May 23, 2016

MEMORANDUM FOR: John H. Thompson
                       Director
                       U.S. Census Bureau

FROM: Carol N. Rice
                       Assistant Inspector General for Economic
                          and Statistical Program Assessment

SUBJECT: *The U.S. Census Bureau Geography Division Lacks Complete*
                       Information for Project Costs and Has Not Fully Monitored GSS-I Goals
                       Final Report No. OIG-16-029-A

This report addresses the status of the Census Bureau's (the bureau's) 2020 decennial program preparation and planning efforts. The bureau maintains all known living quarters in the Master Address File (MAF). Each address in the MAF is linked to a geographic location in the Topologically Integrated Geographic Encoding and Referencing database (TIGER), to create the MAF/TIGER database (MTdb). Our audit objectives were to (1) assess the methods and costs of continuously updating the MTdb; (2) determine how efforts, such as the 2015 Address Validation Test, support the accuracy of the MAF; and (3) evaluate the preparation of the Local Update of Census Addresses (LUCA) program for the 2020 decennial census. This report focuses on risks identified for objective 1. A report on objectives 2 and 3 was released on February 23, 2016.[1] See appendix A for more specific details on our objectives, scope, and methodology.

Background

To conduct demographic, population, and income surveys, including the decennial census, the bureau maintains a complete list of all living quarters in the United States in the MTdb. As the backbone of the bureau's survey operations, the MTdb must be up-to-date and accurate. Because there is no single source for updating data in the MTdb, the bureau coordinates with providers of multiple data sources, such as tribal, state, and local governments; conducts its own operations to verify and update addresses and maps; and receives updates twice a year with the Delivery Sequence File (DSF) from the United States Postal Service.

The bureau's methods for developing an accurate address list have evolved significantly over the decades (see figure 1). Before 1970, enumerators were responsible for listing addresses and conducting interviews at the same time. For the 1970, 1980, and 1990 decennial censuses, the
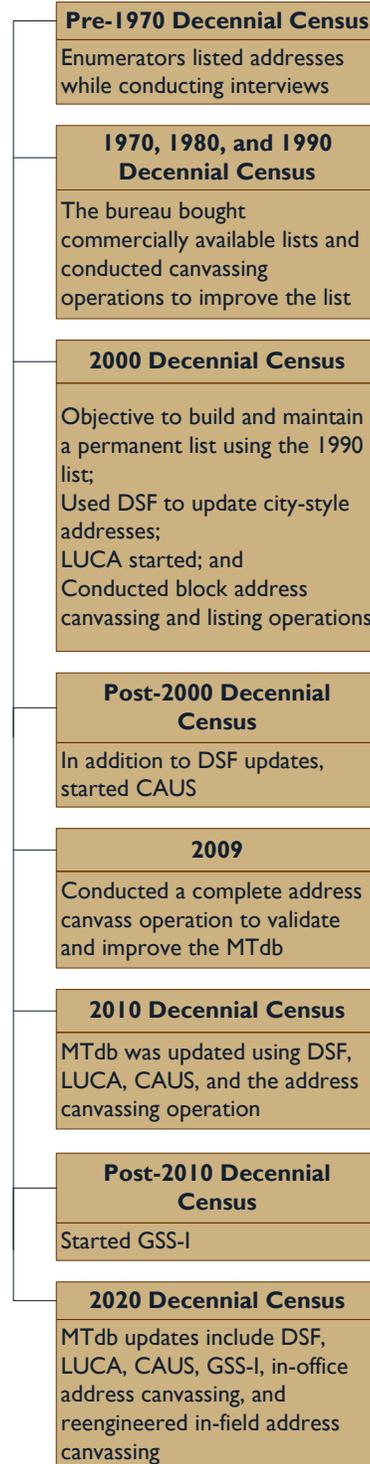
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[1] U.S. Department of Commerce, Office of Inspector General, February 2016. *The U.S. Census Bureau's Efforts to Ensure an Accurate Address List Raise Concerns over Design and Lack of Cost-Benefit Analysis*, OIG-16-018-A. Washington, DC: OIG.

bureau purchased address lists for available metropolitan areas, and then conducted an operation to canvass every street in the nation to improve the address list. For the 2000 decennial census, the objective was to build and maintain a permanent housing unit address list—the MAF—for future use based on the 1990 address list. The LUCA program was started and updates the MTdb[2] through coordination with tribal, state, and local governments. In addition to LUCA, the bureau updated the MTdb with DSF updates, address canvassing, and 2000 decennial census enumeration operations.

The bureau added additional methods for continuously updating the MTdb since 2000. For the 2010 decennial census, the bureau continued with the semiannual DSF updates and started the Community Address Updating System (CAUS), a program that provides field-verified address updates in areas where the DSF is deficient. It also conducted a multi-year effort to collect and correct locations of streets and other geographic information. These updates continued through 2009, when the decennial census conducted a nationwide in-field address canvassing operation to update the MTdb. LUCA also occurred in 2010.

Post-2010 decennial census, the bureau determined there was a need for a more concerted, larger-scale effort for MTdb validation and updates. This prompted the initiation of the Geographic Support System Initiative (GSS-I), a continuous plan on a 10-year lifecycle to provide the most current, accurate, and complete address, feature, and boundary data. The GSS-I is an integrated program of improved address coverage, continual spatial feature updates, and enhanced quality assessment and measurement. Tribal, federal, state, and local governments, as well as third party data providers and users of MTdb data are major participants in the program, submitting address and road data. In addition to GSS-I, DSF, LUCA, and CAUS, the bureau has reengineered

Figure 1. MTdb Development Timeline

Pre-1970 Decennial Census
Enumerators listed addresses while conducting interviews

1970, 1980, and 1990 Decennial Census
The bureau bought commercially available lists and conducted canvassing operations to improve the list

2000 Decennial Census
Objective to build and maintain a permanent list using the 1990 list;
Used DSF to update city-style addresses;
LUCA started; and
Conducted block address canvassing and listing operations

Post-2000 Decennial Census
In addition to DSF updates, started CAUS

2009
Conducted a complete address canvass operation to validate and improve the MTdb

2010 Decennial Census
MTdb was updated using DSF, LUCA, CAUS, and the address canvassing operation

Post-2010 Decennial Census
Started GSS-I

2020 Decennial Census
MTdb updates include DSF, LUCA, CAUS, GSS-I, in-office address canvassing, and reengineered in-field address canvassing

Source: OIG analysis of Census Bureau documents

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[2] For purposes of this report, MTdb refers to both the original MAF/TIGER system and redesigned database.

address canvassing to continuously update the MTdb for the 2020 decennial with: in-office address canvassing, which uses imagery to identify geographic changes; and reengineered in-field address canvassing, which uses the results of the office review to identify areas that may need in-person verification.

Keeping the MTdb up-to-date and accurate is costly and falls under the Periodic Censuses and Programs for Geographic Support System (GSS) budget line-item. The GSS provides the address lists, geospatial data products, and processing systems that support the geographic requirements of all bureau programs, as well as local governments and businesses that use bureau geographic data. The bureau requested $81 million for the GSS in their fiscal year (FY) 2016 budget estimate. Included in the budget is funding used to pay for Census employee salaries as well as contractor costs. For this audit, the team reviewed the 3 primary contracts that specifically relate to work on updating and maintaining the MTdb, which totaled $89,865,709 over a 10 year period. See table 1 below for a breakdown of the contracts.

Table 1. Contracts to Update and Maintain the MTdb

Type of Contract	Length Including Options	Total Length	Total Cost
Alliant Small Business Government-wide Acquisition Contract	8-month base period and 9 1-year options	10 years	$75,655,366
Firm Fixed Price GSA 8(a) STARS II Task Order	1-year base period and 4 1-year options	5 years	$7,441,512
Delivery Order Award	1-year base period and 4 1-year options	5 years	$6,768,831

Source: OIG analysis of the bureau's contracts for updating and maintaining the MTdb

Findings and Recommendations

As the bureau continues updating the MTdb using various methods, we have highlighted three issues for your prompt attention. We identified concerns with (1) approving a new project without a cost estimate, (2) not tracking contractor costs to specific projects, and (3) lack of monitoring the progress of GSS-I goals.

I. The Bureau Does Not Identify Costs for Projects Associated with Continuously Updating the MTdb

   According to the "Geography Division (GEO) Portfolio Management Governing Board (PMGB) Charter" the PMGB, which started in October 2013, approves and prioritizes new work to achieve goals identified for GEO's major programs. The PMGB aligns GEO's finite resources with the bureau's and GEO's strategic plans. The PMGB screens new work before it is sent for approval above the program level. Due to finite resources, PMGB must know the costs of projects in order to balance resources. We found that PMGB approved a

new project without receiving an estimate of project cost. Additionally, we found that GEO does not track contractor costs to specific projects that update the MTdb.

A.   *A new project was approved despite lacking a cost estimate*

Not all projects contain a cost estimate. As a result, the bureau may be making staffing or budgeting decisions that use finite resources incorrectly or inefficiently. The PMGB developed guidance for submitting new work requests in the "Geography Division New Work Request: Process and Guidance." The guidance requires a cost estimate, stating that "[t]he GEO PMGB is not looking for an exact dollar amount—you are being asked for an estimate." However, no cost estimate was included with one of three projects submitted for approval since September 2015.

Three new work requests have been proposed since our audit fieldwork began in September 2015; two included cost estimates of which one was approved and the other has not yet been approved, and the third did not include a cost estimate but was approved. Although the approved third request included staffing resources—which the project owner should have been able to estimate—the PMGB did not require a cost estimate, which is necessary for responsible fiscal management. Because one of the PMGB functions is adjusting the portfolio of projects based on changes such as new high-priority projects, altered strategic direction, or dramatic changes in resources (examples of adjustments are postponing or canceling a project to make resources available for other high-priority work or adding work with accompanying resources) they cannot make informed decisions without complete project information including cost estimates.

B.   *GEO does not track contractors costs to specific projects that update the MTdb*

GEO does not identify contractor costs of specific projects that update the MTdb, and therefore they are not fully informed when managing GEO's limited funding and resources. We found that GEO does not charge contractor costs to specific projects, but rather charges all contractor costs to a single project regardless of contractor activity. As a result, GEO does not consider all costs associated with a project when deciding to de-fund a specific project in favor of another project.

According to the Department of Commerce, *Accounting Principles and Standards Handbook*:

> Managerial cost accounting is the process of accumulating, measuring, analyzing, interpreting, and reporting cost information useful to both internal and external groups concerned with the way in which the organization uses, accounts for, safeguards, and controls its resources to meet its objectives. In managing Federal programs, management should also take into consideration "stewardship investments" which are costs of resources expended for the benefit of the nation.[3]

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[3] U.S. Department of Commerce, Revised September 2011, *Accounting Principles and Standards Handbook,* "Chapter 12: Managerial Cost Accounting." Washington, DC: Department of Commerce, 12-1.

Actual costs need to be known in order to balance the finite GEO resources; otherwise, a decision to suspend a project may not be fully informed. For example, due to sequestration during FY 2014, GEO management eliminated one of the DSF updates; however, the decision was made without knowing the contractor costs and the total impact to the budget.

II. The Bureau Does Not Know if it Achieved All of its GSS-I Goals

The bureau did not monitor over one-third of the original goals it identified for the GSS-I in its operational plan; therefore, the bureau does not know if it has fulfilled those goals. The GSS-I operational plan outlined 43 goals including

- updating the MTdb with Puerto Rico postal service data;

- collecting spatially accurate housing unit coordinates during rural field operations; and

- collecting address and geographic updates from local governments throughout the decade.

After senior management approved the GSS-I operational plan in December 2011, it appears monitoring the status of the goals was overlooked until September 2015, when OIG requested an update. Although the bureau began updating the plan in December 2015, we could not validate the status of 16 of the 43 original goals.

According to the U.S. Government Accountability Office (GAO) *Standards for Internal Control in the Federal Government,* management should design processes to identify information requirements needed to achieve the objectives.[4] The information should consider both internal and external users. Once identified, management obtains relevant information on a timely basis so that it can be used for effective monitoring.

Despite inadequate monitoring, the bureau implemented some of the original goals. Most notably, the bureau established a program to collect address and geographic updates from local governments. As of early December 2015, the bureau had collected over 1,200 updates from state, county, and other local government partners and had implemented procedures to reduce the risk of adding duplicate addresses to the MTdb. We reviewed a random sample of 60 partner submissions and confirmed that the bureau identified duplicates and added over 1,500 new housing units to the MTdb. As a result of this program, the bureau also developed software, techniques, and processes that can be employed in LUCA. Additionally, the bureau implemented, or is in the process of implementing, other projects aimed at assigning the latitude and longitude coordinates to addresses (also known as geocoding), updating street information in the MTdb, and improving address coverage.

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[4] GAO, September 2014. *Standards for Internal Control in the Federal Government,* GAO-14-704G. Washington, DC: GAO, 59.

We recommend the Census Bureau Director

1. Develop and include a cost estimate with existing and new work requests per Geography Division guidance.

2. Track contractor costs to specific projects.

3. Assess, monitor, and document all GSS-I program goals.

In accordance with Department Administrative Order 213-5, submit to us—within 60 calendar days of the date of this report—an agency action plan that responds to the recommendations in the report. Also, please include dates you plan on implementing the action. This final report will be posted on OIG's website pursuant to section 8M of the Inspector General Act of 1978, as amended (5 U.S.C. app., § 8M).

Other Matters

In conducting our audit, we identified the following other matters that are not findings, but are being brought to your attention in order to improve operations.

- We found that, although the bureau has quality indicators (QIs), the QIs measure both MAF quality as well as MAF stability. QIs were supposed to measure the overall quality of addresses in the MAF. However, we found that low QI scores could actually have high quality address data and, conversely, high QI scores could have low quality address data. We suggest the bureau refine the QI scores to truly measure quality, or rename "quality indicators" to better describe what is being measured.

- Prior project and task codes did not enable the GEO Budget Division to track project costs over fiscal years. For FY 2015, the GEO Budget Division created new project and task codes that can identify project costs (except for contractor costs as noted in the above finding). GEO should continue developing project and task codes so that FY costs can be compared.

Summary of Agency Response and OIG Comments

On May 2, 2016, OIG received the bureau's response to the draft report, which we included as appendix B of this report. In the response, the bureau concurs with the recommendations.

In response to finding II, the bureau noted that it did have some processes for tracking GSS-I related work. The OIG concurs that the bureau implemented several different processes for monitoring the status of GSS-I activities between 2011 and 2015. For example, after senior management approved the 43 goals contained in the GSS-I operational plan, the bureau chartered 10 working groups, who in turn, made 63 recommendations regarding the GSS-I program. We found evidence that the bureau monitored the status of the 63 recommendations. However, we also observed that the bureau did not document how the 63 recommendations related to the original 43 goals. Additionally, we observed that senior management neither revised the operational plan nor created a new plan to reflect changes in priorities.

The response identifies actions that, if taken, should improve the bureau's ability to identify Geography Division project costs and fully monitor GSS-I goals. We look forward to reviewing the agency action plan.

Appendix A.
Objectives, Scope, and Methodology

The objectives of our audit were to (1) assess the methods and costs of continuously updating the MTdb; (2) determine how efforts, such as the 2015 Address Validation Test, support the accuracy of the MAF; and (3) evaluate the preparation of the LUCA program for the 2020 decennial census. This report focuses on risks identified for objective 1. On February 23, 2016, we issued a report focused on objectives 2 and 3 to provide timely recommendations for the bureau's operational design decisions.[5] Although the bureau uses different methods to update the MTdb, such as the Boundary and Annexation Survey or the School District Review Program, the scope of our audit focused on the methods and costs of updating the MTdb for the 2020 decennial census. Our scope included methods such as DSF, LUCA, CAUS, and GSS-I; and contracts and the budget for updating the MTdb for the 2020 decennial census.

To meet our audit objective, we assessed the risks associated with the methods and costs for updating the MTdb. For the methods, these included reviewing documentation on how the various methods update the MTdb, the frequency of updates, goals of the methods, and costs associated with those methods. As a result of our risk assessment, we directed our substantive field work and reporting on the costs associated with the methods, and the bureau's GSS-I program.

To accomplish our audit objective, we conducted the following activities:

- interviewed bureau staff and management
- reviewed GEO charters and guidance documents
- assessed the GSS-I operational plan and goals
- reviewed contracts associated with updating the MTdb
- analyzed schedules for updating the MTdb using various methods
- reviewed budget submissions from FY 2011 through FY 2016

We reviewed the following laws, regulations, policies, and documents:

- GAO, September 10, 2014, *Standards for Internal Control in the Federal Government*, GAO-14-704G. Washington, DC: GAO
- U.S. Census Bureau, January 2014, Geography Division Portfolio Management Governing Board Charter. Suitland, MD: U.S. Census Bureau
- U.S. Census Bureau, September 2014, Geography Division New Work Request: Process and Guidance. Suitland, MD: U.S. Census Bureau
- U.S. Census Bureau, May 2009, Geographic Support System Program Increase Initiative (GSS Initiative). Suitland, MD: U.S. Census Bureau

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[5] DOC OIG, *The U.S. Census Bureau's Efforts to Ensure an Accurate Address List Raise Concerns over Design and Lack of Cost-Benefit Analysis*, OIG-16-018-A.

- U.S. Department of Commerce, Revised September 2011, *Accounting Principles and Standards Handbook*, "Chapter 12: Managerial Cost Accounting." Washington, DC: Department of Commerce

Further, we gained an understanding of internal control significant within the context of the audit objective by interviewing officials at the bureau, examining relevant policies and procedures, and reviewing documentation for evidence of internal controls. Based on this, we identified internal control weaknesses (e.g., the PMGB was not following their own guidance when they approved a new work request and GEO did not track the original goals of GSS-I). In satisfying our audit objective, we used computer-processed data to test objective 1. We found the data sufficiently reliable to assess whether the bureau identified added new housing units and identified duplicate addresses. We reviewed the bureau's processes for assessing the quality of data and reviewed the final actions taken on a random sample of partner submissions. We found the data sufficiently reliable.

We conducted this performance audit in accordance with generally accepted government auditing standards. These standards require that we plan and perform our audit to obtain sufficient, appropriate evidence that provides 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.

We conducted our review from September 2015 through March 2016 under the authority of the Inspector General Act of 1978, as amended (5 U.S.C. app.), and Department Organization Order 10-13. We performed our work at the Department of Commerce headquarters in Washington, DC, and the Census Bureau headquarters in Suitland, Maryland.
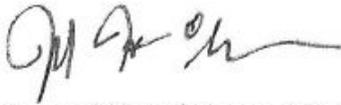
Appendix B.
Agency Response

UNITED STATES DEPARTMENT OF COMMERCE
Economics and Statistics Administration
U.S. Census Bureau
Washington, DC 20233-0001
OFFICE OF THE DIRECTOR

2 MAY 2016

MEMORANDUM FOR: Carol Rice
                    Assistant Inspector General for Economic
                     And Statistical Program Assessment

From: John H. Thompson
                    Director

Subject: Census Bureau Comments on OIG Draft Report: "The U.S.
                    Census Bureau Geography Division Lacks Complete Information
                    for Project Costs and Has Not Fully Monitored GSS-I Goals"
                    (Draft Issued April 15, 2016)

Please see the attached comments in response to recommendations in your final report entitled
*The U.S. Census Bureau Geography Division Lacks Complete Information for Project Costs and
Has Not Fully Monitored GSS-I Goals.* The Census Bureau appreciates the comments and
recommendations developed by the Assistant Inspector General for Economic and Statistical
Program Assessment in producing this draft report.

Attachment

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Census Bureau Comments on OIG Draft Report:
"The U.S. Census Bureau Geography Division Lacks Complete Information for Project Costs
and Has Not Fully Monitored GSS-I Goals" (Draft Issued April 15, 2016)
April 25, 2016

The U.S. Census Bureau appreciates the opportunity to comment on this draft report, which focuses on the objective to assess the methods and costs of continuously updating the MAF/TIGER database (MTdb), number one of three objectives of the audit on the status of the Census Bureau's 2020 decennial program preparation and planning efforts. (The report on two other objectives, to determine how efforts such as the 2015 Address Validation Test support the accuracy of the Master Address File (MAF) and to evaluate the preparation of the Local Update of Census Addresses (LUCA) program for the 2020 decennial census, was released on February 23, 2016.) The recommendations provided by the OIG are concerned with: (1) absence of a cost estimate when approving a new project, (2) not tracking contractor costs to specific projects, and (3) lack of monitoring the progress of GSS-I goals.

We have no fundamental disagreements with any of the recommendations, and will soon prepare a formal action plan to document the steps we will take in response to those recommendations. Planned actions will (1) ensure the utilization of a cost estimate to accompany requests for work funded under the combined Geographic Support System/Geographic Support System Initiative (GSS/GSS-I) program following the Geography Division's (GEO) guidance; (2) investigate ways to track contractor costs to specific projects, and (3) assess, monitor, and document all of the original GSS-I program goals.

The GEO's Program Management Governing Board, or PMGB, is the official venue for establishing new projects and evaluating existing projects within the Geographic Support program. The GEO PMGB is chaired by the Chief of GEO, and includes voting members from GEO, Decennial Census Management Division, the Decennial Information Technology Division (DITD), and the American Community Survey Office. Since the formation of the GEO PMGB, all requests for new work under the Geographic Support program have been discussed at the PMGB. The GEO PMGB has established a threshold in Full Time Employee (FTE) hours that requires a written cost estimate before a decision could be made about whether to conduct the work. The threshold was made to give GEO branch chiefs flexibility with their resources to meet the evolving needs of the GEO and its customers, but still requires discussion, authorization, and prioritization of new work at the PMGB. This first recommendation is an acknowledgement of how the GEO intends to manage its portfolio, and with this finding identified, every effort will be made to ensure that new work is required to deliver a cost analysis and estimate as appropriate prior to PMGB approval.

The GEO retains an Informational Technology (IT) services contract that provides access to application developers, database administrators, technical writers, and testing engineers. These resources support the entire portfolio of GEO-sponsored IT projects based on a priority determined by the GEO PMGB. The work that is assigned to these contractor resources is governed by the scope of work defined in their contract. That scope of work was defined at the time of contract award, and interpretations as to whether a new task falls into the original scope of work are made jointly by the GEO and Census Bureau contracts and Acquisitions staff. Any

modification to the scope of the contract requires approval from Acquisitions and agreement from the contractor. As the scope of the contract was defined at the time of award, and extends across multiple projects and budget years, it is not possible to know in advance what present or future project codes should fund all work supported by the contract. However, the current approach of allocating all funding for the contract into a single project code each year can be adapted to ensure more transparency into full project costs, a recommendation the GEO fully supports. The GEO envisions an approach where portions of funding are allocated to each of the project codes in the GEO IT portfolio each year, totaling the full cost of the option, and allowing the contractor to charge their time to a more specific list of codes. This adaptation will require the approval of the Acquisitions staff and the agreement of the contract managers, and may also require a contract modification and new costs.

Regarding the statement on page 5 noting an apparent lack of monitoring of GSS-I goals for the period December 2011 until the time of the audit, we would like to add information that might change the observation. In the period of interest, December 2011-September 2015, the division chief briefed bureau executives on GEO activities, including a component on the GSS-I, five times per year on average and no less than quarterly. Recent briefings were in November 2015 and January 2016. To the point of the recommendation, however, we agree that clear and measurable documentation is required for all of the goals of the GSS program, and specifically the activities launched under the GSS-I. The original comprehensive list of planned activities for the GSS-I program lifecycle was defined in 2009 as part of the original request for initiative funds. There were nine goals on that list. Since the GSS-I was funded in 2011, those nine original goals have evolved into more specific tasks based on the results of the initial research and development phase of the program. That evolution of the original goals has produced a series of management documents that were intended to define the current scope of the program. The 2011 Operational Plan discussed in the recommendation was one such document. As a definition of program scope, that 2011 Operational Plan was later replaced by ten research and development Working Groups that produced 63 specific recommendations for work to be done under the GSS-I. The GEO hired a GSS-I Program Manager who initially managed work done under the GSS-I program against that list of 63 recommendations, and then eventually shifted into the management of specific projects. We agree with this recommendation because it accurately highlights gaps in the documentation of how the scope of the original GSS-I was and is managed. We will update the documentation for all active work initiated as part of the GSS-I and now absorbed into the Geographic Support program, and continue to refresh that documentation annually. As a project completes, we will document that status and note where artifacts can be located. We appreciate the recommendation's acknowledgement of significant GSS-I goals that we have accomplished and documented.

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