



Highlights

DOT Has Made Significant Progress Meeting the Requirements of the Geospatial Data Act of 2018 but Has Not Maintained an Accurate Inventory

Mandated by the Geospatial Data Act of 2018

Our Objective(s)

To assess the Department of Transportation's (DOT) progress implementing its responsibilities under the Geospatial Data Act (GDA) as a (1) lead covered agency and (2) covered agency.

Why This Audit?

Federal agencies and State governments rely on geospatial data to accomplish their missions. Geospatial data can also be critical to monitoring and responding to transportation safety issues. The GDA requires inspectors general of covered agencies to report to Congress at least every 2 years on their agencies' collection, production, acquisition, maintenance, distribution, use, and preservation of geospatial data. This is our third audit under the Act, which revisits the objectives of our first two audits conducted in 2020 and 2022.

What We Found

DOT fully complies with the GDA's requirements for lead covered agencies.

- DOT has fully implemented the five responsibilities related to the maintenance and dissemination of its transportation theme data.
- The Department has developed a plan to implement standards for transportation theme data, which includes creating an online document repository and procedures for standards adjudication and adoption.

DOT complies with the GDA's general and reporting requirements for covered agencies but partially complies with the inventory requirement.

- DOT meets all 12 of the Act's applicable covered agency requirements for advancing geospatial data through implementation of its strategy, record schedules, and use of geospatial information.
- The Department provided timely annual reports to the Federal Geographic Data Committee and Congress; however, it did not maintain an accurate geospatial system inventory.



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Recommendations to improve DOT's geospatial data assets inventory and reduce geospatial systems' risks. (p. 13)

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Memorandum

Date: October 4, 2024

Subject: ACTION: DOT Has Made Significant Progress Meeting the Requirements of the Geospatial Data Act of 2018 but Has Not Maintained an Accurate Inventory | Report No. IT2025001

From: Kevin Dorsey 
Assistant Inspector General for Information Technology Audits

To: DOT Chief Information Officer
Director, Bureau of Transportation Statistics

Federal agencies and State governments use a variety of geospatial information to support their missions. Geospatial data contain information that is tied to locations on Earth, including geographic location identifiers and characteristics of natural and constructed features and boundaries. Examples of transportation related geospatial data include railroad network systems and maps of pipeline inspection boundaries. These data can be critical to monitoring and responding to safety issues.

In October 2018, Congress passed the Geospatial Data Act (GDA)¹ to codify the committees, processes, and tools used to develop and manage the National Spatial Data Infrastructure (NSDI).² The GDA requires inspectors general of covered agencies, such as the Department of Transportation (DOT), to report to Congress at least once every 2 years on their agencies' collection, production, acquisition, maintenance, distribution, use, and preservation of geospatial data.³

¹ Public Law Number (Pub. L. No.) 115-254, Title VII, Subtitle F (2018) (codified at Title 43 of the U.S. Code (U.S.C) § 2801 *et seq.*).

² NSDI consists of the technology, policies, criteria, standards, and employees necessary to promote geospatial data sharing among the Federal Government, State, tribal, and local governments, and the private sector.

³ 43 U.S.C. § 2808(c). A covered agency is any executive department, as defined in section 101, Title 5 of the U.S.C., 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, including a State, local government, Indian tribe, institution of higher education, business partner or contractor of the Federal Government, and the public. 43 U.S.C. § 2801(3)(A)(i).

We previously reported in 2020⁴ and 2022⁵ on DOT's progress implementing the Act's requirements, and this audit was our third under the mandate. Our audit objectives were to assess DOT's progress implementing its responsibilities under the GDA as a (1) lead covered agency⁶ and (2) covered agency.⁷

We conducted this audit in accordance with generally accepted Government auditing standards. We performed the audit at DOT Headquarters in Washington, DC. Exhibit A details our scope and methodology. Exhibit B lists the organizations we visited or contacted, and exhibit C lists the acronyms used in this report.

We appreciate the courtesies and cooperation of Department of Transportation representatives during this audit. If you have any questions concerning this report, please contact me or Jackie Dang, Program Director.

cc: The Secretary
DOT Audit Liaison, M-1

⁴ *DOT Is Making Progress Toward Fulfilling the Requirements of the Geospatial Data Act of 2018* (OIG Report No. IT2021001), October 2, 2020.

⁵ *DOT Has Made Progress Meeting the Requirements of the Geospatial Data Act of 2018* (OIG Report No. IT2022040), September 28, 2022.

⁶ 43 U.S.C. § 2805(b).

⁷ 43 U.S.C. § 2808.

Background

DOT's Chief Data Officer in the Office of the Chief Information Officer (OCIO), in cooperation with the Bureau of Transportation Statistics (BTS) and Geospatial Management Office (GMO), is ultimately responsible for the Department's geospatial data-related activities. OCIO currently offers DOT's Operating Administrations⁸ a shared service for geospatial applications and data but Operating Administrations can also host data and applications in their own systems.

To codify the committees, processes, and tools used to develop and manage the NSDI, Congress passed the GDA⁹ in 2018. The Act requires the Federal Geographic Data Committee (FGDC)¹⁰ to identify one or more covered agencies¹¹ to serve as lead covered agencies¹² for data themes.¹³ GDA also details the responsibilities and reporting requirements for covered agencies.¹⁴ For example, covered agencies must report annually to FGDC on their efforts to prepare and implement strategies for advancing geographic information. NSDI includes 18 themes, including a transportation theme. FGDC designated DOT as the lead covered agency for the transportation theme—responsible for addressing the GDA's lead covered agency requirements for the transportation theme—and as a covered agency.

⁸ The Department comprises the Office of the Secretary of Transportation (OST), the Office of Inspector General (OIG), and the following nine Operating Administrations—the Federal Aviation Administration (FAA), Federal Highway Administration (FHWA), Federal Motor Carrier Safety Administration (FMCSA), Federal Railroad Administration (FRA), Federal Transit Administration (FTA), Maritime Administration (MARAD), National Highway Traffic Safety Administration (NHTSA), Pipeline and Hazardous Materials Safety Administration (PHMSA), and the Great Lakes Saint Lawrence Seaway Development Corporation (GLS). GLS and OIG are not included in this report because neither collects geospatial data.

⁹ Pub. L. No. 115-254, Title VII, Subtitle F (2018) (codified at Title 43 of U.S.C. § 2801 *et seq.*).

¹⁰ 43 U.S.C. § 2805. FGDC is a 32-member interagency group composed of Cabinet members and representatives from OMB, the Department of Defense, and other agencies, and is responsible for NSDI's implementation and maintenance.

¹¹ The GDA applies to covered Federal agencies, including DOT, as defined in 5 U.S.C. § 101, that collect, produce, acquire, maintain, distribute, use or preserve geospatial data on paper or in electronic form to fulfill their missions as executive Departments. The GDA also applies to the National Aeronautics and Space Administration and General Services Administration but not the Department of Defense or intelligence agencies. (43 U.S.C. § 2801(3)).

¹² 43 U.S.C. § 2805(b). A lead covered agency is responsible for ensuring the coordinated management of data and supporting resources related to services and products associated with a National Geospatial Data Asset theme. For more details, see the Background section of this report.

¹³ A data theme is made up of geospatial datasets relating to a topic or subject designated under 43 U.S.C. § 2805. For example, the transportation theme contains data related to all modes of travel that allow the conveyance of persons and/or goods.

¹⁴ 43 U.S.C. § 2808.

The Act also requires inspectors general¹⁵ of covered agencies, including DOT, to report to Congress at least every 2 years on their agencies' collection, production, acquisition, maintenance, distribution, use, and preservation of geospatial data. This audit is our third since the Act's passage; it revisits the objectives of our first audit,¹⁶ conducted in 2020, and second¹⁷ audit, conducted in 2022.

DOT Fully Complies With the GDA's Requirements for Lead Covered Agencies

The Department has fully implemented the GDA's requirements for lead covered agencies, including developing a plan to set standards for its theme data.

DOT Has Fully Implemented the Requirements for Lead Covered Agencies

As a lead covered agency under the GDA, DOT has five responsibilities related to the maintenance and dissemination of its transportation data theme. The Department has fully implemented all five of these responsibilities. See table 1 for descriptions of these responsibilities.

In fiscal year 2022, BTS implemented the National Spatial Data Infrastructure Transportation Theme Strategic Plan¹⁸ that describes activities to meet transportation theme goals and objectives per the Act.¹⁹ BTS also issued the 2022 National Spatial Data Infrastructure Human and Financial Resources Needs Report²⁰ which addresses the human and financial resource needs of the Department and its transportation theme partners.²¹

In October 2023, BTS addressed a recommendation from our 2022 report relating to its Geospatial Standards Implementation Plan (see exhibit D for the status of

¹⁵ 43 U.S.C. § 2808(c).

¹⁶ *DOT Is Making Progress Toward Fulfilling the Requirements of the Geospatial Data Act of 2018* (OIG Report No. IT2021001), October 2, 2020.

¹⁷ *DOT Has Made Progress Meeting the Requirements of the Geospatial Data Act of 2018* (OIG Report No. IT2022040), September 28, 2022.

¹⁸ DOT, *Transportation Theme of the National Spatial Data Infrastructure Strategic Plan 2021-2024*, May 2021.

¹⁹ 43 U.S.C. § 2805(b)(3)(B).

²⁰ DOT, *Transportation Theme of the National Spatial Data Infrastructure Human and Financial Resource Needs Report*, May 2022.

²¹ Theme partners include BTS, the Federal Aviation Administration, Federal Highway Administration, Bureau of the Census, and U.S. Army Corps of Engineers.

our prior recommendations). In fiscal year 2024, BTS developed a plan²² to adopt or develop minimum content standards for each National Geospatial Data Asset (NGDA) in the transportation theme²³ (see exhibit E for DOT’s inventory of geospatial datasets). For example, FAA’s airport-related data are used to develop satellite-based approach procedures and to better use and manage the National Airspace System. Also see table 1 for DOT’s status in fiscal years 2020, 2022 and 2024 on each responsibility.

Table 1. DOT’s Progress on Lead-Covered-Agency Requirements From Fiscal Years 2020 to 2024

Responsibility	Description	Fiscal Year 2020 Status	Fiscal Year 2022 Status	Fiscal Year 2024 Status
NGDA theme standards	Lead development and implementation of data standards for the transportation theme with emphasis on a data content standard. Before developing new standards, lead agencies must review standards already in use and adopt them if possible.	Did not meet	Partially met	Meets
Theme plan	Lead the development and implementation of a plan for the nationwide population of the transportation theme.	Partially met	Met	Meets
Goals	Establish goals that support the strategic plan for the National Spatial Data Infrastructure prepared under section 755(c).	On hold	Met	Meets
Information on user needs	Collect and analyze information from users of transportation theme data regarding users’ needs for the data and incorporate these needs into theme related strategies.	Met	Met	Meets
Theme administration	Establish a theme point of contact, submit annual performance reports, and publish maps and coordinates with GeoPlatform.	Met	Met	Meets

Source: OIG analysis of BTS’ plan to adopt or develop minimum content standards.

²² BTS-AS, *Geospatial Standards Adoption Support Services*, Gantt Chart, September 2023.

²³ 43 U.S.C. § 2805(b)(3)(A)(iii).

DOT Has Developed a Plan To Implement Standards for Transportation Theme Data

The GDA²⁴ and OMB's Circular A-119²⁵ require each lead covered agency to develop a plan to implement standards for its theme data. In September 2023, BTS awarded a contract for Geospatial Standards Adoption Support Services that requires completion of all deliverables by September 2025. We verified the contract's statement of work documentation that supports BTS' efforts to adopt or develop standards for each NGDA in the transportation theme. BTS now has a plan²⁶ to implement geospatial standards by September 2025. The plan includes developing an online document repository, outlining tasks and milestones for adopting existing standards, drafting a communications plan, starting an adoption charter, and developing procedures for standards adjudication and adoption.

Furthermore, the Department is a member of the FGDC Executive Committee.²⁷ As a member, the Geospatial Information Officer works with FGDC and BTS to develop, review, and adjudicate FGDC's geospatial standards, standard endorsement process, and implementation. BTS is expected to adopt the standards endorsement process by the end of the summer or in early fall 2024.

The Department's plan to implement geospatial standards for theme data enhances its ability to meet the outcomes of its Transportation Theme Strategic Plan, including better data integration and improved geospatial data standards.

DOT Complies With the GDA's General and Reporting Requirements for Covered Agencies but Partially Complies With the Inventory Requirement

The Department fulfilled 12 applicable covered agency responsibilities through implementation of its strategy, record schedules, and use of geospatial information. In addition, DOT complies with the reporting requirement but partially meets inventory requirement.

²⁴ 43 U.S.C. § 2805(b)(3)(A)(iii).

²⁵ OMB Circular A-119, *Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities*, January 2016.

²⁶ BTS-AS, *Geospatial Standards Adoption Support Services*, Gantt Chart, September 2023.

²⁷ FGDC, 2023 Geospatial Data Act Report to Congress, February 2024.

DOT Has Met the 12 Applicable Requirements for Covered Agencies

The GDA requires covered agencies to meet 13 general requirements. However, only 12 of these requirements apply to DOT (see table 2). Of the 12 requirements, DOT met 4 in 2020 and 9 in 2022. For instance, in 2022, DOT was tracking allocated resources, had developed procedures to prevent data duplications, and had developed a process to ensure the metadata quality.

In fiscal year 2024, DOT has completed the three remaining requirements that it partially completed in 2022—a strategy for advancing geospatial data, inclusion of geospatial data in its record schedules, and use of geospatial information to make Federal geospatial information and services useful to the public. Table 2 details DOT’s progress on each requirement in fiscal years 2020, 2022, and 2024.

Table 2. DOT’s Progress on General Covered-Agencies Requirements From Fiscal Years 2020 to 2024

Responsibility	Description	Fiscal Year 2020 Status	Fiscal Year 2022 Status	Fiscal Year 2024 Status
Strategy	Prepare, implement, maintain, and publish a strategy for advancing geographic information and related geospatial data and activities.	Partially met	Partially met	Meets
Geospatial data	Collect, maintain, disseminate, and preserve geospatial data.	Met	Met	Meets
Promotion of integration	Promote the integration of geospatial data from all sources.	Met	Met	Meets
Inclusion of geospatial data in agency record schedules	Ensure that data information products and other records created in geospatial data and activities are included on agency record schedules approved by the National Archives and Records Administration.	Partially met	Partially met	Meets

Responsibility	Description	Fiscal Year 2020 Status	Fiscal Year 2022 Status	Fiscal Year 2024 Status
Allocation of resources	Allocate resources to fulfill the responsibilities of effective geospatial data collection, production, and stewardship.	Partially met	Met	Meets
Use of geospatial data standards	Use the geospatial data standards, including documenting geospatial data with the relevant metadata and making metadata available through the GeoPlatform.	On hold	Met	Meets
Coordination	Coordinate and work in partnership with other agencies.	Met	Met	Meets
Use of geospatial information	Use 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 Congress.	Partially met	Partially met	Meets
Privacy and confidentiality	Protect personal privacy and maintain confidentiality in accordance with Federal policy and law.	Did not meet	Met	Meets
Data declassification*	Participate in determining whether declassified data can contribute to and become a part of the NSDI.	N/A	N/A	N/A
Review of existing geospatial data	Search all sources to determine if existing geospatial data meets the needs of the covered agency before expending funds for geospatial data collection.	Did not meet	Met	Meets

Responsibility	Description	Fiscal Year 2020 Status	Fiscal Year 2022 Status	Fiscal Year 2024 Status
Collection of high-quality data	Ensure that a person receiving Federal funds for geospatial data collection provides high-quality data.	Did not meet	Met	Meets
Appointment of contact	Appoint a contact to coordinate with the lead covered agencies for collection, acquisition, maintenance, and dissemination of the NGDA data themes used by the covered agency.	Met	Met	Meets

* The data declassification requirement is not applicable because DOT does not have geospatial data to be declassified at this time.

Source: OIG analysis of DOT’s strategic, record schedules, and use of geospatial information.

DOT’s Strategy and Use of Geospatial Information

In June 2022, OCIO issued its *GIS Strategic Plan*²⁸ for fiscal years 2022 through 2024. This plan complies with the GDA²⁹ requirement for covered agencies to prepare, maintain, publish, and implement a strategy to increase use of geospatial data. It includes the steps GMO will take to oversee implementation of the following goals, and monitor Operating Administrations’ compliance:

1. Implement requirements from the GDA and related statutes and policies, and monitor Operating Administrations’ compliance.
2. Advance the transportation theme by maturing DOT geospatial data management practices, expanding DOT data sources, formalizing data acquisition, and ensuring DOT’s NGDAs are findable, accessible, interoperable, and reusable.
3. Grow DOT's GIS shared services by expanding available data and applications, enabling interoperability, and optimizing performance.

²⁸ DOT, *GIS Strategic Plan, 2022-2024*, June 2022. This plan serves as DOT’s strategy for advancing geographic information and related geospatial data and activities appropriate to its mission as a covered agency. This plan examines the current state of GIS at the Department and defines the strategies we will implement to grow and improve DOT’s geospatial program.

²⁹ 43 U.S.C. § 2808(a)(1).

4. Enable and promote collaborative governance and partnerships internally, across the Federal geospatial community, and with external stakeholders to meet DOT mission goals.
5. Realize DOT's potential as a GIS leader and innovator by cultivating a 21st century geospatial workforce and adequately resourcing our geospatial program.

In fiscal year 2024, GMO reported that it completed implementing the strategy. Specifically, GMO documented quarterly reports that support Operating Administrations' progress on goals and work to foster partnerships across the Federal geospatial community and with external stakeholders and partners. GMO has extended the current strategy until December 2025.

The GDA also requires covered agencies to use geospatial information to enhance their operations, support decision making, and improve reporting to Congress. In fiscal year 2020, DOT lacked guidance for its Operating Administrations on how to use geospatial data to enhance operations. The GIS Strategic Plan for fiscal years 2022 through 2024 includes this guidance for enhancing operations with geospatial data. It also establishes ongoing monitoring of strategic goals and objectives. In implementing the GIS Strategic Plan, GMO proactively promoted the use of geospatial information in alignment with the Act and its GIS Strategic Plan. For example, according to GMO's June 2024 quarterly reports, DOT added new datasets to the transportation theme—supporting implementation of its strategic goal 2. DOT also explored opportunities to move geospatial datasets and applications to the DOT GIS Shared Services—supporting implementation of its strategic goal 3.

DOT's Scheduling of Records That Contain Geospatial Data

Per GDA, covered agencies must include data information products in agency record schedules approved by the National Archives and Records Administration (NARA). In 2020, BTS did not have a process to identify which data should be preserved as records. FAA, FTA, MARAD, NHTSA, OST, and PHMSA had also not completed their file plans and record schedules for geospatial data. In September 2022, DOT's Chief Information Officer implemented a recommendation from our 2020 report³⁰ (see exhibit D for the status of our prior recommendations) to work with the records officers at FAA, FTA, MARAD, NHTSA, OST, and PHMSA to verify that those Operating Administrations allocate appropriate resources to complete file plans and record schedule development. In January 2024, the Department³¹

³⁰ *DOT Is Making Progress Toward Fulfilling the Requirements of the Geospatial Data Act of 2018* (OIG Report No. IT2021001), October 2, 2020.

³¹ *FGDC, 2023 Covered Agency Annual Report and Self-Assessment For Department of Transportation Geospatial Data Act of 2018 Section USC 43 Sec 2808(a) Requirements*, January 2024.

confirmed DOT’s commitment to manage and archive geospatial data for record schedules approved by NARA. The Operating Administrations have also submitted their geospatial data to NARA for scheduling.

DOT Meets the Reporting Requirement but Partially Meets the Inventory Requirement

The GDA sets out a reporting requirement³² and a requirement³³ for an inventory of geospatial data assets. DOT has complied with the reporting requirement and partially complied with the inventory requirement (see table 3).

Table 3. DOT’s Progress on the Covered-Agency Reporting and Inventory Requirements From Fiscal Years 2020 to 2024

Responsibility	Description	Fiscal Year 2020 Status	Fiscal Year 2022 Status	Fiscal Year 2024 Status
Annual report	Each covered agency shall submit an annual report to FGDC and Congress.	Did not meet	Met	Meets
Geospatial data assets inventory	Each covered agency shall maintain an inventory of its geospatial data assets in accordance with OMB Circular A-130.	Did not meet	Met	Partially Meets

Source: OIG analysis of DOT’s annual reports and geospatial data assets inventory.

In fiscal years 2023 and 2024, the Department submitted its annual reports³⁴ to FGDC and Congress. These reports document DOT’s preparation and implementation of its strategy for geospatial data, appropriate to the Department’s mission, and its achievements complying with the GDA’s requirements.³⁵

³² 43 U.S.C. § 2808(b)(1).

³³ 43 U.S.C. § 2808(b)(2)(B).

³⁴ FGDC, *2023 Covered Agency Annual Report and Self-Assessment For Department of Transportation Geospatial Data Act of 2018 Section USC 43 Sec 2808(a) Requirements*, January 2024; FGDC, *2022 Covered Agency Annual Report and Self-Assessment For Department of Transportation Geospatial Data Act of 2018 Section USC 43 Sec 2808(a) Requirements*, February 2023.

³⁵ 43 U.S.C. § 2808(a).

In its requirement for inventories, the GDA calls for covered agencies to establish inventories in accordance with OMB Circular A-130.³⁶ As part of the Department's compliance with the requirement, DOT's 2021 Information Technology Implementation Memorandum (ITIM)³⁷ required (1) the Operating Administrations to, within 30 days of the ITIM's issuance, confirm to GMO their geospatial information system inventories by their identifications in the Cyber Security Assessment and Management tool (CSAM)³⁸ system, including authorization status, and provide a schedule for reauthorization; and (2) GMO to work on a quarterly basis with DOT's Chief Information Security Officer and Chief Privacy Officer to review the Operating Administrations' authorization to operate (ATO) reporting. GMO is also required to identify geospatial information systems with lapsed ATOs or other cybersecurity issues and work with the Operating Administrations' CIO to make them compliant.

However, DOT did not maintain an accurate inventory of its geospatial systems. GMO officials stated that the Department used CSAM to track geospatial system inventory. GMO also maintained its own internal inventory and provided us with its June 2024 inventory. DOT also reported to FGDC its datasets as listed in the June 2024 inventory. However, we compared the June 2024 inventory to CSAM and found that

- four geospatial systems in the June 2024 inventory have CSAM ID assigned to different systems in CSAM (see exhibit F, table F-1);
- seven geospatial systems were not reported in CSAM (see exhibit F, table F-2); and
- five geospatial systems were reported in CSAM but not included in the June 2024 inventory (see exhibit F, table F-3).

In addition, DOT did not have approved ATOs for three FAA geospatial systems. These systems are reported in CSAM with expired ATOs (see exhibit F, table F-4). FAA officials stated that they are working toward obtaining reauthorizations for these systems.

A GMO official acknowledged they do not have an accurate inventory of geospatial systems in CSAM and stated that GMO has not yet performed a quarterly review of the geospatial system inventory and cybersecurity status, but

³⁶ The GDA (43 U.S.C. § 2808(b)(2)(B)) requires agencies to maintain their inventories in accordance with OMB Circular A-130 (OMB Circular A-130, *Managing Information as a Strategic Resource, Appendix I-II, Security of Federal Automated Information Resources*, July 2016), which in turn requires agencies to ensure that physical devices, software applications, hardware platforms, and systems within the organization are inventoried.

³⁷ DOT, *ITIM 2022-001, U.S. DOT Requirements for ATOs for Geospatial Systems*, November 23, 2021.

³⁸ The Department's main repository for tracking system inventories, security assessment, authorization documentation, weaknesses, and other system security information.

GMO will coordinate with Operating Administrations' Geospatial Information Officers to explain their responsibilities related to geospatial information systems in CSAM, which include removing systems mismarked as geospatial and participating in the quarterly monitoring process of geospatial system ATOs. In addition, OCIO will also work with CSAM officials to implement the ITIM. During our fieldwork, GMO and OCIO reported that they would complete these action items by September 6, 2024.

The lack of an accurate inventory makes it difficult for the Department officials to track and protect its geospatial systems and report an accurate inventory to Congress and FGDC. Furthermore, the lack of approved ATOs for geospatial systems inhibits DOT's ability to mitigate the risk to an acceptable level, leaves systems vulnerable to potential threats and attacks and hinders the ability to verify security controls are operating effectively. The lack of ongoing authorization also inhibits authorizing officials' abilities to make effective decisions regarding the cybersecurity risk due to compromise of geospatial data in each geospatial system.

Conclusion

DOT has undertaken multiple actions supporting the implementation of the Geospatial Data Act of 2018 for both lead covered agencies and covered agencies. However, the lack of an accurate inventory of its geospatial systems and current authorities to operate for its geospatial systems inhibits the Department's ability to efficiently track and secure the systems, and reduce cybersecurity risks to its geospatial data.

Recommendations

To improve the Department of Transportation's (DOT) geospatial data assets inventory and reduce geospatial systems' risk, we recommend that DOT's Chief Information Officer direct Geospatial Management Office (GMO) to:

1. Conduct quarterly reviews of geospatial systems to maintain an accurate inventory of geospatial systems in accordance with DOT ITIM 2022-001 requirements and verify completion.
2. In collaboration with the Federal Aviation Administration, obtain reauthorizations for geospatial systems with expired authorizations to operate in accordance with DOT ITIM 2022-001 requirements and verify completion.

Agency Comments and OIG Response

We provided DOT's OCIO with our draft report on September 11, 2024, and received its formal response on September 24, 2024. DOT's OCIO response is included in its entirety as an appendix to this report. DOT's OCIO concurred with both of our recommendations and proposed appropriate actions and completion dates.

Actions Required

We consider our recommendations resolved but open pending completion of the planned actions.

Exhibit A. Scope and Methodology

This performance audit was conducted between May 2024 and September 2024. We conducted this 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.

The GDA requires inspectors general of each covered agency to report to Congress at least once every 2 years on their agencies' collection, production, acquisition, maintenance, distribution, use, and preservation of geospatial data. This audit is our third since the Act's passage and revisits the objectives of our first and second audits, conducted in 2020 and 2022, respectively. This report is due to Congress no later than October 4, 2024. For this third audit, we:

- reviewed applicable laws, legislation, and regulatory requirements and guidance related to geospatial data;
- interviewed DOT, BTS, GMO, and Operating Administration program and security personnel responsible for implementing lead covered agency and covered agency requirements per the Act;
- interviewed and determined if DOT officials perform declassification of geospatial data, if applicable that can contribute to and become part of the National Spatial Data Infrastructure;
- obtained and analyzed DOT and Operating Administration documentation of organization collection, production, acquisition, maintenance, distribution, use, and preservation of geospatial data;
- assessed DOT's progress implementing its responsibilities by obtaining documentation, progress reports and status updates;
- reviewed DOT's plan to adopt or develop minimum content standards for each NGDA in the transportation theme;
- analyzed DOT's implementation of its GIS Strategic Plan for fiscal years 2022 through 2024 for advancing geographic information and related geospatial data and activities as required by the Act;
- confirmed whether the Department submitted an annual report to FGDC and Congress on its geospatial data-related activities and achievements as a covered agency; and

- assessed whether DOT maintains an inventory of its geospatial data assets in accordance with OMB Circular A-130.³⁹

³⁹ The GDA (43 U.S.C. § 2808(b)(2)(B)) requires agencies to maintain their inventories in accordance with OMB Circular A-130 (OMB Circular A-130, *Managing Information as a Strategic Resource, Appendix I-II, Security of Federal Automated Information Resources*, July 2016), which in turn requires agencies to ensure that physical devices, software applications, hardware platforms, and systems within the organization are inventoried.

Exhibit B. Organizations Visited or Contacted

DOT Organizations Contacted

Bureau of Transportation Statistics
Federal Aviation Administration
Federal Highway Administration
Federal Motor Carrier Safety Administration
Federal Railroad Administration
Federal Transit Administration
Geospatial Management Office
Maritime Administration
National Highway Traffic Safety Administration
Office of the Chief Information Officer
Office of the Secretary of Transportation
Pipeline and Hazardous Materials Safety Administration

Exhibit C. List of Acronyms

ATO	Authorization to Operate
BTS	Bureau of Transportation Statistics
CIO	Chief Information Officer
CISO	Chief Information Security Officer
CSAM	Cyber Security Assessment and Management
DOT	Department of Transportation
FAA	Federal Aviation Administration
FGDC	Federal Geographic Data Committee
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GDA	Geospatial Data Act
GIS	Geospatial Information System
GMO	Geospatial Management Office
ITIM	Information Technology Implementation Memorandum
MARAD	Maritime Administration
NARA	National Archives and Records Administration
NGDA	National Geospatial Data Assets
NHTSA	National Highway Traffic Safety Administration
NSDI	National Spatial Data Infrastructure
OCIO	Office of the Chief Information Officer
OIG	Office of Inspector General
OMB	Office of Management and Budget
OST	Office of the Secretary of Transportation
PHMSA	Pipeline and Hazardous Materials Safety Administration

Exhibit D. Status of OIG’s Prior Recommendations

In response to our prior GDA reports, issued in October 2020 and October 2022, the Department took appropriate steps, and the following recommendations from those reports have been closed.

No.	Description of 2022 OIG Recommendation	Status
1	The Director of Bureau of Transportation Statistics complete and implement the DOT Geospatial Standards Implementation Plan in accordance with section 756(b) of the Geospatial Data Act of 2018.	Closed 10/3/2023

No.	Description of 2020 OIG Recommendations	Status
1	Update the NGDA Theme plan with the processes to identify, assess, and develop NGDA standards based on the Act.	Closed 3/22/2022
2	Develop and implement a process to track the financial resources necessary to manage the NGDA Transportation data theme.	Closed 5/13/2022
3	Develop, publish and implement DOT’s strategy for geospatial data-related activities as defined in its Geospatial Information System Strategic Plan.	Closed 11/15/2022
4	Work with the Chief Data Officer to verify that all OAs designate an appropriate individual as a geospatial information officer.	Closed 10/27/2020
5	Work with OA records officers to verify that FAA, FTA, MARAD, NHTSA, OST, and PHMSA allocate appropriate resources to complete file plans and record schedules development activities through submission to the DOT Records Management Office.	Closed 9/16/2022
6	Track and monitor FRA’s, MARAD’s, NHTSA’s, and PHMSA’s allocated resources to meet the responsibilities of effective geospatial data collection, production, and stewardship.	Closed 6/1/2022
7	Develop, disseminate, and implement a uniform process for all OAs to perform a quality review of geospatial data to verify compliance with DOT’s information quality guidelines. This process should include a method of ensuring recipients of DOT funds for geospatial data collection meet appropriate quality standards, as well as an assessment of stakeholder and peer reviews in order to validate the quality of all disseminated information.	Closed 2/18/2022
8	Update, disseminate and implement DOT’s internal data inventory policy to address how the OAs should verify that geospatial data and metadata does not inappropriately disclose personally identified information to external parties and include guidelines on tracking and maintaining geospatial data asset inventory and validating that inventories are complete.	Closed 6/29/2022
9	Develop a process to verify that the OAs are aware of and apply DOT’s Privacy Risk Management Policy, requiring privacy risk management activities to be	Closed 6/1/2022

No.	Description of 2020 OIG Recommendations	Status
	completed for geospatial information systems prior to next system reauthorization.	
10	Develop and implement a procedure that documents and tracks all responsibilities outlined in the Geospatial Policy on Reducing Duplication are implemented to include DOT's and OAs' implementation of geospatial clearinghouse searches to validate no duplication of funds.	Closed 10/28/2021
11	Develop and maintain a process to verify that all geospatial metadata meets quality standards that strengthen the internal control process to improve the quality of metadata reported on DOT's enterprise data inventory.	Closed 1/19/2022
12	Establish, document and implement a process for ongoing monitoring of its strategy for advancing geospatial information and related geospatial data and activities appropriate to its mission in accordance with requirements of the Federal Internal Control Standards	Closed 11/15/2022
13	Working with the OAs, require that all geospatial information systems maintain authorization status in accordance with departmental cybersecurity policies.	Closed 6/1/2022

Exhibit E. DOT's Inventory of Geospatial Datasets

Operating Administration	Name of Asset
FAA	Airports (National)(NGDA) Airports
FAA	Runways (National)(NGDA) Runways
FHWA	National Bridge Inventory (NGDA) Bridges
FHWA	Travel-Monitoring-Analysis-System-national
FRA	North-American-Rail-Nodes-National-NGDA-North-American-rail-node
FRA	North-American-Rail-Lines-National-NGDA-North-American-rail-line
MARAD	America's Marine Highway Routes
MARAD	Commercial Strategic Ports
MARAD	MARAD Gateway Regions
MARAD	MARAD Gateway Offices
OST/BTS	Bikeshare Scooter Systems
OST/BTS	Freight Analysis Framework (FAF5) Network Links
OST/BTS	Freight Analysis Framework (FAF5) Regions
OST/BTS	Freight Analysis Framework (FAF5) Network Nodes
OST/BTS	Intercity Bus Atlas – Routes
OST/BTS	Intercity Bus Atlas – Stops
OST/BTS	Intermodal Freight Facilities – Air-to-Truck
OST/BTS	Intermodal Freight Facilities – Marine Roll-on/Roll-off
OST/BTS	Intermodal Freight Facilities – Pipeline Terminals
OST/BTS	Intermodal Freight Facilities – Rail TOFC/COFC
OST/BTS	Means of Transportation to Work
OST/BTS	National Census of Ferry Operators (NCFO) Routes
OST/BTS	National Census of Ferry Operators (NCFO) Terminals
OST/BTS	National Transit Map – Routes
OST/BTS	National Transit Map – Stops
OST/BTS	National Transit Map – Agencies

Operating Administration	Name of Asset
OST/BTS	Noise Data 2016
OST/BTS	Noise Data 2018
OST/BTS	Noise Data 2020
OST/BTS	North American Roads
OST/BTS	Spaceports
OST/BTS	Time Zones
OST/BTS	Travel Time to Work

Source: OIG analysis of DOT's datasets inventory as of June 2024.

Exhibit F. DOT Geospatial Systems' Inventory Issues

Table F-1. Geospatial Systems in the June 2024 Inventory With Mismatched Names in CSAM

Operating Administration	Type of Asset	June 2024 Inventory	CSAM
FAA	Major Application	Aeronautical Information Portal/ National Flight Data Center and ProjectWise Electronic Drawing Management System	Computer Aided Engineering Graphics
FAA	Major Application	Geospatial Tool with Integrated Technology	FAA Environmental Site Cleanup Report (ESCR) Automated Tracking System
FAA	Major Application	NAS Integrated Status Insight System	National Defense Program
FAA	Major Application	Aeronautical Information Portal/ National Flight Data Center	National Airspace System (NAS) Aeronautical Information Management Enterprise System

Source: OIG analysis of DOT's geospatial systems as of June and August 2024.

Table F-2. Geospatial Systems in the June 2024 Inventory but Not in CSAM

Operating Administration	Type of Asset	Name of Asset
FHWA	General Support System	ITD GSS (includes HEPGIS and HPMS)
FHWA	General Support System	WFL GSS
FHWA	General Support System	EFL GSS
FHWA	General Support System	CFL GSS
FHWA	General Support System	NTI
FMCSA	Major Application	Motor Carrier Management Information Systems (MCMIS)
PHMSA	Major Application	PHMSA Portal System with Cloud (PPS)

Source: OIG analysis of DOT's geospatial systems as of June and August 2024.

Table F-3. Geospatial Systems in CSAM but Not in the June 2024 Inventory

Operating Administration	Type of Asset	Name of Asset
FAA	Major Application	UAS Facility Maps
FHWA	Major Application	Long Term Bridge Performance InfoBridge LTBP InfoBridge
FHWA	Major Application	Long Term Pavement Performance InfoPave
FHWA	Major Application	Mobile Solution for Assessment & Reporting
NHTSA	Major Application	Enterprise Data Management Analytics Services

Source: OIG analysis of DOT’s geospatial systems as of June and August 2024.

Table F-4. FAA Geospatial Systems With Expired Authorizations To Operate

Operating Administration	Type of Asset	Name of Asset	ATO Expiration Date
FAA	Major Application	Computer Aided Engineering Graphics	April 15, 2024
FAA	General Support System	FALCON	March 5, 2024
FAA	Major Application	Real Estate Management System	June 24, 2024

Source: OIG analysis of DOT’s geospatial systems as of June and August 2024.

Exhibit G. Major Contributors to This Report

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Appendix. Agency Comments




**U.S. Department of
Transportation**
Office of the Secretary
of Transportation
Office of the Chief Information Officer

Memorandum

Subject: INFORMATION: Management Response to the
Office of Inspector General (OIG) Draft Report -
Review of DOT's Fiscal Year 2024 Compliance With
the Geospatial Data Act of 2018

Date:
9/24/2024

From: Daniel Morgan DANIEL SCOTT
Chief Data Officer MORGAN

 Digitally signed by DANIEL SCOTT
MORGAN
Date: 2024.09.24 12:15:30 -04'00'

To: Kevin Dorsey
Assistant Inspector General for Information Technology Audits

The Department of Transportation (Department or DOT) is a leader in the federal geospatial community. When the Geospatial Data Act (GDA or Act) was signed into law in October 2018, DOT immediately began implementation. We chaired the cross-agency working group focused on addressing the Act's requirements. The Department's Chief Data Officer and Chief Geospatial Information Officer (GIO) coordinated with Operating Administration (OA) subject matter experts, the Bureau of Transportation Statistics, Chief Information Security Officer, Privacy Officer, and Records Management liaisons to implement actions to comply with the GDA.

DOT recognizes that geospatial endeavors are important to the Department's operations. The Geospatial Management Office continues to grow its staffing, resources, and partnerships. Each OA having geospatial data and/or programs has selected its GIO. This team of Component GIOs monitor geospatial programs in the OAs, report geospatial expenditures and resources, and assist the Geospatial Management Office with GDA compliance. As a result of these efforts, DOT has implemented the requirements of the Act and addressed all prior recommendations issued by OIG. Further, in August 2024, DOT implemented updated processes to further enhance the accuracy of its geospatial inventory, such as removing systems that are not geospatial. These would include OA systems noted in OIG's table F2 (FMCSA) and table F3 (FHWA and NHTSA).

Upon review of the OIG draft report, the Department concurs with Recommendations 1 and 2 as written. We plan to complete actions to implement Recommendation 1 by December 31, 2024, and actions to implement Recommendation 2 by March 31, 2025.

DOT appreciates the opportunity to respond to the OIG's draft report. Please contact me

at daniel.morgan@dot.gov or (202) 366-4308, with any questions or if you would like additional details.

U.S. Department of Transportation
Office of Inspector General

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