.

   OIG Comment: Based on OCIO's response, we consider this recommendation resolved. It will be implemented when OCIO provides us with documentation showing that it developed requirements for specific data fields for NGDAs.

Appendix 1: Scope and Methodology

Scope

We audited the status of the U.S. Department of the Interior's (DOI's) compliance with the management of geospatial data as defined by the Geospatial Data Act of 2018,[28] specifically focusing on DOI's actions between January 2022 and January 2024. This Act requires the Office of Inspector General to report on the agency's collection, production, acquisition, maintenance, distribution, use, and preservation of geospatial data according to the responsibilities set forth in the Act (see the "Background" section of this report).

Scope Limitation

In November 2023, the Council of the Inspectors General on Integrity and Efficiency (CIGIE) issued a letter to the U.S. Congress narrowing the scope of the fiscal year (FY) 2024 report to exclude 2 of the 15 requirements (43 U.S.C. § 2808(c)(1) and (3)).[29] CIGIE excluded covered agency compliance with data standards and limitation on using public funds for geospatial data management activities because the standards used to evaluate compliance are unclear and because Federal law establishes a five-year period to implement data standards before limiting the use of public funds for noncompliant activities. CIGIE's unified approach also provides latitude for the Office of Inspector General to define audit procedures.

Methodology

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

To audit DOI's geospatial data management, we interviewed DOI's chief data officer and representatives from the Federal Geographic Data Committee (FGDC) and reviewed documentation related to DOI's compliance with the Geospatial Data Act. To determine DOI's compliance, we reviewed nine DOI bureaus, which all have responsibilities for geospatial data:

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Ocean Energy Management
- Bureau of Reclamation
- Bureau of Safety and Environmental Enforcement
- National Park Service
- Office of Surface Mining Reclamation and Enforcement
- U.S. Fish and Wildlife Service
- U.S. Geological Survey

[28] 43 U.S.C. §§ 2801-2811.

[29] In October 2021, CIGIE issued a letter to Congress narrowing the scope of the FY 2022 report to exclude 2 of the 15 responsibilities (43 U.S.C. § 2808(c)(1) and (3)).

We assessed whether internal control was significant to the audit objective. We determined that DOI's control activities, information, communications, and monitoring and the following principles were significant to the audit objectives:

- Management should establish an organizational structure, assign responsibility, and delegate authority to achieve the entity's objectives.
- Management should design control activities to achieve objectives and respond to risks.
- Management should implement control activities through policies.
- Management should use quality information to achieve the entity's objectives.
- Management should internally communicate the necessary quality information to achieve the entity's objectives.
- Management should externally communicate the necessary quality information to achieve the entity's objectives.
- Management should establish and operate monitoring activities to monitor the internal control system and evaluate the results.
- Management should remediate identified internal control deficiencies on a timely basis.

We relied on the chief data officer and the bureaus to provide written responses and evidence of their performance with the objectives we reviewed. To accomplish our objectives, we:

- Reviewed relevant criteria, such as the Geospatial Data Act of 2018, Office of Management and Budget Circular A-16, and Executive Order No. 12906.
- Reviewed FGDC guidance published at FGDC.gov.
- Identified data content fields from the FGDC best practices guidance that were most critical to a user's ability to find a given data resource and tested for the dataset's GeoPlatform content to ensure consistency with FGDC best practices.
- Reviewed DOI and bureau policies and memoranda related to the management and oversight of geospatial data.
- Searched geospatial data on Geoplatform.gov and Data.gov.
- Reviewed the position description and nomination documentation for the chief data officer as DOI's senior agency official for geospatial information.
- Reviewed evidence of geospatial data collaboration activities, such as memoranda of understanding.
- Examined privacy impact assessments.
- Reviewed documentation citing examples of DOI's use of geospatial data.
- Reviewed agency and bureau budget data related to IT, including geospatial data, collection, production, and stewardship.

During our audit, we obtained information from Geoplatform.gov, Data.gov, and DOI's data inventory website. We conducted limited data reliability testing related to dataset availability. Specifically, we gained an understanding of the three websites, tested the existence of the datasets listed on GeoPlatform, and compared the information on Geoplatform.gov to Data.gov and DOI's data inventory website. We determined that the data we used as a basis for our findings and conclusion was sufficiently reliable for the purposes of this audit.

Appendix 2: Description of the U.S. Department of the Interior's NGDA Themes

Below is a list and description of the nine National Geospatial Data Asset (NGDA) themes for which DOI and its bureaus are responsible as leaders in the management of geospatial data.[30] Theme leads provide interdepartmental leadership and coordination at the NGDA theme level. Each lead coordinates and oversees the strategic planning and implementation of the NGDA theme and manages the Geospatial Data Act annual report process.[31]

NGDA Theme	NGDA Theme Description	DOI Theme Lead(s)
Biodiversity and Ecosystems	Pertains to or describes the dynamic processes, interactions, distributions, and relationships between and among organisms and their environments.	U.S. Geological Survey (USGS)
Cadastre	Past, current, and future rights and interests in real property, including the spatial information necessary to describe geographic extents.	Bureau of Land Management
Cultural Resources	Features and characteristics of a collection of places of significance in history, architecture, engineering, or society (includes national monuments and icons).	National Park Service
Elevation	The measured vertical position of the earth's surface, other landscape, or underwater depth of ocean floors or lake floors.	USGS
Geology	Geographically referenced data pertaining to the origin, history, composition, structure, features, and processes of the solid earth, both onshore and offshore.	Bureau of Ocean Energy Management and USGS
Imagery	Georeferenced images of the earth's surface, which have been collected via aerial photography or satellite data.	USGS
Land Use – Land Cover	Natural and manmade surface features that cover the land (land cover) and the primary ways in which land cover is used by humans (land use).	USGS
Utilities	Means, aids, and use of facilities for producing, conveying, distributing, processing, or disposing of public and private commodities, including power, energy, communications, natural gas, and water (includes subthemes for energy, drinking water and water treatment, and communications).	Bureau of Safety and Environmental Enforcement
Water – Inland	Interior hydrologic features and characteristics, including classification, measurements, location, and extent (includes aquifers, watersheds, wetlands, navigation, water quality, water quantity, and groundwater information).	U.S. Fish and Wildlife Service and USGS

[30] NGDA theme descriptions are summarized from the "Federal Geographic Data (FGDC) Committee Designated National Geospatial Data Asset (NGDA) Data Themes, Theme Definitions, and Theme Lead Agencies" list dated August 7, 2020. Available at https://www.fgdc.gov/policyandplanning/a-16/appendixe/20240703-ngda-themes-fgdc-sc-revised-appendixe.pdf.

[31] The "Elevation," "Imagery," and "Land Use – Land Cover" data themes have multiple theme lead agencies, of which DOI is one.

Appendix 3: The U.S. Department of the Interior's Status in Meeting the Requirements of the Geospatial Data Act of 2018

Below is a summary of the Geospatial Data Act requirements and our determination of the U.S. Department of the Interior's (DOI's) progress in meeting those requirements. Two of 15 responsibilities were excluded from the scope of our audit. Of the 13 remaining responsibilities, we found that DOI has continued to make progress in complying with the agency responsibilities; however, we found deficiencies impacting four of the responsibilities.

Requirement	DOI's Progress
43 U.S.C. § 2808(c)(1) Complying with the standards for geospatial data, including information about geospatial datasets, also known as metadata, as established under § 2806.	We did not audit this objective because the Council of the Inspectors General for Integrity and Efficiency (CIGIE) excluded it from the scope for fiscal year (FY) 2024.
§ 2808(a)(1) Preparing, maintaining, publishing, and implementing a strategy for advancing geographic information and related geospatial data and activities appropriate to DOI's mission, in support of the strategic plan for the National Spatial Data Infrastructure (NSDI) prepared under § 2804(c).	We determined that DOI has prepared, maintained, published, and implemented a strategy for advancing geographic information and related geospatial data and activities appropriate to DOI's mission in support of the NSDI strategic plan prepared under § 2804(c) that complies with the Geospatial Act of 2018.
§ 2808(a)(2) Collecting, maintaining, disseminating, and preserving geospatial data, such that the resulting data, information, or products can be readily shared with other Federal agencies and non-Federal users.	We determined that DOI has not consistently made its geospatial data readily available to other Federal agencies and non-Federal users. Two searches of GeoPlatform found approximately 54 percent and 12 percent, respectively, of DOI's National Geospatial Data Assets (NGDA) were not available. The inconsistent availability of NGDAs is a longstanding issue due to technical problems with the flow of data between systems. See "DOI's National Geospatial Data Assets Were Not Consistently Available on GeoPlatform" finding in this report.
§ 2808(a)(3) Promoting the integration of geospatial data from all sources.	We determined that DOI has taken steps to promote integrating geospatial data from all sources. In addition to DOI, each of its bureaus provided many examples as evidence of promoting integrated geospatial data from all sources.
§ 2808(a)(4) Ensuring that data information products and other records created in geospatial data and activities are included on agency record schedules that have been approved by the National Archives and Records Administration.	We determined that DOI and its bureaus generally include geospatial related records on agency record schedules approved by National Archives and Records Administration. Specifically, six of nine bureaus reported having a schedule in place that covers geospatial data. The other three bureaus reported they are working on record schedules.

Requirement	DOI's Progress
§ 2808(a)(5) Allocating resources to fulfill the responsibilities of effective geospatial data collection, production, and stewardship regarding related DOI activities, and as necessary to support the Federal Geographic Data Committee (FGDC) activities.	We were unable to determine whether DOI has properly allocated resources to effectively manage its geospatial data in support of FGDC activities. DOI's bureaus were unable to provide us with geospatial related expenditure information. See "DOI's Bureaus Did Not Know How Much They Spent on Geospatial Data" finding in this report.
§ 2808(a)(6) Using the geospatial data standards, including those for metadata, and other appropriate standards, as well as documenting geospatial data with the relevant metadata and making metadata available through GeoPlatform.	We determined that DOI's NGDA metadata content was not consistently available on GeoPlatform. We found about 61 percent of DOI's NGDAs were missing important data fields, thus geospatial data was not easily accessible for users. The inconsistent availability of metadata content is because the FGDC has not published or endorsed geospatial data standards. See "DOI's National Geospatial Data Assets Did Not Include Important Data Fields" finding in this report. Additionally, we determined that DOI has not consistently made its geospatial data readily available to other Federal agencies and non-Federal users. Two searches of GeoPlatform found about 54 percent and 12 percent, respectively, of DOI's NGDAs were not available. The inconsistent availability of NGDAs is a longstanding issue due to technical problems with the flow of data between systems. See "DOI's National Geospatial Data Assets Were Not Consistently Available on GeoPlatform" finding in this report.
§ 2808(a)(7) Coordinating and working with other Federal agencies; agencies of State, Tribal, and local governments; institutions of higher education; and the private sector to efficiently and cost effectively collect, integrate, maintain, disseminate, and preserve geospatial data, building on existing non-Federal geospatial data to the extent possible.	We determined that DOI works with a range of private and public entities. The bureaus stated that they worked with Federal agencies; agencies of State, Tribal, and local governments; institutions of higher education; and the private sector by participating in working groups; executing Federal assistance, contracts, and interagency agreements; and attending conferences.

Requirement	DOI's Progress
§ 2808 (a)(8) Using geospatial information to make Federal geospatial information and services more useful to the public, enhance operations, support decision making, and enhance reporting to the public and to Congress.	During our review, we were told that dataset managers at DOI bureaus may be reluctant to have geospatial datasets added to the NGDA portfolio because of potential exposure to additional scrutiny and administrative burden. We noted that three of DOI's nine bureaus do not have geospatial datasets designated as NGDAs. The process for identifying NGDAs has resulted in datasets that may not be commonly used by multiple agencies for a multitude of uses. See the "Other Matters" section in this report. Additionally, we determined that DOI has not consistently made its geospatial data readily available to other Federal agencies and non-Federal users. Two searches of GeoPlatform found approximately 54 percent and 12 percent, respectively, of DOI's NGDAs were not available. The inconsistent availability of NGDAs is a longstanding issue due to technical problems with the flow of data between systems. See "DOI's National Geospatial Data Assets Were Not Consistently Available on GeoPlatform" finding in this report.
§ 2808(a)(9) Protecting personal privacy and maintaining confidentiality according to Federal policy and law.	We reviewed privacy impact assessments for some geospatial information systems and determined that DOI and its bureaus have generally taken steps to protect personal privacy and maintain confidentiality in accordance with the Geospatial Data Act of 2018. Specifically, we identified privacy impact assessments of geospatial information systems for seven of nine bureaus. The other two bureaus reported that their geospatial information systems typically do not have personally identifiable information.
§ 2808(a)(10) Determining, when applicable, whether declassified data can contribute to and become a part of the NSDI.	We identified declassified datasets on GeoPlatform and concluded that DOI has participated in determining when declassified data can contribute to and become a part of the NSDI.
§ 2808(a)(11) Searching all sources, including GeoPlatform, to determine if existing Federal, State, local, or private geospatial data meet DOI needs before expending funds for geospatial data collection.	In July 2023, DOI's Offices of the Chief Information Officer, Acquisition and Property Management, and Grants Management issued a joint memorandum to bureau and office associate chief information officers requiring all bureaus and offices to establish controls to verify a search of existing geospatial data for each acquisition or financial assistance action involving geospatial data. According to bureaus officials, they have implemented processes and policies intended to prevent duplication of effort among agencies, including searching GeoPlatform, conducting market research on existing data, and collaboratively developing data acquisition projects. We reviewed bureau responses and related policies and procedures and determined that DOI and its bureaus generally have controls or mechanisms in place to ensure searches of existing sources for geospatial data are conducted before expending funds.

Requirement	DOI's Progress
§ 2808(a)(12) Ensuring, to the maximum extent practicable, that a person receiving Federal funds for geospatial data collection provides high-quality data.	We determined that DOI has taken steps to assure, to the maximum extent practicable, that a person receiving Federal funds for geospatial data collection provides high-quality data. In July 2023, the Offices of the Chief Information Officer, Acquisition and Property Management, and Grants Management issued a joint memorandum requiring bureaus and offices to establish controls to verify a search of existing geospatial data for each acquisition or financial assistance action involving geospatial data that verify compliance with DOI Acquisition, Assistance, and Asset Policy No. 0169, *Special Acquisition Planning Considerations*, dated December 2, 2020; and the grants process in DOI PGM Policy No. PGM-POL-2021-0005, *Use of Geospatial Data*, as updated on March 10, 2023. According to bureau officials, they have issued guidance, included standard requirements for contracts and grants, and conducted various evaluations of the data deliverables on a case-by-case basis.
§ 2808(a)(13) Appointing a contact to coordinate with the lead covered agencies for collection, acquisition, maintenance, and dissemination of the NGDA data themes used by DOI.	We reviewed the Office of the Chief Information Officer's 2016 memorandum designating the chief data officer as DOI's senior agency official for geospatial information (SAOGI). Pursuant to this designation, the SAOGI oversees, coordinates, and facilitates DOI's implementation of geospatial-related requirements, policies, activities, and investments. The SAOGI also serves as DOI's representative on the FGDC, pursuant to OMB Circular No. A-16. We also reviewed Office of the Chief Information Officer's 2020 position description of the geospatial information officer (GIO). The GIO serves as principal advisor to the chief data officer, chief information officer, and other top DOI and bureau officials on cross-cutting program matters related to all aspects of geospatial policy, data, programs, and technology. The GIO is responsible for facilitating and leading the establishment of unified standards for geospatial activities and the evaluation of the quality and effectiveness of geospatial activities and initiatives in support of GeoPlatform. We determined that DOI has appointed a contact to coordinate with the lead covered agencies for collection, acquisition, maintenance, and dissemination of the NGDA data themes.
§ 2808(c)(3) Complying with the limitation on the use of Federal funds under § 2809.	We did not audit this objective because CIGIE excluded it from the scope for FY 2024.

Appendix 4: Availability of U.S. Department of the Interior Datasets on GeoPlatform

Below are the results of tests we performed on the availability of DOI's National Geospatial Data Assets (NGDAs) on GeoPlatform. We identified a total of 59 NGDAs across 6 bureaus—Bureau of Land Management, Bureau of Ocean Energy Management, Bureau of Safety and Environmental Enforcement, U.S. Fish and Wildlife Service, National Park Service, and U.S. Geological Survey. Our tests of NGDA availability on GeoPlatform consisted of using the Federal Geographic Data Committee (FGDC) NGDA portfolio link to GeoPlatform and using the search function in GeoPlatform to search for the NGDA's title (the name of that dataset). We performed the test twice, first in February 2024 and again in April 2024.[32]

National Geospatial Data Asset ID Number (NGDAID)	Not Available by Search Test 1 (February)	Not Available by Link Test 1 (February)	Not Available by Search Test 2 (April)	Not Available by Link Test 2 (April)
3	X	X		X
5				
6				
10				
14	X			
16	X	X	X	X
17		X		
18	X	X		
19	X	X		
20	X	X		
21	X	X		
22	X	X		
23	X	X		
24	X	X		
25	X	X		
26	X	X		
27				
34				
36	X	X	X	X

[32] We searched GeoPlatform for the dataset using the title from FGDC NGDA portfolio site (https://ngda-portfolio-community-geoplatform.hub.arcgis.com/pages/portfolio), and we attempted to open the dataset on GeoPlatform using the link provided on the portfolio site.

National Geospatial Data Asset ID Number (NGDAID)	Not Available by Search Test 1 (February)	Not Available by Link Test 1 (February)	Not Available by Search Test 2 (April)	Not Available by Link Test 2 (April)
39	X	X	X	X
40			X	X
42				X
46				X
51	X	X	X	X
52	X	X	X	X
53	X	X		
54	X	X		
55	X	X		
56	X	X	X	X
103				X
104				X
105				X
117				X
118				X
119				X
120	X	X		X
135				X
157	X	X		
158	X	X		
159				X
162				
163				X
169	X	X		
170	X	X		
171	X	X		
172	X	X		
173	X	X		
174	X	X		
175	X	X		

National Geospatial Data Asset ID Number (NGDAID)	Not Available by Search Test 1 (February)	Not Available by Link Test 1 (February)	Not Available by Search Test 2 (April)	Not Available by Link Test 2 (April)
176	X	X		
177	X	X		
184				
185				X
186				
187				X
188				
191				X
197				
198				
Total	**32**	**32**	**7**	**23**

Appendix 5: Analysis of U.S. Department of the Interior NGDA Dataset Data Fields

Below are the results of 12 tests (related to 5 metadata data fields) we performed of DOI's National Geospatial Data Asset (NGDA) metadata content. We judgmentally selected the five metadata data fields from FGDC's technical guidance checklist. Five of DOI's NGDAs were not available on GeoPlatform when we conducted testing and were excluded from the testing (see "DOI's National Geospatial Data Assets Were Not Consistently Available on GeoPlatform" finding in this report).

Data Content Field Tested	Department Dataset Passed	Department Dataset Failed
Title Listed	54	0
Relevant Date	51	3
Keywords Listed	54	0
Keywords Listed "NGDA"	52	2
Keywords Listed "National Geospatial Data Asset"	34	20
Keywords Listed the NGDAID ("NGDA###")	24	30
Keywords Listed the NGDA Theme	37	17
Contact Info	50	4
Dataset Links and Files Available	32	22
Metadata Insights Available	26	28
Metadata Original Source Available	26	28
Metadata Data.gov Source Available	26	28

Appendix 6: Responses to Draft Report

The U.S. Department of the Interior’s responses to our draft report follow on page 31.

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, DC 20240

Memorandum

To: Mark Lee Greenblatt
Inspector General

From: Michael Brain
Digitally signed by MICHAEL BRAIN
Date: 2024.08.28 18:31:47 -04'00'
Principal Deputy Assistant Secretary for Water and Science
Chair, Federal Geographic Data Committee

Subject: Response to Draft Evaluation Report -*The U.S. Department of the Interior Is Making Progress in Its Management of Geospatial Data but Improvements Are Needed* (2024-ER-003)

Thank you for providing the Department of the Interior (Department, DOI), Office of the Chief Information Officer (OCIO) the opportunity to review and comment on the draft Office of Inspector General (OIG) Report, *The U.S. Department of the Interior Is Making Progress in Its Management of Geospatial Data but Improvements Are Needed* (2024-ER-003).

We appreciate the OIG's review of the DOI's compliance with the Geospatial Data Act. Three recommendations were issued to the OCIO and three to the Principal Deputy Assistant Secretary for Water and Science, who serves as the delegated Chair of the Federal Geographic Data Committee (FGDC).

The Principal Deputy Assistant Secretary for Water and Science, as the delegated Chair of the FGDC, concurs with the OIG's recommendations. Please see the attached for the Department's management response and target dates for the three recommendations.

If you have questions, please contact Joshua Delmonico, Executive Director for the Federal Geographic Data Committee, at jdelmonico@usgs.gov.

Attachment

Attachment

Management Response to The U.S. Department of the Interior Is Making Progress in Its Management of Geospatial Data but Improvements Are Needed Report No. 2024–ER–003

Recommendations and Responses

Recommendation 1: We recommend that the Principal Deputy Assistant Secretary for Water and Science, as the delegated Federal Geographic Data Committee Chair, conduct an analysis to identify the root cause(s) of the geospatial dataset unavailability on GeoPlatform.

Response: Concur. The Federal Geographic Data Committee (FGDC) will work with DOI, who is the GeoPlatform Managing Partner, to conduct an analysis and identify the root cause(s) of the DOI National Geospatial Data Assets dataset unavailability on GeoPlatform.

Responsible Officials: Joshua Delmonico, Executive Director for the Federal Geographic Data Committee

Target Date: 31 May 2025

Recommendation 2: We recommend that the Principal Deputy Assistant Secretary for Water and Science, as the delegated Federal Geographic Data Committee Chair, conduct an analysis to determine the costs, benefits, and feasibility of resolving the root causes identified with GeoPlatform.

Response: Concur. The FGDC will work with DOI, who is the GeoPlatform Managing Partner, to determine the costs, benefits, and feasibility of resolving the root causes identified with GeoPlatform.

Responsible Officials: Joshua Delmonico, Executive Director for the Federal Geographic Data Committee

Target Date: 30 July 2025

Recommendation 3: We recommend that the Principal Deputy Assistant Secretary for Water and Science, as the delegated Federal Geographic Data Committee Chair, implement appropriate changes based on the root cause and cost benefit analyses to address dataset availability issues.

Response: Concur. The FGDC will work with DOI, who is the GeoPlatform Managing Partner, to implement appropriate changes based on the root cause, cost benefit analyses, and feasibility to address dataset availability issues pending availability of funding.

Responsible Officials: Joshua Delmonico, Executive Director for the Federal Geographic Data Committee

Target Date: 30 September 2025

cc: Joshua Delmonico, Executive Director for the Federal Geographic Data Committee
Annalise Blum, Deputy Assistant Secretary for Water and Science
Sherrill Exum, Chief, Audit Management Division, Office of Financial Management
Tim Quinn, USGS ACIO
David Brostuen, Acting Associate Director Core Science Systems
Steve Gillespie, USGS Audit Liaison
Tiya Samuels, OCIO Audit Liaison Lead, Compliance Management Section
Thomas Dabolt, DOI Chief Data Officer
David Carter, DOI Geospatial Information Officer

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, DC 20240

August 28, 2024

Memorandum

To: Mark Lee Greenblatt
Inspector General

From: Darren B. Ash
Chief Information Officer
Office of the Chief Information Officer

DARREN ASH Digitally signed by DARREN ASH
Date: 2024.08.28 14:13:53 -04'00'

Subject: Response to Draft Evaluation Report -*The U.S. Department of the Interior Is Making Progress in Its Management of Geospatial Data but Improvements Are Needed* (2024-ER-003)

Thank you for providing the Department of the Interior (Department, DOI), Office of the Chief Information Officer (OCIO) the opportunity to review and comment on the draft Office of Inspector General (OIG) Report, *The U.S. Department of the Interior Is Making Progress in Its Management of Geospatial Data but Improvements Are Needed* (2024-ER-003).

We appreciate the OIG's review of the DOI's compliance with the Geospatial Data Act. Three recommendations were issued to the OCIO and three to the Principal Deputy Assistant Secretary for Water and Science, who serves as the delegated Chair of the Federal Geographic Data Committee.

The OCIO concurs with the OIG's recommendations. Please see the attached for the Department's management response and target dates for the three OCIO recommendations.

If you have questions, please contact Thomas (Tod) Dabolt, Chief Data Officer, at thomas_dabolt@ios.doi.gov.

Attachment: Management Response to *The U.S. Department of the Interior Is Making Progress in Its Management of Geospatial Data but Improvements Are Needed* OIG Report No. 2024-ER-003, Recommendations

cc: Thomas Dabolt, Chief Data Officer, OCIO
Kenneth Klinner, Deputy Chief Information Officer - Program Management
Deputy Chief Information Officers
Sherrill Exum, Chief, Audit Management Division, Office of Financial Management
Associate Chief Information Officers
Associate Chief Data Officers
Bureau and Office Audit Liaisons
Douglas Scoville, Chief, Governance Branch, OCIO
Richard Westmark, Chief, Compliance Management Section, OCIO

Management Response to The U.S. Department of the Interior Is Making Progress in Its Management of Geospatial Data but Improvements Are Needed Report No. 2024–ER–003

Recommendations and Responses

Recommendation 4: We recommend that the Chief Information Officer develop and implement a methodology for the bureaus to identify all DOI geospatial-related costs to ensure consistency.

Response: Concur. The Office of the Chief Information Officer will adapt the current IT portfolio management process to accommodate the identification of investments in geospatial capabilities. The updated IT portfolio management process will annually report geospatial capabilities spending across the Department.

Responsible Officials: Thomas Dabolt, Chief Data Officer and Kenneth Klinner, Deputy Chief Information Officer - Program Management

Target Date: April 25, 2025

Recommendation 5: We recommend that the Chief Information Officer direct the bureaus to track all geospatial related costs using the methodology developed in Recommendation 4 and report these costs to the office of the Chief Information Officer annually.

Response: Concur. The OCIO will issue direction to the Departmental bureaus and offices to report geospatial spending through the process identified in Recommendation 4.

Responsible Officials: Thomas Dabolt, Chief Data Officer and Kenneth Klinner, Deputy Chief Information Officer - Program Management

Target Date: June 2, 2025

Recommendation 6: We recommend that the Office of the Chief Information Officer, in the absence of Federal Geographic Data Committee standards, identify relevant best practices and develop requirements for specific data fields for National Geospatial Data Assets (NGDA) in alignment with best practices.

Response: Concur. The Office of the Chief Data Officer will update the Enterprise Data Inventory (EDI) Metadata Standard Documentation to address NGDAs. The Metadata documentation update will address standardization of tags to assist finding geospatial data records through the EDI and other Federal data catalogs including the GeoPlatform.

Responsible Official: Thomas Dabolt, Chief Data Officer

Target Date: June 2, 2025

Appendix 7: Status of Recommendations

Recommendation	Status	Action Required
2024-ER-003-01 We recommend that the Principal Deputy Assistant Secretary for Water and Science, as the delegated Federal Geographic Data Committee Chair, conduct an analysis to identify the root cause(s) of the geospatial dataset unavailability on GeoPlatform.		
2024-ER-003-02 We recommend that the Principal Deputy Assistant Secretary for Water and Science, as the delegated Federal Geographic Data Committee Chair, conduct an analysis to determine the costs, benefits, and feasibility of resolving the root causes identified with GeoPlatform.		
2024-ER-003-03 We recommend that the Principal Deputy Assistant Secretary for Water and Science, as the delegated Federal Geographic Data Committee Chair, implement appropriate changes based on the root cause and cost benefit analyses to address dataset availability issues.	**Resolved**	We will track implementation.
2024-ER-003-04 We recommend that the Office of the Chief Information Officer develop and implement a methodology for the bureaus to identify all DOI geospatial-related costs to ensure consistency		
2024-ER-003-05 We recommend that the Office of the Chief Information Officer direct the bureaus to track all geospatial-related costs using the methodology developed in Recommendation 4 and report these costs to the Office of the Chief Information Officer annually.		
2024-ER-003-06 We recommend that the Office of the Chief Information Officer, in the absence of Federal Geographic Data Committee standards, identify relevant best practices and develop requirements for specific data fields for National Geospatial Data Assets in alignment with best practices.		

OFFICE OF
INSPECTOR GENERAL
U.S. DEPARTMENT OF THE INTERIOR

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