

GAO

Report to the Chairman, Committee on
Agriculture, Nutrition, and Forestry,
U.S. Senate

July 2007

NATIONAL ANIMAL IDENTIFICATION SYSTEM

USDA Needs to Resolve Several Key Implementation Issues to Achieve Rapid and Effective Disease Traceback





Highlights of [GAO-07-592](#), a report to the Chairman, Committee on Agriculture, Nutrition, and Forestry, U.S. Senate

Why GAO Did This Study

Livestock production contributed nearly \$123 billion to the U.S. economy in 2006. In response to concerns about animal disease outbreaks, the U.S. Department of Agriculture (USDA) announced in December 2003 that it would implement a nationwide program—later named the National Animal Identification System (NAIS)—to help producers and animal health officials respond quickly and effectively to animal disease events in the United States.

In this context, GAO determined (1) how effectively USDA is implementing NAIS and, specifically, the key issues identified by livestock industry groups, market operators, state officials, and others; (2) how USDA has distributed cooperative agreement funds to help states and industry prepare for NAIS and evaluated the agreements' results; and (3) what USDA and others estimate are the costs for USDA, states, and industry to implement NAIS. In conducting its work, GAO reviewed USDA documents; interviewed agency, industry, and state officials; and consulted 32 animal identification (ID) experts.

What GAO Recommends

GAO made several recommendations to help USDA achieve the program's goal of rapid and effective animal disease traceback. In commenting on a draft of this report, USDA generally agreed with the recommendations.

www.gao.gov/cgi-bin/getrpt?GAO-07-592.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Lisa Shames at (202) 512-3841 or ShamesL@gao.gov.

NATIONAL ANIMAL IDENTIFICATION SYSTEM

USDA Needs to Resolve Several Key Implementation Issues to Achieve Rapid and Effective Disease Traceback

What GAO Found

In implementing the NAIS program, USDA has taken some steps to address issues identified by livestock industry groups, market operators, state animal health officials, and others. Nonetheless, the agency has not effectively addressed several issues that, if left unresolved, could undermine the program's ability to achieve the goal of rapid and effective animal disease traceback. Specifically, USDA's decision to implement NAIS as a voluntary program may affect the agency's ability to attract the necessary levels of participation. However, some industry groups believe that NAIS could succeed as a voluntary program, or that USDA needs to first resolve several issues before making participation mandatory. Agency officials are analyzing what participation levels are necessary to meet the program's goal and may introduce benchmarks to measure progress. In addition, several key problems hinder USDA's ability to implement NAIS effectively:

- USDA has not prioritized the implementation of NAIS by species or other criteria. Instead, the agency is implementing NAIS for numerous species simultaneously, causing federal, state, and industry resources to be allocated widely, rather than being focused on the species of greatest concern.
- USDA has not developed a plan to integrate NAIS with preexisting USDA and state animal ID requirements. As a result, producers are generally discouraged from investing in new ID devices for NAIS.
- USDA has not established a robust process for selecting, standardizing, and testing animal ID and tracking technologies.
- USDA does not clearly define the time frame for rapid traceback, possibly slowing response and causing greater economic losses.
- USDA does not require potentially critical information to be recorded, such as species or age, in the NAIS databases.

USDA has awarded \$35 million in NAIS cooperative agreements from fiscal years 2004 through 2006 to 49 states, 29 tribes, and 2 territories to help identify effective approaches to register premises and identify and track animals. However, USDA has not consistently monitored or formally evaluated the results of cooperative agreements or consistently shared the results with states, industry groups, and other stakeholders. As a result, USDA cannot be assured that the agreements' intended outcomes have been achieved and, furthermore, that lessons learned and best practices are used to inform the program's progress.

No comprehensive cost estimate or cost-benefit analysis for the implementation and maintenance of NAIS currently exists. As a result, it is not known how much is required in federal, state, and industry resources to achieve rapid and effective traceback, or whether the potential benefits of the program outweigh the costs. Industry groups and state officials say the cost of implementing NAIS is one of their biggest concerns. USDA plans to hire a contractor to conduct a cost-benefit analysis, in part to more precisely forecast the economic effects of NAIS.

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Abbreviations

APHIS	Animal and Plant Health Inspection Service
BSE	bovine spongiform encephalopathy
CCC	Commodity Credit Corporation
EU	European Union
FMD	foot-and-mouth disease
ID	identification
NAIS	National Animal Identification System
OMB	Office of Management and Budget
RFID	radio frequency identification
TB	tuberculosis
USDA	U.S. Department of Agriculture

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United States Government Accountability Office
Washington, DC 20548

July 6, 2007

The Honorable Tom Harkin
Chairman
Committee on Agriculture, Nutrition, and Forestry
United States Senate

Dear Mr. Chairman:

U.S. agriculture provides an abundant supply of food and other products for Americans and others around the world, annually generating more than \$1 trillion in economic activity, including more than \$68 billion in exports in 2006. Because of the economic importance of the agriculture sector and the risks to public health as well as the economy, we have designated the federal oversight of food safety as a high-risk area.¹ Within the broader sector, livestock production contributed nearly \$123 billion to the U.S. economy in 2006, including \$13.4 billion in livestock, poultry, and dairy exports.² One way to protect the health of livestock animals—which are critically important to the integrity and safety of the nation’s food supply, the well-being of Americans, and the U.S. economy—is through a national animal identification (ID) system to trace back and contain diseases that spread rapidly. Our recent work has described animal diseases and their economic and, in some cases, human health consequences. For example, a highly pathogenic strain of avian influenza has spread to nearly 60 countries over the past few years, resulting in the death and destruction of millions of wild and domestic birds and infecting almost 300 humans, more than one-half of whom have died—creating serious concerns that the virus could reach North America at any time.³ In addition, the first known U.S. case discovered in December 2003 of one cow infected with bovine spongiform encephalopathy (BSE) caused the U.S. beef industry to lose more than 80 percent of its export trade, or an estimated \$2 billion,

¹GAO, *High-Risk Series: An Update*, [GAO-07-310](#) (Washington, D.C.: January 2007).

²In this report, we use the word “livestock” to refer to all animals involved in livestock production, including poultry.

³GAO, *Avian Influenza: USDA Has Taken Important Steps to Prepare for Outbreaks, but Better Planning Could Improve Response*, [GAO-07-652](#) (Washington, D.C.: June 11, 2007).

between January and September 2004.⁴ Commonly known as mad cow disease, BSE has been linked by scientists to a fatal neurological disease in humans known as variant Creutzfeldt-Jacob disease. Another disease of particular concern is foot-and-mouth disease (FMD), a highly contagious livestock disease that does not typically affect humans and last occurred in the United States in 1929. According to several estimates, the direct costs of controlling and eradicating a U.S. outbreak of FMD could range up to \$27 billion in current dollars.⁵

In response to concerns about such outbreaks occurring in the United States and in recognition that speed and accuracy are critical factors in controlling a disease, the U.S. Department of Agriculture (USDA) announced in December 2003 that it would lead the design and implementation of a nationwide program—later named the National Animal Identification System (NAIS)—to enable USDA, states, and industry to quickly and efficiently locate all infected and potentially exposed animals and premises that have had contact with a foreign or domestic disease of concern. USDA recognized that a fully functional animal tracking system will keep the United States competitive in international markets, can help reassure foreign consumers about the health of U.S. livestock, and may satisfy other countries' import requirements. Internationally, some of the United States' major trading partners—such as the European Union (EU), Japan, and Canada—already have mandatory national animal ID programs in place for certain species. The Animal Health Protection Act authorizes the Secretary of Agriculture to carry out operations and measures to detect, control, or eradicate livestock pests and diseases,⁶ and USDA has delegated this responsibility to its Animal and Plant Health Inspection Service's (APHIS) Veterinary Services. USDA cites this broad authority for implementing NAIS as either a voluntary or mandatory program.

NAIS is currently being implemented for nine livestock species groups: bison; camelids (llamas and alpacas); cattle (beef and dairy); cervids (deer and elk); equine (horses, mules, donkeys, and burros); goats; poultry;

⁴GAO, *Mad Cow Disease: FDA's Management of the Feed Ban Has Improved, but Oversight Weaknesses Continue to Limit Program Effectiveness*, [GAO-05-101](#) (Washington, D.C.: Feb. 25, 2005).

⁵GAO, *Foot and Mouth Disease: To Protect U.S. Livestock, USDA Must Remain Vigilant and Resolve Outstanding Issues*, [GAO-02-808](#) (Washington, D.C.: July 26, 2002).

⁶7 U.S.C. § 8308.

sheep; and swine. Since 2004, USDA has received input on the design and implementation of the program from various stakeholders, including industry groups, individual producers, livestock markets, slaughter facilities (processors), and state animal health officials. USDA says that because NAIS is a state-federal-industry partnership, the agency has used stakeholder input to adjust the program as NAIS has evolved, and it encourages continued stakeholder input.

NAIS consists of three components: (1) registering all “premises” that manage or handle livestock, such as farms, feedlots, veterinary clinics, and livestock markets; (2) identifying livestock animals; and (3) tracking animal movements throughout the production process, from their premises of origin to their slaughter or death. Initially, USDA stated that NAIS would start as a voluntary program and later become mandatory, but, in late 2006, the agency decided that NAIS would remain voluntary. The agency also provided a timeline for implementation and set participation benchmarks that called for gradually increasing the percentages of premises registered, animals identified, and animals tracked. By August 2005, all states had the capability of registering premises, and, as of late May 2007, USDA reported that more than 390,000 premises, or 27.5 percent of the national estimate, were registered in NAIS.

Of the total \$85.0 million funding made available for NAIS from fiscal years 2004 through 2006, USDA has awarded \$35.0 million in cooperative agreements to states, territories, and tribes to help identify effective approaches to register premises and to identify and track animals. In fiscal year 2007, Congress appropriated another \$33.0 million to develop and implement NAIS, and the President’s Budget in fiscal year 2008 requested an additional \$33.1 million for the program. Premises registration is currently funded by USDA, states, territories, and tribes and, therefore, is free to the producer. The costs of animal ID and tracking are to be borne by the livestock industry and will vary, depending on the choices made by individual producers.

In this context, we determined (1) how effectively USDA is implementing NAIS and, specifically, the key implementation issues identified by livestock industry groups, market operators, state animal health officials, and others; (2) how USDA has distributed cooperative agreement funding to help states and industry prepare for NAIS and evaluated the agreements’ results; and (3) what USDA and others estimate are the costs for USDA, states, and the livestock industry to implement and maintain NAIS.

To address all three objectives, we reviewed USDA documents, interviewed agency officials responsible for implementing NAIS, and conducted site visits to selected livestock markets and cooperative agreement field trials. We also conducted structured interviews in person or via telephone with animal health officials in seven states. These states were selected on the basis of their geographic dispersion; the range in the number of premises located in each state; and, in some cases, their high levels of livestock production. We also conducted structured interviews in person or via telephone with, and reviewed documents from, representatives from numerous stakeholder organizations, including several NAIS industry working groups. In addition, for the first and third objectives, we convened a Web-based panel of 32 experts to learn their beliefs and opinions on various aspects of USDA's implementation of NAIS. We selected experts who were actively involved in the development or implementation of NAIS and were knowledgeable of its details; who had conducted research on animal ID, or had published in peer-reviewed journals on animal ID; or who were recognized by their peers as an expert on NAIS. For the second objective, we also reviewed USDA documentation related to cooperative agreements signed between USDA and states, territories, tribes, and industry groups from fiscal years 2004 through 2007. For the third objective, we asked USDA and others for any NAIS cost estimates they had developed, and we reviewed federal guidance for developing cost-benefit analyses. A more detailed description of our scope and methodology is presented in appendix I. We conducted our work from June 2006 to May 2007 in accordance with generally accepted government auditing standards.

Results in Brief

USDA has steadily increased the number of livestock premises registered in the nation and taken some steps to address stakeholder concerns in implementing NAIS. However, the agency has not effectively addressed several key issues identified by livestock industry groups, market operators, state animal health officials, and others that, if left unresolved, could undermine the program's goal of rapid and effective traceback and thus hinder its success. Foremost among these issues is USDA's decision in late 2006 to continue implementing NAIS as a voluntary program and to drop participation benchmarks that were intended to gauge progress. Many industry groups, state animal health officials, and experts say this approach may affect the agency's ability to attract the necessary levels of participation to quickly and efficiently locate all animals that are potentially exposed to a disease. However, some industry groups oppose the program being mandatory because they believe that NAIS could succeed as a voluntary program or that USDA first needs to resolve several

implementation issues. USDA officials told us that the agency is analyzing what participation levels are necessary to meet the program's goal, and that it may introduce new, risk-based benchmarks, accordingly. In addition, several other key problems hinder the agency's ability to implement NAIS effectively, as follows:

- USDA has not prioritized the implementation of NAIS by species or other criteria. Instead, the agency is implementing NAIS for numerous species simultaneously, regardless of the species' economic value, their risk of diseases of concern, the potential human health impact of these diseases, or other criteria. Consequently, federal, state, and industry resources for NAIS have been allocated widely, rather than being focused first on the species of greatest concern and allowing other species to be included later, on the basis of lessons learned. Twenty-one of the 32 expert panel members said USDA should definitely or probably implement NAIS incrementally by species and suggested criteria to prioritize the order of implementation. USDA officials told us that prioritizing implementation may be appropriate, such as focusing on specific diseases of concern or commercial operations, and that the states should determine their own priorities for implementation.
- Although USDA aims to minimize the financial and practical impact on producers and others in implementing NAIS, the agency has not developed a plan to integrate NAIS with preexisting animal ID requirements, such as scrapie ear tags and brands, for other USDA and state animal health programs. As a result, producers have generally been discouraged from investing in new ID devices for NAIS, according to industry groups we interviewed.
- USDA has not established a robust process for selecting, standardizing, and testing ID and tracking technologies. While international programs have generally used specific animal ID devices for their national animal ID programs, USDA has taken a "technology-neutral" position to allow market forces to determine what devices are most effective and practical. In addition, industry groups, experts, and others told us that electronic ID technologies do not always perform well in production environments, such as livestock markets, and that the agency has not independently tested any ID or tracking devices. Consequently, producers, livestock markets, and others are reluctant to invest in new ID or tracking devices for NAIS, according to industry groups and the experts.
- USDA does not clearly define the time frame for rapid animal disease traceback. The definition of "rapid traceback" may vary by disease because some diseases spread more quickly than others, but by not clearly

defining a rapid response for a given disease, there could be a slower response and greater economic losses. A senior USDA official told us the agency first needs to identify current baselines for traceback before the agency can determine time-sensitive traceback goals for NAIS.

- USDA does not require potentially critical information—such as the species, date of birth, or approximate age of animals—to be recorded in NAIS animal ID and tracking databases. This information can be critical for efficient traceback because it helps limit the scope of an investigation, thus saving time and potentially minimizing the economic impact. USDA officials told us that although animal-specific data can be valuable, the agency is collecting the minimum amount of information needed due to some producers' concerns about protection of their proprietary information in NAIS databases.

USDA awarded 169 NAIS cooperative agreements totaling \$35 million to 49 states, 29 tribes, and 2 territories from fiscal years 2004 through 2006 to help identify effective approaches to register premises and identify and track animals. To date, USDA has not consistently monitored cooperative agreements, and, as a result, the agency cannot be assured that the agreements' intended outcomes have been achieved. In addition, USDA has not formally evaluated or consistently shared the results of cooperative agreements with state departments of agriculture, industry groups, and other NAIS stakeholders, which would enable lessons learned and best practices to inform the program's progress. USDA officials told us the quality of reports submitted to the agency varies, and USDA has had insufficient resources to conduct additional oversight. In fiscal year 2007, USDA plans to increase oversight of all cooperative agreements awarded that year by assessing progress midyear. Furthermore, USDA plans to give those states with greater numbers of premises registered some flexibility in using cooperative agreement funds to subsidize the purchase of animal tracking equipment for livestock markets. For the first time, in fiscal year 2007, USDA also plans to award \$6 million in cooperative agreements to nonprofit industry and other groups to increase premises registration efforts.

Although USDA began to implement NAIS in 2004, no comprehensive cost estimate or cost-benefit analysis for the implementation and maintenance of NAIS currently exists. As a result, it is not known how much is required in federal, state, and industry resources to achieve rapid and effective traceback or whether the potential benefits of the program outweigh the costs. Twenty-nine of the 32 expert panel members said that USDA should definitely or probably publish a cost-benefit analysis for NAIS. The NAIS

working groups, other livestock industry representatives, and state animal health officials we interviewed also said that the cost of implementing NAIS remained one of their biggest concerns. USDA officials plan to hire a contractor to conduct a cost-benefit analysis, in part, to more precisely forecast the program's economic effects. Moreover, the Senate Committee on Appropriations and the House of Representatives have raised concerns over how USDA has spent funds to develop and implement NAIS. Finally, the experts had mixed views on the impact that NAIS would have on the livestock industry, such as whether NAIS may lead to changes in market structure or affect prices.

To ensure that USDA continues to take steps to address unresolved issues, we are making several recommendations aimed at improving USDA's efforts to implement NAIS more effectively and efficiently. For example, we are recommending that USDA reestablish participation benchmarks to gauge progress in registering premises and identifying and tracking animals; monitor participation; and, if participation does not meet the benchmarks, take further action, such as making participation mandatory or creating incentives to achieve those levels of participation. In addition, we are recommending that USDA establish a robust process to select, standardize, and independently test and evaluate the performance of animal ID and tracking devices to ensure they meet minimum standards. We are also recommending that USDA increase the monitoring of NAIS cooperative agreements, evaluate and publish the results of cooperative agreements on a timely basis, and publish the planned analysis of the costs and benefits of NAIS following criteria established in Office of Management and Budget (OMB) guidance.

In commenting on a draft of this report, USDA stated that it appreciated our comprehensive evaluation of NAIS and generally agreed with our recommendations. However, regarding our recommendation that USDA establish a robust process to select, standardize, and independently test and evaluate the performance of animal ID and tracking devices to ensure they meet minimum standards, USDA believed that these standards must be defined through a consensus of affected stakeholders and that working with stakeholders to resolve this issue is imperative before selecting specific technologies for NAIS. We recognize the need for USDA to work with stakeholders before determining which ID and tracking devices are most appropriate for NAIS. However, we emphasize that the sooner USDA selects specific technologies, the sooner the animal ID and tracking components of the program will be implemented effectively and efficiently. See the "Agency Comments and Our Evaluation" section and

appendix VII for a reprint of USDA's comment letter and our responses to these comments.

Background

The concept of animal ID is not new, in the United States or abroad. For decades, American producers have kept records on, and used ID methods for, livestock animals for both commercial and regulatory purposes. Specifically, several USDA and state animal disease eradication programs—such as programs for tuberculosis (TB) in cattle, pseudorabies in swine, and scrapie in sheep and goats—include animal ID requirements. Certain species and classes of animals require officially recognized ID devices for interstate commerce, and all live animals imported into, or exported from, the United States require official ID. Thus, many livestock animals are already identified in the United States by ear tags, branding, tattoos, or other devices. However, the use of ID devices varies by breed, species, and state, and, until NAIS, no attempt had been made to create a uniform animal ID system of national scope and across multiple species using a universal numbering system and central data repository.

Due to serious concerns about the United States' ability to safeguard its livestock from the harmful effects of disease, in 2002, the National Institute of Animal Agriculture—an organization of producers, veterinarians, scientists, government representatives, and allied industries—initiated a state-USDA-industry task force of approximately 70 representatives to create a national animal ID system. In 2003, USDA expanded upon this work and established a development team consisting of more than 70 industry associations, organizations, and government agencies. That team ultimately produced the *United States Animal Identification Plan* in December 2003, which provided the foundation for NAIS. Although early versions of the plan focused on food animals only, other livestock species were later incorporated. The plan was being finalized when the nation's first case of BSE was confirmed on December 25, 2003. Five days later, the Secretary of Agriculture announced measures to guard against BSE and indicated that USDA would expedite the implementation of a national animal ID system.

Since 2004, USDA has solicited public comments on draft NAIS policy documents, held public listening sessions, and met with industry groups and others in its efforts to design and implement NAIS. In addition, USDA has received input from 10 working groups comprising producers, academics, and others representing the various livestock species and industry sectors currently included in NAIS. These working groups make recommendations to the NAIS Subcommittee, a group of state and

industry stakeholders established by USDA in September 2004 to provide regular, formal input to the USDA Secretary's Advisory Committee on Foreign Animal and Poultry Diseases (full committee) about how NAIS should progress. The NAIS Subcommittee is also responsible for receiving input from the National Institute of Animal Agriculture; the United States Animal Health Association, an organization representing state veterinarians and allied industry groups; and other organizations and individuals. The full committee is a federal advisory group of state, academic, and industry experts selected by the Secretary, which meets once a year or as deemed necessary by the Secretary. While the NAIS Subcommittee meets periodically, the full committee has met only twice—in September 2004 and September 2006—since the creation of NAIS. USDA is not obligated to take action on the NAIS Subcommittee's, full committee's, or others' recommendations.

For the premises registration component of NAIS, states and tribes are responsible for submitting premises information—given to them by producers and others—to a central, Web-based USDA premises database. In turn, USDA allocates a unique, 7-digit, alphanumeric, premises ID number (e.g., A123B45). The premises then receives confirmation online or by mail from the relevant state or tribe with its unique premises ID number.

For the animal ID component, USDA published an interim rule, effective in November 2004, recognizing the Animal Identification Number as a new, official numbering system for individual animals in interstate commerce.⁷ Producers and other NAIS participants can order ID devices from USDA-approved managers that are imprinted with a unique, 15-digit Animal Identification Number for use on animals that move through the production process as individuals, as is typical in the cattle, sheep, and goat industries. Figure 1 shows a calf that is identified with tags in both ears, with the calf's left ear bearing an electronic tag and its right ear bearing a visual tag. Both tags have the Animal Identification Number for official ID purposes, and the visual tag also has a number used for the producer's herd management purposes. For animals of the same species that typically move through the production chain as a group, such as commercial poultry and swine, producers can instead identify the animals with a group/lot ID number. Group/Lot ID numbers are self-generated by

⁷Livestock Identification; Use of Alternative Numbering System, 69 *Fed. Reg.* 64,644 (Nov. 8, 2004).

the premises (not assigned by USDA) and are maintained at the premises in management records.

Figure 1: A Calf Identified with Both a Visual and an Electronic Tag



Source: USDA.

Lastly, for the animal tracking component, USDA has developed the Animal Trace Processing System to allow state and federal animal health officials to request information, in the event of an animal health investigation, from multiple private and state animal tracking databases containing animal location and movement records. Producers and others are responsible for reporting certain animal movements, such as when a change of ownership occurs or when animals commingle with other herds or flocks. Events that would enable state and federal animal health officials to request information from this network of databases include an indication or a confirmed positive test of a foreign animal disease, an animal disease emergency as determined by the Secretary of Agriculture or state departments of agriculture, or a need to conduct a trace to determine the origin of infection for a domestic disease of concern. (See app. II for a list of domestic and foreign animal diseases of concern identified by USDA.)

Key NAIS Implementation Issues Are Unresolved and Could Undermine the Program's Goal of Rapid and Effective Traceback

USDA has steadily increased the number of livestock premises registered in the nation and has taken some steps to address stakeholder concerns in implementing NAIS. However, the agency has not effectively addressed a number of key issues identified by livestock industry groups, market operators, state animal health officials, and others that, if not ultimately resolved, could undermine the program's goal of rapid and effective traceback, thus hindering its success. USDA's decision to implement NAIS as a voluntary program without benchmarks to measure progress may affect the agency's ability to attract the necessary levels of participation to quickly and efficiently locate all animals potentially exposed to a disease. In addition, USDA has not prioritized the implementation of NAIS by species or other criteria. Furthermore, USDA has not developed a plan for integrating NAIS with other USDA and state animal ID requirements, nor has it established a robust process for selecting, standardizing, and testing ID and tracking technologies. The agency also does not clearly define the time frame for rapid traceback. Finally, USDA does not require potentially critical information for efficient traceback to be recorded in NAIS databases.

USDA Is Implementing NAIS as a Voluntary Program without Participation Benchmarks

During the first 2 years of the program's implementation, USDA stated several times that participation in NAIS would initially be voluntary but would eventually become mandatory to achieve full participation and, thus, the goal of rapid and effective traceback. One of USDA's first major NAIS policy documents, the *Draft Strategic Plan 2005-2009*, released in April 2005, stated that during initial implementation, participation would be voluntary so that stakeholders could have the opportunity to obtain experience with the program and provide feedback as successful and practical solutions evolved. The plan also provided a timeline for implementation, with premises registration and animal ID to be required by January 2008 and the reporting of defined animal movements to be required by January 2009, under what would become an entirely mandatory program. The plan stated that this phased-in approach was "to support the transition from voluntary to mandatory as full implementation is achieved." In addition, the plan also stated that, "While market forces may eventually create more inclusiveness, the clear stakeholder support for transitioning to a mandatory program and the urgency of achieving the goal, suggest that setting a date for that transition would benefit the program."

Later, the April 2006 *Strategies for the Implementation of NAIS* set benchmarks that were intended to gauge progress in attaining full participation. These benchmarks called for gradually increasing the

percentages of premises registered, animals identified, and animals tracked from January 2007 through January 2009. Specifically, for premises registration, USDA aimed for 25 percent participation by January 2007, 70 percent by January 2008, and 100 percent by January 2009. In addition, the implementation plan called for 40 percent of animals being identified by January 2008, 100 percent of “new” animals less than 1 year of age being identified by January 2009, and 60 percent of new animals having complete tracking data by January 2009. USDA stated that it would evaluate whether participation levels were increasing at rates that would achieve full participation by 2009, and that, if this were not the case, USDA would develop federal regulations to require industry to identify their premises and animals.

In May 2006, in an announcement for NAIS cooperative agreements, USDA stated that it anticipated promulgating regulations by early 2008 to require participation in all three components of the program. Furthermore, in a document supporting its fiscal year 2007 budget submission to OMB, USDA stated that the intrinsic value of its investment in NAIS was based on the assumption that there would be sufficient animal ID and movement data available to support the program’s traceback goal. USDA also said that if participation fell below expectations, traceback would periodically fail because of the lack of animal tracking information from nonparticipants.

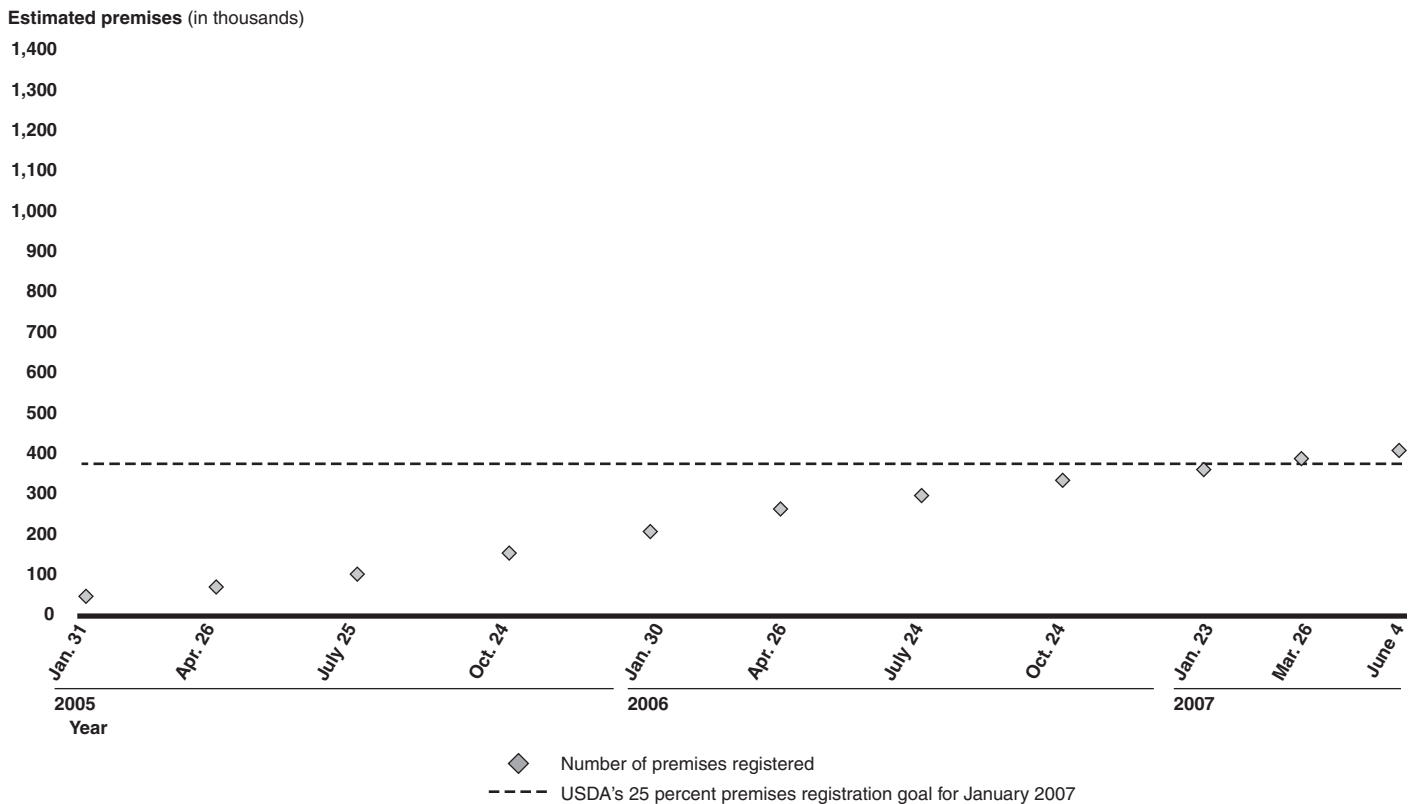
However, in August 2006, reporting that 20 percent of the nation’s premises had been registered, USDA decided that NAIS would permanently remain a voluntary program. USDA officials told us that due to opposition from some industry groups, it is imperative that industry advance the program, rather than government regulations, to encourage participation. Some industry groups believe that NAIS could succeed as a voluntary program or that USDA first needs to resolve several key implementation issues before making participation mandatory. For example, officials from the National Cattlemen’s Beef Association told us they believe that NAIS could be successful as a voluntary program, such as the beef industry’s 20-year-old Beef Quality Assurance program, which covers about 95 percent of cattle in feedlots and aims to reduce drug residues and pathogen contamination. The association officials also told us that if NAIS became mandatory, producers who have voluntarily participated would lose the market advantage they currently enjoy through higher prices paid at market or slaughter for animals they identify for marketing or management purposes. Another industry group, the American Farm Bureau Federation, which in 2006 supported NAIS being a mandatory program, expressed its support in January 2007 for NAIS to be

voluntary, while cautioning that USDA should not make the program mandatory until the agency has published a full cost analysis for the program. The Livestock Marketing Association—a national trade association representing over 700 livestock auction markets, dealers, and other livestock marketing businesses—also wrote in comments to USDA in 2005 that NAIS should remain voluntary until USDA addresses several implementation issues, including the effectiveness and availability of animal ID technology.

In November 2006, USDA also dropped its participation benchmarks from the most recent policy document for the program, the draft *NAIS User Guide*.⁸ Despite a steady increase in the number of premises registered since USDA began reporting premises registration information in January 2005 and reaching the 25 percent target (nearly 360,000 premises) in early February 2007 (see fig. 2), USDA officials told us they dropped the participation benchmarks because meeting future benchmarks for all components of NAIS was no longer realistic. Instead, the officials said the agency is analyzing what participation levels for all components of NAIS would achieve the “critical mass” necessary to have an efficient and effective program. The officials added that the agency does not expect that equal levels of involvement across all species will be necessary, and that new, risk-based participation benchmarks for premises registration, animal ID, and animal tracking may be developed accordingly, which could vary by species. However, USDA has not determined what action it may take if participation levels do not meet those new benchmarks.

⁸USDA, *National Animal Identification System (NAIS): A User Guide and Additional Information Resources, Draft Version* (November 2006).

Figure 2: Number of NAIS Premises Registered, 2005 to Present



Source: GAO summary of USDA data.

Note: On the basis of 2002 U.S. Census of Agriculture data, USDA's National Agriculture Statistics Service estimates there are approximately 1.4 million distinct livestock premises nationwide (with more than \$1,000 in annual income), which may contain one or more species.

Although it may be too soon to determine whether USDA's current approach will be successful, many industry groups, state animal health officials, and the experts we surveyed say the program will likely need to become mandatory to achieve the levels of participation that are necessary to rapidly and effectively locate all potentially exposed animals in a disease traceback. In the *Draft Strategic Plan*, for instance, USDA reported that most individuals who spoke about this subject at the agency's 2004 listening sessions preferred, by a ratio of 3:1, a mandatory program to a purely voluntary program. USDA also reported at that time that a survey of National Institute of Animal Agriculture members showed even stronger support, by a ratio of 8:1, for a program that is or will become mandatory. In addition, state and industry officials we interviewed said that as a voluntary program without benchmarks, NAIS has lost

momentum, deterred participation, and faces an uncertain future. For example, officials from one major agricultural state told us that USDA's changed direction on whether the program would become mandatory has challenged the state's premises registration efforts, because many producers are motivated by compliance with federal requirements, not necessarily by NAIS's traceback goal alone. These officials also said that the lack of participation benchmarks had compromised the state's credibility with producers and its ability to make progress in implementation. As of early June 2007, this state had less than 16 percent of its premises registered, and the officials believed there is little incentive for producers to participate in NAIS. Moreover, three states where premises registration is mandatory by state law—Indiana, Michigan,⁹ and Wisconsin—accounted for about 26 percent of USDA's total premises registered nationally as of that time.

Furthermore, a majority of the 32 expert panel members said that 81 percent to 100 percent of producers, livestock markets, and slaughter facilities would need to register their premises to achieve the program's goal of rapid and effective traceback (see apps. III and IV for more details about these experts and their responses to our questions). By contrast, under a voluntary program, only 1 expert believed that producers would achieve at least 81 percent participation in premises registration, while 11 experts believed that level would be achieved by livestock markets, and 20 experts believed that level would be achieved by slaughter facilities. For the animal ID and tracking components, experts had similar views. For example, a majority believed that 76 percent to 100 percent of producers, markets, and slaughter facilities would need to participate in animal tracking to make the program effective, while a minority believed that level would be achieved in any of those sections under a voluntary program. Overall, 27 of the 32 experts said participation in NAIS should definitely or probably be mandatory.

Several other countries, including the United States' major agricultural trading partners and competitors, have instituted mandatory animal ID programs for cattle and, in some cases, a few other species. For example, the EU has mandatory programs in which all cattle born or moved across EU state lines as of 2000 must be identified with two individual ear tags and an animal passport, and member states must maintain computerized

⁹In March 2007, Michigan regulations took effect that require electronic ear tags for all cattle prior to leaving their premises of origin.

databases that record births, movements, and deaths. Since several cases of BSE were discovered in 2001, Japan has made a series of changes to its food safety legislation, resulting in a mandatory system where all beef and dairy cattle must be identified using an ear tag. Information is maintained on an animal's ID number, breed, gender, and production history from the farm of origin through distribution to consumers. Similarly, in 2001, Canada started a compulsory animal ID program that applies to all bovine and bison and now requires that animals receive a radio frequency identification (RFID) tag when leaving their herd of origin,¹⁰ which is collected at slaughter or export. Canada later expanded its program to sheep in 2004, requiring the use of visual ear tags. Brazil, the world's largest beef exporter, gradually phased in its mandatory ID program for cattle and bison starting in January 2002; the entire herd is expected to be identified by the end of 2007. Australia, the world's second-largest beef exporter, has developed a mandatory system that uses RFID to identify and trace cattle from farm of origin to slaughter. Australia has been moving toward a fully integrated program linking electronic ID devices, product bar coding, and a central electronic database. Appendix V provides more detailed information on select international animal ID and tracking programs.¹¹

To increase participation in NAIS, several industry groups, state animal health officials, and the experts we surveyed have also suggested that USDA provide incentives, such as financial assistance, to industry to implement the animal ID and tracking components. For instance, the NAIS Cattle Working Group recommended in 2004 that USDA assume primary financial responsibility for funding the initial development of the basic infrastructure required for animal ID and tracking—including equipping concentration points, such as livestock markets and slaughter facilities, with RFID readers and software to capture the data electronically. Livestock market operators and others also say such financial support would be an attractive incentive because RFID technology, if effective, would allow animal movements to be recorded as quickly as the current “speed of commerce” and, therefore, would not slow down business operations. The NAIS Subcommittee also recommended, in 2005, a cost-sharing arrangement between USDA and industry to fund the program's implementation. The Secretary's Advisory Committee on Foreign Animal

¹⁰RFID is an automated data-capture technology that can be used to electronically identify, track, and store information contained on an object (in the case of NAIS, an animal).

¹¹We did not independently verify the information on foreign countries' animal ID systems.

and Poultry Diseases adopted these recommendations as well as the other NAIS working group and Subcommittee recommendations presented at its September 2006 meeting. One state that has already created a cost-sharing incentive is Wisconsin, where the state contributes 50 percent, or up to \$1, of the cost of an RFID ear tag on a first-come, first-served basis under its voluntary animal ID program. Wisconsin officials say the cost-sharing arrangement is designed to make the program more attractive to the state's producers, and, as of early March 2007, the state had approved reimbursing producers for a total of 30,000 tags for cattle, which was up from 20,000 tags the previous month.

However, USDA officials told us that the power of producers to protect themselves and their animals is a tremendous incentive for participation in NAIS, and, as the program continues to be implemented and developed, additional incentives will be realized by USDA, producers, and state and industry partners. Nonetheless, whether NAIS is mandatory or voluntary, the lack of participation benchmarks prevents USDA from measuring progress in attaining the necessary participation levels for an effective program.

Several Other Key Issues Hinder USDA's Ability to Implement NAIS Effectively

Industry groups, market operators, state animal health officials, and others have identified several other key problems that, if left unresolved, could undermine the program's goal, further hindering USDA's ability to implement the NAIS program effectively.

USDA Has Not Prioritized the Implementation of NAIS by Species or Other Criteria

USDA has not prioritized the implementation of NAIS by species or other criteria. Instead, the agency is currently implementing NAIS simultaneously for numerous species, regardless of their economic value, their risk of diseases of concern, the potential human health impact of these diseases, or other criteria. Consequently, federal, state, and industry resources for NAIS have been allocated widely, rather than being focused first on the species of greatest concern and allowing other species to be included later, on the basis of lessons learned. In contrast, international animal ID programs have generally started implementation with one species (cattle) and, in some cases, later expanded to include a few other species, such as sheep, bison, and goats, on the basis of disease risk, economic importance, or potential human health impact. In addition, 21 of the 32 expert panel members said USDA should definitely or probably implement NAIS incrementally by species, while 8 experts said USDA should definitely or probably continue with its current approach to

implement the program for numerous species simultaneously.¹² Many of the 32 experts suggested criteria that USDA could use to determine the priorities given to each species in implementing NAIS, including whether it is a food animal; its likelihood of capturing diseases of concern; the risk that the animal will spread a disease harmful to human health; the relative ease of implementation for a particular industry; and the industry's impact on the U.S. economy, including export value.

Prioritizing implementation for certain species before trying to apply the program to numerous species would likely result in more efficient and cost-effective implementation, on the basis of lessons learned and best practices being identified. In addition, the industries currently covered by NAIS appear to be at various stages of readiness to implement NAIS. For example, the Bison, Camelid, Cattle, Equine, Swine, Sheep, and Goat Working Groups have submitted reports to USDA with implementation recommendations for their industries, but the Cervid and Poultry Working Groups have not. Furthermore, according to industry representatives, some industries, such as commercial swine and poultry operations, already have widespread ID and tracking systems in place that would allow traceback to occur within 48 hours, while other industries may not.

USDA officials pointed out that an animal ID program to support the animal health needs of all livestock species would be unique in the world and would place the United States in a position to set a new standard for animal ID. Some industry groups have expressed their support for NAIS being implemented for all species, since many transmissible diseases are not species-specific. For example, the National Livestock Producers Association, which represents about 200,000 producers across the country, wrote USDA in 2005 that the true value of NAIS rests in its potential ability to track all livestock animals, regardless of species, due to the extent of their commingling and potential to spread disease. The association added that NAIS would not be very effective or equitable if all species were not included as soon as possible. Furthermore, 21 of the 32 experts we surveyed said USDA should definitely or probably continue with its current approach to include all species, rather than limit NAIS to one or a few species. USDA officials also told us that establishing NAIS across all species is critical, because many operations handle more than one species, and that focusing entirely on cattle, as some other countries have done, is a critical flaw since some animal diseases cross species lines. Nonetheless,

¹²Two of the 32 experts were uncertain, and 1 expert did not answer this question.

USDA officials told us they recognize that prioritizing program implementation may be appropriate, such as by focusing on specific diseases of concern or large commercial operations, and that the states should determine their own priorities for implementation. These officials also said future NAIS plans will more clearly identify higher-risk areas or sectors within the species. In commenting on a draft of this report, USDA told us it plans to develop, in collaboration with the species working groups, a NAIS Short-Term and Long-Term Implementation Strategies document that will contain actions for the remainder of 2007 through 2011. Specifically, the agency stated that the short-term strategy, targeted for publication in August 2007, will target species or industry sectors that have the greatest need for advancing premises registration, animal ID, and tracking. The long-term strategy will be distributed in early 2008 and will call for an evaluation of participation through 2009 to determine what actions, such as incentives, may be needed to accelerate participation in the voluntary program.

USDA Has Not Developed a Plan for Integrating NAIS with Other USDA and State Animal ID Requirements

Although USDA aims to minimize the financial and practical impact on producers and others in implementing NAIS, the agency has not developed a plan to integrate NAIS with preexisting programs and systems. Many producers are already required to participate in preexisting USDA and state animal disease eradication programs that use specific ID devices with different numbering systems or that require branding. For example, the National Scrapie Eradication Program for sheep and goats requires visual ear tags, and other USDA-state programs require ear tags for brucellosis and TB in cattle and ear notches in swine. In addition, several western states recognize branding as an official ID for disease control purposes. As a result, producers have generally been discouraged from investing in new ID devices for NAIS, according to industry groups we interviewed, thereby inhibiting implementation of the program's animal ID and tracking components.

Importantly, while USDA published an interim rule effective in November 2004 recognizing the Animal Identification Number as a new, official numbering system for individual animals in interstate commerce, this new system does not replace other, USDA-recognized, official numbering systems. The rule established that the Animal Identification Number may be used for official ID in other disease eradication programs. Nonetheless, USDA officials told us that they are evaluating how NAIS and other official ID systems can be standardized and moved to a single numbering system, to the extent practical, and that eventually, the agency expects Animal Identification Numbers to become the standard national numbering system used for certain species, individual ID methods, or both. USDA told

us that as of early March 2007, 1.3 million Animal Identification Number RFID ear tags had been distributed, including some that are being used for state disease eradication programs. For example, USDA reported that about 500,000 tags had been distributed to Michigan producers, where the state's bovine TB eradication program requires all cattle to have RFID ear tags prior to movement from their premises.

For NAIS not to impose undue costs on producers by requiring additional ID devices, stakeholders say the program must be integrated with preexisting programs and systems. However, USDA faces challenges in integrating NAIS with other animal ID requirements. For example, Sheep Working Group members told us that because the scrapie program already assigns a flock ID number to each premises—plus a unique, individual ID number to each animal—sheep producers do not see the need to participate in NAIS, which involves different premises and individual animal ID numbering systems. Another challenge is that brands identify all animals raised by a specific producer as a group, not as individuals, and the same brands are often used in different states or even in different counties within the same state. USDA's *NAIS User Guide* states that registered brands are not considered to be an official, individual animal ID as called for by NAIS because cattle typically move through the production process as individuals. In addition, NAIS animal tracking requirements may differ operationally from state brand laws and practices. For example, New Mexico requires state authorities to inspect all livestock moving across brand district lines, which contrasts with NAIS, where the responsibility of reporting animal movement lies with the premises receiving animals. New Mexico officials told us that if they were to implement NAIS as envisioned, the time required for state inspections would at least double if inspectors were required to read and report ID tags. The Cattle Working Group recommended, in 2004, that USDA develop protocols for integrating existing brand laws with NAIS individual animal ID requirements and for the reporting of animals' movements from brand law states to nonbrand law states.

USDA officials told us that the need to have a single numbering system across all species is less important than getting animals individually identified and tracked using any official ID system recognized by USDA. Furthermore, these officials said that while standardizing to a single numbering system for animal ID may eventually be appropriate, USDA recognizes there are differences among species and that cost, technology capability, and practicality must be considered before phasing out existing ID devices that have proven to be workable for producers. For example, the 15-digit Animal Identification Number may not be the most practical

USDA Has Not Established a Robust Process for Selecting, Standardizing, and Testing ID and Tracking Technologies

numbering system when used on visual ear tags for smaller animals since the size of the tag does not lend itself to a 15-digit number. Nonetheless, USDA officials are starting to address some integration issues. For example, USDA officials told us in April 2007 that the agency has decided to allow the official ID devices and numbering systems used by other disease eradication programs for the purposes of NAIS as well, although the agency has not yet communicated this development to industry. In addition, in late 2006, a NAIS Brand State Working Group was formed, in part to identify what brand concepts could integrate with NAIS. In commenting on a draft of this report, USDA informed us that it will update the *NAIS User Guide* in October 2007 to more clearly reflect the use of other official ID numbers within NAIS.

International programs have generally used specific animal ID devices for their national animal ID programs, and some NAIS working groups have recommended specific ID devices for their species, such as RFID ear tags for cattle and RFID microchip implants for horses. However, USDA has taken a “technology-neutral” position to allow market forces to determine what devices are most effective and practical and to accommodate future technologies. In a NAIS policy document on ID devices released in February 2006,¹³ USDA stated that individual, visual ID devices are a starting point to ensure greater participation among producers and asserted that a neutral approach allows RFID; biometrics, such as DNA and retinal imaging devices; and other potential technologies to be used as supplemental identification. Nonetheless, that document also stated that uniformity and compatibility of technology are critical to ensure that the collection of animal ID data is practical and cost-effective throughout production. Furthermore, USDA recognized the need to have ID technologies that are compatible with Canada and Mexico. USDA also stated that as NAIS is phased in, ongoing efforts to harmonize animal ID with other countries will facilitate safe trade.

While not all species can use the same devices due to industry preferences or physical limitations, such as small ears, USDA’s technology-neutral approach means, for example in the cattle industry, that a producer can choose to use visual ear tags; low- or high-frequency RFID ear tags; or other advanced technologies, such as retinal imaging. There are costs and benefits associated with any device. For example, visual ID devices are

¹³USDA, *National Animal Identification System (NAIS): Administration of Official Identification Devices with the Animal Identification Number* (Feb. 23, 2006).

less expensive but require manual recording, which may cause errors and slow down the “speed of commerce” at livestock markets and slaughter facilities. RFID systems, on the other hand, allow data to be captured automatically into databases, but these systems are also not consistently accurate and are more expensive—in terms of both the ID device and the associated infrastructure (reader, installation, and computer use). With such a wide range of options in animal ID and tracking devices, industry groups and expert panel members told us that producers and market operators fear that their choices may be inconsistent with others in the marketplace, or that USDA will adopt specific devices in the future, and they may find themselves having made the wrong investment decision. For instance, a producer may find that the closest livestock market uses electronic readers and cannot easily accommodate visual ear tags; alternatively, the market may not have installed RFID reader equipment, and the producer would not get the anticipated return on his or her investment. From another perspective, a multispecies livestock market, based on its customers, may face a dilemma of investing in equipment to read and record visual tags, RFID tags, RFID implants, and other devices—or risk being unable to capture all information quickly and efficiently and losing some customers. Consequently, producers, livestock markets, and slaughter facilities have generally been discouraged from investing in ID or tracking devices, thus inhibiting implementation of the animal ID and tracking phases.

Asked whether USDA’s technology-neutral position encourages or discourages producers’ investment in animal ID technology, 23 of the 32 expert panel members said this position definitely or probably discourages investment, and 6 said it definitely or probably encourages investment.¹⁴ In their written responses elaborating on this question, several experts said USDA’s technology-neutral approach limits the interoperability (compatibility) of different systems in place, thus reducing the viability of a consistent, national traceback program. In addition, they wrote that it has caused confusion, uncertainty, and a “wait-and-see” attitude in the marketplace, and that it will take time to sort out efficient from inefficient technologies. Conversely, other experts replied that USDA’s technology-neutral approach allows marketplace competition to advance new or improved technologies and drive fair prices. Similarly, for animal tracking, more experts replied that USDA’s approach definitely or probably

¹⁴Two experts responded that investment in animal ID technology is neither encouraged nor discouraged, and 1 expert replied as having no expertise on this topic.

discourages investment by producers, livestock markets, and slaughter facilities more than it encourages investment. For example, 22 experts said USDA's approach discourages investment by livestock markets, compared with 2 who said it encourages such investment; 17 experts said it discourages investment by slaughter facilities, whereas 4 said it encourages that industry sector to invest.

While USDA has not selected specific animal ID devices, the agency has published minimum standards for the various ID devices recommended to date by the species working groups and the NAIS Subcommittee. Specifically, USDA has established printing and performance standards for visual and RFID ear tags that address characteristics such as durability (expected tag life); tag loss; visual readability of the 15-digit Animal Identification Number; and, in the case of RFID, electronic read rates and ranges. USDA has published similar performance standards for RFID implants, with additional characteristics addressing the migration or breakage of the device and its being harmless to an animal. However, USDA has not published standards for RFID readers and does not expect to do so unless the agency purchases readers for use by animal health officials, in which case it says it will define performance standards for those specific environments. In addition, USDA has not established a robust process to independently test and evaluate the performance of animal ID and tracking devices.

Industry groups, expert panel members, and others told us that RFID devices do not always perform well in production environments, such as livestock markets, particularly with RFID readers being made by different companies. For example, one NAIS pilot project found that in loading cattle onto commercial trucks, RFID readers read only 70 percent of the RFID ear tags, with variations among tag manufacturers ranging from 47 percent to 96 percent.¹⁵ As a result, stakeholders are lacking reliable, independent information on the effectiveness of animal ID and tracking devices, and without such information, they are reluctant to invest in these devices.

It is common U.S. practice to select one technology for systems that need to be widely implemented in different environments to ensure consistency

¹⁵However, in commenting on a draft of this report, USDA told us that continued testing and modification of systems in several pilot projects demonstrated high readability rates of 90 percent to 99 percent for systems that initially showed high variability and low readability rates of 50 percent to 60 percent.

and interoperability across multiple users. We have previously reported that a robust process for selecting technologies, setting and revising performance standards, and testing and evaluating technologies against those standards leads to the most effective and efficient use of technology.¹⁶ For example, we have reported on the necessity of the federal government's selection and standardization of RFID cards and readers for federal employees so that the ID cards can be read at any federal agency across the nation.¹⁷

Several expert panel members suggested that USDA provide funding for independent, third-party evaluations of technologies and make results of such work readily available; appoint a standards committee to evaluate and make recommendations on the basis of sound science; or require independent evidence that devices meet standards before approving them. The NAIS Subcommittee also recommended, in 2006, that USDA establish an objective process to (1) test the performance of ID devices to ensure they meet NAIS standards in various production environments and over extended periods and (2) evaluate new technologies as they emerge. Typically, federal agencies rely on independent laboratories that are certified by a government agency, such as the National Institute of Standards and Technology, for such testing and evaluation.

USDA officials told us they are working with industry to determine better ways to define performance criteria and establish a more thorough process to test and evaluate ID devices, but they did not specify a time frame for these developments. Toward this end, the agency held preliminary discussions in mid-April 2007 with the American Society for Testing and Materials' Committee on Livestock, Meat and Poultry Evaluation Systems to form a task force to fine-tune ID performance standards for NAIS and help USDA put testing protocols in place. In the February 2006 NAIS policy document on ID devices, USDA stated that when NAIS becomes fully operational, the agency will develop an approval process for official ID devices and more complete testing and evaluation procedures. Manufacturers of Animal Identification Number devices, regardless of any prior permission from USDA, will have to submit new or appended applications to be considered for "USDA Approved" status.

¹⁶GAO, *Information Security: Radio Frequency Identification Technology in the Federal Government*, GAO-05-551 (Washington, D.C.: May 27, 2005).

¹⁷GAO, *Electronic Government: Progress in Promoting Adoption of Smart Card Technology*, GAO-03-114 (Washington, D.C.: Jan. 3, 2003).

USDA Does Not Clearly Define the Time Frame for Rapid Traceback

Evaluations may include laboratory or field studies to verify compliance with criteria and specification standards, either before or following issuance of “USDA Approval Pending” or “USDA Approved” status for ID devices.

When USDA announced NAIS in 2004, the program’s traceability goal was to locate all potentially exposed animals within 48 hours of a disease’s discovery, and both USDA and states conveyed that message in their outreach to producers and others. However, USDA’s most recent NAIS policy document, the draft *NAIS User Guide* issued in November 2006, is silent on this time frame and instead says NAIS will allow producers and animal health officials to respond as “quickly, efficiently, and effectively as possible.” By definition, traceback goals need to be time-sensitive and cost-effective to efficiently target and evaluate the program’s success in eliminating a disease outbreak. If rapid traceback goals are not clearly defined, there could be a slower response to an animal disease outbreak and, therefore, greater economic losses.

Of the 32 expert panel members, 25 defined rapid traceback in an animal disease event as occurring within 48 hours, with 10 of the experts defining it as 24 hours or less and 15 defining it as 25 to 48 hours. State animal health and industry officials told us it is important that USDA communicate a specific time frame to encourage participation, reinforce the necessity of rapid traceback, and have a measure by which to evaluate results. However, a senior USDA official told us that the definition of “rapid traceback” may vary by disease, because some diseases spread more quickly than others and some diseases are limited in how they can be transmitted. For example, traceback for FMD might ideally occur within 12 hours because the disease spreads so rapidly. By contrast, because BSE is transmitted only through animal feed containing certain contaminated animal products, and scrapie is transmitted during the breeding season, a longer traceback would be appropriate. In addition, the senior official told us that until USDA collects baseline information on tracebacks for specific diseases, the agency cannot determine time-sensitive, cost-effective traceback goals for NAIS.

USDA Does Not Require Potentially Critical Information for Efficient Traceback to Be Recorded in NAIS Databases

When producers and other participants register their premises, they are required by USDA to record only their name and contact information, with species information being optional. In addition, when USDA-approved managers distribute ID devices to a producer, they must record the devices’ unique animal ID numbers, the premises ID number where the devices were sent, and the date of distribution. However, USDA does not require additional information, such as the species, date of birth, or

approximate age of the animals, to be recorded in NAIS animal ID or tracking databases.

Information that may be critical for narrowing the scope of a traceback—thus saving time and resources and potentially minimizing the economic impact—includes the species, date of birth, or approximate age of an animal. Many diseases, such as bovine TB, affect only specific species or generally affect animals of a certain age, such as in the case of Johne’s disease, which is usually contracted at a young age. Consequently, if a new case of these diseases arose in the United States, tracing other species or animals of a different age may unnecessarily use federal, state, and industry resources in locating animals and premises that may not be affected—thus impeding the goal of rapid and effective traceback. Similarly, most equine diseases of concern affect only equine species, and exotic Newcastle disease affects only poultry, so tracing other species would be an inefficient use of time and resources. Other state and federal animal disease eradication programs require the recording or reporting of this type of information. For example, the Bovine Tuberculosis Eradication Program requires, for all TB-tested bison and cattle, the reporting of the animal’s unique, official ID device; approximate age; gender; and breed. In addition, the National Scrapie Eradication Program requires goat flock owners to maintain a management and monitoring plan that must record an animal’s gender, year of birth, and breed following the discovery of scrapie within the flock.

The Cattle Working Group recommends that producers identify calves at birth or at the earliest date possible to support animal disease issues when the age of an animal is needed, noting that when the precise date of birth is not known, the approximate birth date within 2 to 3 months should be recorded. USDA officials acknowledged that although animal-specific data can be valuable, the agency is collecting the minimum amount of information needed for traceback to (1) respond to some producers’ concerns about protection of their proprietary information in NAIS databases and (2) encourage participation. In addition, participants have the option to record such information in ID and tracking databases, and USDA encourages them to do so. Nonetheless, without this information being consistently recorded in NAIS databases, USDA and state officials may not be able to efficiently trace only those animals potentially affected by a disease.

USDA Has Awarded NAIS Cooperative Agreements to Identify Effective Implementation Approaches but Has Not Formally Evaluated Agreements' Results

USDA has awarded \$35.0 million in NAIS cooperative agreements to states, tribes, and territories to help register premises and identify and track animals. However, USDA has not consistently monitored or formally evaluated the results of these cooperative agreements. In addition, USDA has not consistently shared cooperative agreement results with NAIS stakeholders. USDA plans to increase its oversight and give states with greater participation in NAIS some flexibility in using their cooperative agreement funds.

USDA Awarded 169 Cooperative Agreements between Fiscal Years 2004 and 2006

To help identify effective approaches to register premises and identify and track animals between fiscal years 2004 and 2006, USDA awarded 169 cooperative agreements, totaling \$35.0 million, to 49 states, 29 tribes, and 2 territories. NAIS cooperative agreement awards ranged in size from \$7,381 to \$1.2 million, and the average award was about \$207,000. In fiscal years 2004 and 2005, USDA did not require recipients to contribute to, or share, costs (cost-share); however, in fiscal years 2006 and 2007, USDA required certain recipients to demonstrate 20 percent in matching funds, through cash or in-kind (noncash) contributions. For more information about NAIS cooperative agreements' funding by fiscal year, see appendix VI, table 2. Cooperative agreements are typically funded for a 12-month funding period, with recipients required to submit both quarterly accomplishment and financial status reports.

USDA required all NAIS cooperative agreement recipients to submit information to USDA in an initial work plan containing proposed project objectives, species and industry sector focus, as well as milestones for measuring progress. Although some premises registration cooperative agreements proposed activities that would span across most species and industry sectors covered by NAIS, other projects proposed focusing premises registration activities on one, or a few, species and sectors of the livestock industry. Of field trial cooperative agreement funding to test animal ID and tracking solutions, all but two field trials intended to focus on beef or dairy cattle; several proposed work on sheep; a few included swine, cervids, goats, bison, and equine; and only one project intended to focus some work on camelids. While no NAIS field trials proposed work on the poultry industry, USDA has previously funded work, through funds other than NAIS cooperative agreements, that examined the tagging and

record-keeping requirements that would facilitate tracking of birds in the live bird marketing system. For information on species covered under NAIS field trials, see appendix VI, table 3.

Field trial funding recipients also varied in the number of industry sectors they intended to involve in cooperative agreement activities. Overall, more than one-half of recipients intended to work with producers, livestock markets, slaughter facilities, and feedlots. USDA did not require field trials covering multiple species or industry sectors to include in initial work plans information regarding how funding was to be spent on each species or sector. USDA officials told us that they have not requested such details because of the interconnectivity of the activities associated with cooperative agreements.

Most of the cooperative agreement awards were focused on premises registration. Specifically, of the \$35.0 million awarded in fiscal years 2004 through 2006, USDA awarded 146 cooperative agreements totaling \$23.4 million for premises registration efforts to 49 states, 29 tribes, and 2 territories. These premises registration awards provided funding for activities such as hiring personnel to register premises, developing educational materials, and providing outreach to producers and nonproducer participants on the goals of NAIS. For example, 1 cooperative agreement awarded to the Navajo Nation was for the development of communications in the Navajo language for outreach on premises registration and animal ID. In addition, some of these cooperative agreements funded limited animal ID and tracking activities, along with premises registration.

In fiscal years 2004 and 2005, USDA also awarded field trial cooperative agreements. Specifically, in fiscal year 2004, USDA awarded 16 cooperative agreements totaling \$9.7 million to 15 states and 1 tribe. USDA estimates that \$1.8 million of the \$9.7 million awarded was used to support premises registration activities. The remainder was used for field trials to develop, test, and offer solutions for applying animal ID devices and collecting animal tracking information. For example, 1 cooperative agreement with the Wyoming Livestock Board tested whether existing brand inspection personnel and infrastructure could be used to track livestock changing ownership and livestock entering into interstate commerce through Wyoming livestock markets. In fiscal year 2005, USDA awarded 7 cooperative agreements totaling \$1.9 million to 6 states and 1 tribe for field trials to support research, including the assessment of existing and novel ID technologies.

USDA anticipates awarding an additional \$20.5 million in cooperative agreements in fiscal year 2007. Of this, USDA anticipates awarding \$14.5 million for continued support of premises registration, education, and outreach activities under approximately 80 cooperative agreements to 50 states, 28 tribes, and 2 territories. As of March 2007, USDA had awarded 31 of the anticipated 80 cooperative agreements, totaling \$6.7 million. The remaining \$6.0 million in fiscal year 2007 funding for cooperative agreements will be provided for the first time to nonprofit organizations for premises registration activities. In January 2007, USDA entered into a cooperative agreement with the National Pork Board to begin work with pork producers to encourage premises registration. Subsequently, in February 2007, USDA announced that other nonprofit industry organizations, historically black colleges, tribal land-grant colleges, and tribal organizations were also eligible for these awards, which are intended to support the continued registration of premises.

USDA Has Not Consistently Monitored or Formally Evaluated NAIS Cooperative Agreements or Consistently Shared Their Results

To date, USDA has not consistently monitored or formally evaluated NAIS cooperative agreements and has not consistently shared their results with state, industry, and other stakeholders. USDA officials told us that NAIS program staff provided some oversight for field trial cooperative agreements as well as for tribal premises registration cooperative agreements. However, NAIS program staff do not directly monitor most NAIS cooperative agreements; instead, USDA delegates administrative oversight activities for each cooperative agreement to designated representatives, mostly Area Veterinarians in Charge whose overall responsibility is to supervise and perform the official animal health activities of APHIS in the state concerned. These individuals are responsible for direct administration of the individual state premises registration and field trial cooperative agreements, including the monitoring and assessment of agreements. According to USDA, it is appropriate for these designated representatives to monitor cooperative agreements because they are familiar with the circumstances associated with implementing projects in a particular state. We have previously reported with other government audit organizations that monitoring the performance of federal awards helps to ensure that goals are reached and required deliverables are completed.¹⁸ According to USDA officials, the

¹⁸Domestic Working Group, Grant Accountability Project, *Guide to Opportunities for Improving Grant Accountability* (Washington, D.C.: October 2005). The Domestic Working Group is an organization made up of 19 federal, state, and local audit organizations.

designated representatives responsible for monitoring cooperative agreements have a multitude of competing responsibilities and thus may not have sufficient time or resources to oversee cooperative agreements.

In addition, NAIS program staff did not conduct any formal evaluation of NAIS cooperative agreements. Evaluating results against cooperative agreement goals can help to identify ways to improve program performance. USDA officials said that the quality of quarterly and final accomplishment reports provided to designated representatives by cooperative agreement recipients varied. They said that many times, these reports identified what was being done, rather than what was being accomplished. For example, one state premises registration project set milestones for educating 60 percent of livestock producers and registering 40 percent of premises; however, the reported results included the purchase of computers, number of presentations given to producer organizations, and number of premises registration forms that were printed for distribution. Furthermore, our analysis of available reports indicated that results were not reported or were of limited value because initial project goals and milestones presented in recipients' work plans were vague or unclear.¹⁹ In addition, several states indicated to us that they had difficulty completing the work outlined in their cooperative agreements within given time frames. For instance, one state told us that it was difficult for it to hire an ID coordinator in its first year of cooperative agreement funding, which meant the state was unable to use all of the funds it was allocated. Thus, while USDA has awarded the majority of cooperative agreement funds to support premises registration, the agency has not been able to determine effective or ineffective approaches for increasing premises registration, animal ID, or tracking.

USDA has formally shared few results of cooperative agreements with NAIS stakeholders, hindering them from identifying approaches that have worked to achieve NAIS program objectives, such as increasing outreach, as well as ineffective approaches, such as the interoperability of RFID devices and readers. To date, USDA has provided information regarding NAIS field trial cooperative agreements on three occasions. In April 2005, USDA released a document containing summary information on the goals of the initial 16 field trials, including the types of technology tested and

¹⁹Some cooperative agreement projects from fiscal years 2004 through 2007 were still ongoing at the time of our review; therefore, reports for these agreements were not available.

industry focus. In June 2006, USDA released a preliminary progress report for these first 16 field trials but stated in the report that due to the timing of work plan submissions and the subsequent need for approved time extensions to complete proposed projects, 10 of these 16 projects awarded in fiscal year 2004 had not yet submitted final reports. In addition, USDA stated in this report that to fully understand the projects' results, interested parties should contact cooperative agreement project administrators to learn more about the projects' specific activities. However, the report did not include contact information. In May 2007, USDA released a third and final report on the results of the fiscal year 2004 field trials and descriptions of the fiscal year 2005 field trials for distribution to state, industry, and other stakeholders.²⁰

USDA started sharing the results of premises registration and outreach cooperative agreements by publishing weekly premises registration statistics, by state, beginning in December 2006 (for state premises registration statistics, see app. VI, table 4). However, USDA has not formally shared any information about the strategies used by the individual state projects, nor has the agency communicated to stakeholders successful or unsuccessful approaches to registering premises.

While USDA states that some results of cooperative agreements have been shared publicly at numerous stakeholder meetings, animal health officials and industry representatives told us that not enough information exists about the results of NAIS cooperative agreements, and that more sharing of results, best practices, and lessons learned is needed. For example, a researcher applying for fiscal year 2005 field trial funding told us it was difficult to determine whether previous NAIS cooperative agreements had included work similar to what the applicant was proposing. In addition, industry groups, state animal health officials, and experts told us that livestock markets would benefit from more information concerning the retrofitting of animal tracking equipment.

²⁰USDA, *National Animal Identification System (NAIS): Pilot Projects/Field Trials Summary: 2004 Initial Pilot Projects Final Report and 2005-07 Project Descriptions* (May 2007).

USDA Plans to Improve Oversight and Give States with Greater Participation in NAIS Some Flexibility in Using Cooperative Agreement Funds

As we have previously reported, increasing oversight, linking funding to performance milestones, and altering flexibility are accountability mechanisms that can be used by agencies to encourage improved performance during an award period.²¹ In fiscal year 2007, USDA plans to increase oversight activities for some state cooperative agreements, on the basis of state premises registration levels at the time of the November 2006 announcement. For example, the 27 states that had 25 percent or less of their premises registered at the time of the cooperative agreement announcement and were eligible for more than \$82,000 in awards would receive only 90 percent of reserved funding until a midyear review period. According to USDA, designated representatives will determine the success of cooperative agreements during this midyear review, largely on the basis of the goals stated in the cooperative agreements' approved work plans. The 23 states with greater than 25 percent of premises registered, or eligible for awards of less than \$82,000, are eligible to receive 100 percent of cooperative agreement funding without a midyear review (see app. VI, table 5). In addition, all nonprofit industry organizations that receive cooperative agreement funding in fiscal year 2007 will be eligible for 50 percent of approved funds, with an additional 25 percent of funds released following each successful third- and fourth-quarter review of interim reports required by USDA.

Moreover, USDA has linked funding to participation levels by providing for increased spending flexibility for some state recipients of fiscal year 2007 premises registration cooperative agreements. USDA believes that cooperative agreement funding may be more appropriately used by states with greater numbers of premises registered to support the animal ID and tracking components of NAIS. For example, the 14 states that have achieved greater than 25 percent of premises registered may spend up to 40 percent of funds on animal tracking infrastructure, such as to support NAIS's integration with preexisting disease eradication programs or to share in the cost of data collection equipment for livestock markets and dealers. The 18 states that have registered between 11 percent and 25 percent of premises may spend up to 30 percent of their funding on animal tracking infrastructure, while the 8 states that have registered between 6 percent and 10 percent of premises may spend up to 20 percent of funding on animal tracking infrastructure. Finally, those states that have registered

²¹GAO, *Grants Management: Enhancing Performance Accountability Provisions Could Lead to Better Results*, GAO-06-1046 (Washington, D.C.: Sept. 29, 2006).

less than 6 percent of premises are required to spend 100 percent of funds on outreach and premises registration.

Total NAIS Program Costs Have Not Been Determined, but USDA Recently Announced Plans to Develop a Cost-benefit Analysis

USDA has not determined the program costs for NAIS but recently announced plans to hire a contractor to conduct a cost-benefit analysis for NAIS, in part to more precisely forecast the economic effects of the program. The Senate Appropriations Committee and the House of Representatives have raised concerns in recent years about how USDA has spent funds to develop and implement NAIS. Finally, the views of our expert panel members are mixed concerning NAIS's potential impact on the livestock industry.

NAIS Costs and Benefits Are Not Known

Although implementation of NAIS began in 2004, USDA has not developed a comprehensive cost estimate or cost-benefit analysis for the program. In addition, to our knowledge, no industry group, academic institution, or state animal health agency has published a cost estimate for implementing and maintaining NAIS. Without a comprehensive cost-benefit analysis for NAIS, it is not known how much is required in federal, state, and industry resources to achieve rapid and effective traceback, or whether the potential benefits of the program outweigh the costs. In 2004, and again in 2006, the NAIS Subcommittee recommended that USDA prepare an in-depth, cost-benefit analysis for NAIS as part of the strategic planning process. In addition, 29 of the 32 expert panel members said that USDA should definitely or probably publish a cost-benefit analysis that contains detailed NAIS cost and benefit information for the different sectors of the livestock industry, states, and USDA. The NAIS working groups, other livestock industry representatives, and state animal health officials we interviewed said that the cost of implementing NAIS remained one of their biggest concerns. For example, in comments to USDA in 2005, the Livestock Marketing Association wrote that it is "highly critical of the fact that too little has been known" about the potential costs of establishing a national animal ID system and about who will bear those costs. Furthermore, the association wrote that a cost-benefit analysis is "long overdue" and that without better information, NAIS appears to be prohibitively expensive for the livestock industry to implement. As a result, without a reliable cost-benefit analysis that is consistent with federal guidance, stakeholders are unlikely to participate in NAIS due to their uncertainty that NAIS program benefits outweigh program costs.

USDA announced plans in March 2007 to conduct a cost-benefit analysis for NAIS. USDA officials told us that the cost-benefit analysis will be used for program planning and resource allocation, producer and industry education, and public relations and outreach and to more precisely forecast the economic effects of NAIS. USDA officials anticipate that the cost-benefit analysis will be available in 2008.

As we have previously reported, measuring the economic performance of federal programs, such as the extent to which program benefits exceed costs (net benefits) or are achieved at least cost (cost-effectiveness), could be a useful way to assess, in conjunction with other measures, the extent to which federal programs are meeting the nation's priorities.²² In addition, OMB has established general guidance on conducting cost-benefit analyses of federal programs to promote efficient resource allocation through well-informed decision making.²³ OMB suggests that agencies follow this guidance in conducting analyses used to support government decisions to initiate, renew, or expand programs or projects that would result in a series of measurable benefits or costs extending 3 or more years into the future. The USDA announcement suggests that the planned NAIS cost-benefit analysis follow this and other available federal guidance.

Concerns Exist over How USDA Has Spent Funds to Develop and Implement NAIS

In fiscal year 2004, the Secretary of Agriculture transferred \$18.8 million from the Commodity Credit Corporation (CCC) to develop and implement NAIS, as shown in table 1. Although approximately \$85.0 million had been made available for NAIS implementation by the end of fiscal year 2006, USDA had obligated only about \$61.1 million as of late March 2007;²⁴ thus, the agency has carried over about \$23.9 million in unobligated NAIS funds into fiscal year 2007.²⁵ Because NAIS funding has been designated by Congress to be available until expended, USDA can carry funds that it did not expend in prior years forward into the current year. In addition to these carryover funds, Congress appropriated an additional \$33.0 million

²²GAO, *Economic Performance: Highlights of a Workshop on Economic Performance Measures*, GAO-05-796SP (Washington, D.C.: July 2005).

²³OMB, Circular A-94 Revised, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs* (Washington, D.C.: updated Jan. 26, 2006).

²⁴The term "obligation" is a definite commitment that creates a legal liability of the government for the payment of goods and services ordered or received.

²⁵Unobligated funds are the difference between total funding available and actual obligations.

for the NAIS program for fiscal year 2007. The President's Budget requested \$33.1 million for NAIS in fiscal year 2008.

Table 1: USDA NAIS Budget Data, Fiscal Years 2004 (CCC Funds) through 2006

Dollars in thousands				
	Fiscal year			Total
	2004	2005	2006	
Funding availability	\$18,793	\$33,197	\$33,007	\$84,997
Planned obligations				
Information technology development, maintenance, and operations	\$2,009	\$6,858	\$7,733	\$16,600
Cooperative agreements	14,357	17,050	13,882	45,288
Communications and outreach	2,137	3,474	1,940	7,551
Headquarters and field staff and materials	290	3,125	5,285	8,700
Uncommitted/Unassigned funding	0	2,690	4,167	6,857
Total	\$18,793	\$33,197	\$33,007	\$84,997
Actual obligations				
Information technology development, maintenance, and operations	\$1,829	\$5,276	\$2,466	\$9,571
Cooperative agreements	13,944	15,031	6,026	35,000
Communications and outreach	2,137	2,719	1,640	6,495
Headquarters and field staff and materials	379	3,213	6,428	10,019
Total	\$18,288	\$26,238	\$16,559	\$61,086
Unobligated funds	\$505	\$6,959	\$16,448	\$23,911
Actual expenditures				
Information technology development, maintenance, and operations	\$1,813	\$3,946	\$908	\$6,668
Cooperative agreements	11,831	9,799	2,219	23,849
Communications and outreach	2,103	1,598	216	3,918
Headquarters and field staff and materials	379	3,174	6,427	9,979
Total	\$16,127	\$18,518	\$9,770	\$44,414

Source: USDA data as of March 27, 2007.

Note: All figures have been rounded to the nearest thousand.

The Senate Appropriations Committee and the House of Representatives have raised concerns in recent years about how USDA has spent funds to develop and implement NAIS. For example, in the 109th Congress, the

House passed a fiscal year 2007 appropriations bill for agriculture (H.R. 5384) that included a provision prohibiting funds from being obligated on NAIS until the House Appropriations Committee received a detailed plan for NAIS “including, but not limited to, proposed legislative changes, cost estimates, and means of program evaluation,” and that the plan be published in the *Federal Register* for public comment. Although the bill, with the provision limiting obligations, passed in the House, it did not become law. USDA officials told us they have plans to obligate all carryover funds in fiscal year 2007. These plans include awarding additional cooperative agreements to states and industry organizations to register premises; additional investments in information technology development, maintenance, and operations; and communications and outreach.

Expert Views Concerning Changes to the Livestock Industry Are Mixed

Questions have been raised about whether NAIS could lead to greater contracting, vertical integration, or horizontal consolidation in the livestock industry market structure,²⁶ and whether NAIS could affect prices at both the retail and producer levels. Expert panel members provided the following views relating to changes in market structure as well as to changes in costs and prices for various market participants due to the implementation of NAIS.

- The 32 experts were evenly split on whether contracting or horizontal consolidation would increase as a result of NAIS—16 said those effects would definitely or probably be more likely to occur, and 16 said those effects would not occur or are probably less likely to occur.
- Twenty experts said vertical integration would not occur or is probably less likely to occur, while 12 said vertical integration is definitely or probably more likely to occur.
- Regarding price effects at the retail level of meat and/or animal products, 12 experts thought prices would be higher; 15 thought there would be no effect; and 5 believed they would be lower.

²⁶Contracting is where a firm commits to purchase a commodity from a producer at a price established in advance of the purchase. Vertical integration is where a single firm controls the flow of the commodity across two or more stages of production. Horizontal consolidation refers to the process by which production is organized into fewer, but larger, plants or farms.

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- When asked what would be the effect on prices paid to producers for livestock if NAIS led to increased costs in livestock markets and/or slaughter facilities, 21 experts believed that prices would probably or definitely decrease; 8 thought there would be no effect; and 2 thought that there would probably be an increase.
 - Similarly, when asked what would be the effect on prices paid to producers for livestock if NAIS led to decreased costs in livestock markets and/or slaughter facilities, 16 experts replied that prices paid to producers would probably or definitely increase; 13 replied that there would be no effect; and 1 respondent thought there would be a decrease.

Conclusions

NAIS provides USDA, states, and the livestock industry with a historic opportunity for the United States to develop a comprehensive, coherent program to identify the nation's livestock animals and premises and achieve the goal of rapid and effective disease traceback. In addition, a successful program in sync with our international trading partners and competitors could boost consumer confidence in U.S. animal products and help maintain and expand market access. However, for NAIS to be fully effective and efficient in responding to an animal disease emergency, adequate levels of participation need to be achieved in all three NAIS components—premises registration, animal ID, and tracking. If insufficient numbers of animals are identified and tracked, the system will have gaps, despite millions of dollars being invested in the program's development. Conversely, high levels of participation would better position the United States to handle future animal health emergencies and minimize economic, trade, and possibly human health consequences. USDA's changes in direction over the past 3 years have caused considerable confusion and frustration among many NAIS stakeholders, and the program's implementation may be in danger of losing momentum. Most critically, whether NAIS is voluntary or mandatory, the lack of participation benchmarks makes it more difficult to gauge progress in attaining the necessary levels of participation for an effective animal ID program and, if there is insufficient participation, to develop strategies to achieve it. Without meaningful progress, USDA's expenditures on NAIS will continue to be questioned.

In addition, if USDA does not resolve several key implementation issues, the program will continue to face opposition by some industry stakeholders, and participation in all three NAIS components could be limited. Collectively, these unresolved issues will likely lead to ineffective and inefficient implementation and prevent NAIS from achieving the goal

of rapid and effective traceback. First, prioritizing how NAIS is implemented, such as by species, would allow USDA and stakeholders to better allocate their resources and improve the program over time. Second, the integration of NAIS with other USDA and state animal disease eradication programs and branding systems would remove another hurdle preventing participation in NAIS's animal ID and tracking components. Third, creating a robust process for selecting, setting standards for, and independently testing and evaluating animal ID and tracking devices in meeting NAIS standards is important to ensure effectiveness and interoperability across the national program and, therefore, would encourage investment. Fourth, identifying time-sensitive and cost-effective goals for traceback, which may vary by disease, would allow stakeholders to have common goals in responding to an event, potentially speeding up response and, therefore, minimizing economic losses. Fifth, requiring the recording of information in NAIS databases that may be critical for efficient traceback, such as species, approximate age, or date of birth, would enable animal health authorities to more quickly locate only those premises and animals that are relevant in an investigation, thus minimizing time and resources and hastening response.

Finally, we believe that if USDA were to provide industry, state, and other stakeholders with key information on the results of cooperative agreements, it would help identify the most effective and efficient means to implement the program and likely increase participation and enable producers, livestock markets, states, and other stakeholders to make informed decisions about where to allocate scarce resources. Moreover, for planning purposes in allocating federal, state, and industry resources, it is important for stakeholders, Congress, and the public to know how much it will cost to implement and maintain NAIS, compared with its benefits. Without a reliable cost-benefit analysis, stakeholders are unlikely to participate in NAIS due to their uncertainty about whether program benefits outweigh the costs.

Recommendations for Executive Action

To achieve the program's goal of rapid and effective animal disease traceback, we recommend that the Secretary of Agriculture direct the Administrator of APHIS to reestablish participation benchmarks to gauge progress in registering premises and identifying and tracking animals; monitor participation; and, if participation does not meet the benchmarks, take further action, such as making participation mandatory or creating incentives to achieve those levels of participation.

In addition, we recommend that the Secretary direct the Administrator of APHIS to take the following seven actions to implement NAIS more effectively and efficiently and achieve the program's goal of rapid and effective traceback:

- set priorities, in consultation with the NAIS species working groups, state animal health officials, and others, for implementing NAIS incrementally by species or other criteria;
- determine how NAIS will integrate with existing USDA and state animal disease eradication programs and branding systems;
- establish a robust process to select, standardize, and independently test and evaluate the performance of animal ID and tracking devices to ensure they meet minimum standards;
- identify—in consultation with the NAIS species working groups, state animal health officials, and others—current baselines for animal disease traceback, and develop time-sensitive, cost-effective goals for traceback under NAIS, which may include separate time frames for specific diseases;
- evaluate what information is critical for efficient traceback, such as species, approximate age or date of birth, and require that participants record that information in the NAIS animal ID and tracking databases;
- increase the monitoring of NAIS cooperative agreements, and evaluate and publish the results of cooperative agreements on a timely basis; and
- conduct the planned analysis of the costs and benefits of NAIS following criteria established in OMB guidance for conducting cost-benefit analyses for federal programs and publish the results for comment.

Agency Comments and Our Evaluation

We provided a draft of this report to USDA for review and comment. In written comments on our draft report, USDA stated that it appreciated our comprehensive evaluation of NAIS and generally agreed with our recommendations. However, regarding our recommendation that USDA establish a robust process to select, standardize, and independently test and evaluate the performance of animal ID and tracking devices to ensure they meet minimum standards, USDA agreed with the need to establish a more robust process for having ID devices tested to meet minimum performance standards, but believed that these standards must be defined through a consensus of affected stakeholders. USDA stated that as performance standards are established, the selection of such devices will

then be warranted. USDA also stated that as part of the evaluation process, it will specify the testing standards and then review the manufacturer's documentation of laboratory testing and field trials. In addition, USDA stated that testing of such devices should be at the expense of the device manufacturer.

We recognize the need for USDA to work with stakeholders before determining which ID and tracking devices are most appropriate for NAIS. However, the sooner USDA selects specific technologies, the sooner producers, livestock markets, slaughter facilities, and others will likely participate in the animal ID and tracking components of NAIS. As a starting point, some NAIS working groups have recommended specific ID devices for their species. It is common U.S. practice to select one technology for systems that need to be widely implemented in different environments, and we have previously reported that a robust process for selecting, standardizing, and testing and evaluating technologies leads to the most effective and efficient systems. During the course of our work, we found that USDA's technology-neutral position has caused producers, market operators, and slaughter facilities to be generally discouraged from investing in new animal ID or tracking devices for NAIS due to fear that their choices might be inconsistent with others in the marketplace, or that USDA might adopt specific devices in the future. The selection of specific ID and tracking devices, therefore, would ensure consistency and interoperability across the program's many potential users, leading to more efficient implementation. Furthermore, as stated in this report, USDA has recognized the need for animal ID technologies that are compatible with Canada and Mexico, and it also has stated that harmonizing the United States' program with other countries will facilitate safe trade. Selecting technologies for NAIS that are in sync with our trading partners and competitors could have positive trade implications for the United States. Lastly, the selection of specific devices would inform the cost-benefit analysis that USDA is currently conducting, which, in turn, could affect participation levels. These reasons underscore the need for USDA to select specific ID and tracking devices, on the basis of independent, reliable information regarding their performance in meeting minimum standards and of consultations with stakeholders.

In its written comments, USDA also provided points of clarification and provided details about current and future actions that the agency plans to take to address our recommendations, which we incorporated throughout the report, as appropriate. USDA's written comments and our specific responses appear in appendix VII. In addition, USDA provided technical comments that we incorporated throughout the report, as appropriate.

As we agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution of it until 30 days from the date of this report. At that time, we will send copies of this report to the interested congressional committees, the Secretary of Agriculture, and other interested parties. We will also make copies available to others upon request. In addition, this report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-3841 or ShamesL@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix VIII.

Sincerely yours,

A handwritten signature in cursive script that reads "Lisa Shames".

Lisa Shames
Director, Natural Resources and Environment

Appendix I: Objectives, Scope, and Methodology

The objectives of our review were to determine (1) how effectively the U.S. Department of Agriculture (USDA) is implementing the National Animal Identification System (NAIS) and, specifically, the key implementation issues identified by livestock industry groups, market operators, state animal health officials, and others; (2) how USDA has distributed cooperative agreement funding to help states and industry prepare for NAIS and evaluated the agreements' results; and (3) what USDA and others estimate are the costs for USDA, states, and the livestock industry to implement and maintain NAIS.

To address these objectives, we interviewed USDA officials responsible for implementing NAIS and conducted site visits to selected livestock markets and cooperative agreement field trials. We conducted structured interviews in person or via telephone with animal health officials in seven states: California, Iowa, Michigan, New Mexico, Texas, Vermont, and Wisconsin. These states were selected on the basis of their geographic dispersion; the range in the number of premises located in each state; and, in some cases, their high levels of livestock production. We also conducted interviews in person or via telephone and reviewed documents from the NAIS Subcommittee and the 10 NAIS working groups that report to the NAIS Subcommittee: Beef and Dairy Cattle Working Group, Bison Working Group, Camelid Working Group, Cervid Working Group, Equine Working Group, Goat Working Group, Market/Processor Working Group, Poultry Working Group, Sheep Working Group, and Swine Working Group. We also conducted structured interviews in person or via telephone and reviewed documents from four industry organizations: American Farm Bureau Federation, Livestock Marketing Association, National Cattlemen's Beef Association, and National Livestock Producers Association. In addition, we reviewed documents from the United States Animal Health Association Livestock ID Committee; the Ranchers-Cattlemen Action Legal Fund -- United Stockgrowers of America; three NAIS opposition groups—NoNAIS.org, Liberty Ark Coalition, and the Farm and Ranch Freedom Alliance; and other organizations that testified before Congress on NAIS in recent years or spoke at USDA's listening sessions in 2004. We attended the NAIS Subcommittee meeting and a USDA meeting with state departments of agriculture on NAIS held in August 2006 in Kansas City, Missouri, and the Secretary's Advisory Committee on Foreign Animal and Poultry Diseases meeting in September 2006 in Riverdale, Maryland. We identified and reviewed applicable laws, USDA policies, guidance, and technical standards regarding NAIS. We also reviewed relevant GAO reports and a Congressional Research Service report to Congress on animal identification (ID) and traceability.

To determine how USDA has distributed cooperative agreement funding to help states and industry prepare for NAIS, we reviewed USDA documentation related to cooperative agreements signed between USDA and states, territories, tribes, and industry groups from fiscal years 2004 through 2007. To determine which livestock species were the focus of cooperative agreement field trials, we reviewed and systematically recorded this information from cooperative agreement recipients' work plans; however, we did not independently assess whether the proposed work with these species and industry sectors took place. To determine how USDA has evaluated the results of cooperative agreements, we interviewed NAIS program staff, reviewed guidance provided to recipients, and reviewed quarterly and final reports submitted to USDA by cooperative agreement recipients. Because some cooperative agreements were ongoing and because other recipients did not report to USDA in a timely manner, we could not examine a complete set of quarterly and final reports for all recipients. We conducted a reliability assessment of the data that USDA provided to us on the NAIS cooperative agreements and found these data to be reliable for our reporting purposes.

For the third objective, to determine estimates of the costs to implement and maintain NAIS, we asked representatives from USDA, industry groups, academic institutions, and state animal health agencies for any NAIS cost estimates they had developed. We identified and reviewed federal guidance for developing cost estimates and cost-benefit analyses and sound economic and cost accounting principles. We also reviewed NAIS budget data from USDA for fiscal years 2004 through 2007, and conducted a reliability assessment of these data and found them to be reliable for our reporting purposes.

To help answer the first and third objectives, we convened a Web-based panel of 32 experts on several aspects of NAIS. The process we followed is based on GAO guidance for identifying experts for panels or other work requiring expertise in a specific area. We identified potential panel members by conducting a literature search to obtain the names of individuals who had published on animal ID in academic journals and in other relevant venues. We also asked for recommendations from individuals we interviewed for other aspects of the job. We then selected individuals who were actively involved in the development or implementation of NAIS and were knowledgeable of its details; who had conducted research, or were published in peer-reviewed journals on animal ID; or who were recognized by their peers as an expert on NAIS. Panel members were asked to fill out a Web-based questionnaire, which asked for their beliefs and opinions on future participation in NAIS,

effective traceback, implementation of NAIS, the costs and benefits of NAIS, the impact of NAIS on the livestock industry and consumers, ID technology, and databases for tracking animals. Panel members had approximately 3 weeks to fill out their questionnaires in December 2006 and January 2007. All panel members completed their questionnaires, giving us a 100 percent response rate. The questions and aggregated responses are presented in appendix IV. While we display only the quantitative, closed-ended responses, we also relied on the responses to the qualitative, open-ended questions to inform our findings in this report. The views expressed by the panel members do not necessarily represent the views of GAO.

We conducted our work from June 2006 to May 2007 in accordance with generally accepted government auditing standards.

Appendix II: Select Domestic and Foreign Animal Diseases of Concern Identified by USDA

Animal disease	Livestock animals affected	Can affect humans?
Domestic		
Avian influenza (low pathogenic)	Poultry	No
Bovine spongiform encephalopathy	Cattle	Yes
Bovine brucellosis and Swine brucellosis	Cattle, bison, goats, swine, and cervids	Yes
Chronic wasting disease	Cervids	Unknown
Equine infectious anemia	Horses, donkeys, mules, ponies, and zebra	No
Johne's disease	Cattle, sheep, goats, and cervids	Unknown
Pseudorabies	Swine, cattle, sheep, and goats	No
Scrapie	Sheep and goats	Unknown
Texas (splenetic) fever	Cattle	No
Tuberculosis	Cattle, bison, and captive cervids	Yes
Foreign		
Avian influenza (highly pathogenic)	Poultry	Yes
Dourine	Horses and donkeys	No
Exotic Newcastle disease	Poultry	Yes
African swine fever	Swine	No
Classical swine fever	Swine	No
Contagious bovine pleuropneumonia	Cattle and bison	No
Foot-and-mouth disease	Cattle, sheep, goats, and swine	Yes, but rarely infects humans
Glanders	Horses, donkeys, mules, and goats	Yes

Source: USDA.

Note: Pursuant to the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (the "Bioterrorism Act of 2002"), USDA identifies animal diseases that have the potential to pose a severe threat to livestock and human health, including bacillus anthracis, brucella abortus, brucella melitensis, brucella suis, burkholderia mallei, burkholderia pseudomallei, clostridium botulinum, coccidioides immitis, francisella tularensis, botulinum neurotoxins, clostridium perfringens epsilon toxin, shigatoxin, staphylococcal enterotoxins, T-2 toxin, African horsesickness, peste des petits ruminants, swine vesicular disease virus, lumpy skin disease virus, sheep pox, and goat pox.

USDA identifies other domestic animal diseases of concern in federal regulations, including acute swine erysipelas (affects swine), anthrax (all domestic species), bluetongue (all domestic species), chlamydiosis (poultry), Eastern equine encephalomyelitis (horses), mycoplasma gallisepticum (poultry), mycoplasma meleagridis (poultry), mycoplasma synoviae (poultry), salmonella enteritidis (poultry), salmonella gallinarum (poultry), salmonella pullorum (poultry), scabies (cattle), infectious salmon anemia, and spring viremia of carp. Additional foreign animal diseases of concern identified by USDA include equine viral arteritis (horses, donkeys, mules, ponies, and zebra); hendra (horses); nipah (swine and horses); Rift Valley fever (cattle, sheep, and goats); rinderpest (cattle, sheep, and goats); Venezuelan equine encephalomyelitis (all equine species); and vesicular stomatitis (swine, cattle, sheep, and goats).

Appendix III: Members of GAO's Expert Panel on NAIS

This appendix provides the names and affiliations of 32 academic, government, and other experts who, as members of our expert panel on NAIS, completed a Web-based questionnaire from December 2006 to January 2007 regarding USDA's implementation of NAIS. We also spoke with a select number of these experts regarding animal ID and tracking technology, among other issues.

Expert Panel Members

- Dr. David P. Anderson, Associate Professor and Extension Economist - Livestock and Food Products Marketing, Department of Agricultural Economics, Texas A&M University
- Dr. DeeVon Bailey, Interim Department Head and Professor, Department of Economics, Utah State University
- Dr. Joseph Balagtas, Assistant Professor, Department of Agricultural Economics, Purdue University
- Dr. Dale A. Blasi, Professor & Extension Beef Specialist, Department of Animal Sciences & Industry, Kansas State University
- Dr. D. Scott Brown, Research Assistant Professor and Program Director of Livestock and Dairy, Food and Agricultural Policy Research Institute, University of Missouri
- Dr. Daniel D. Buskirk, Associate Professor and Beef Extension Specialist, Department of Animal Science, Michigan State University
- Dr. Julie A. Caswell, Professor and Department Chair, Department of Resource Economics, College of Natural Resources and the Environment, University of Massachusetts
- Dr. David A. Daley, Professor, College of Agriculture, California State University, Chico
- Dr. Kevin Dhuyvetter, Agricultural Economist, Department of Agricultural Economics, Kansas State University
- Dr. Basil Eastwood, National Program Leader, Plant and Animal Systems, Cooperative State Research, Education, and Extension Service, USDA
- Dr. Scott Greiner, Associate Professor and Extension Animal Scientist, Beef and Sheep, Department of Animal & Poultry Sciences, College of

Agriculture and Life Sciences, Virginia Polytechnic Institute and State University

- Dr. Ron A. Gustafson, Senior Economist, Beef Analysis, Economic Research Service, USDA
- Dr. James C. Heird, Director of Equine Sciences Department, Equine Teaching and Research Center, Colorado State University
- Dr. Julie Jarvinen, Associate Professor, Department of Veterinary Pathology, Iowa State University
- Dr. Cleon V. Kimberling (retired), Clinical Sciences Department, Colorado State University
- Dr. John D. Lawrence, Professor and Extension Livestock Economist, Agricultural Economics, Department of Economics, Iowa State University
- Dr. Darrell R. Mark, Assistant Professor and Livestock Extensionist, Department of Agricultural Economics, University of Nebraska, Lincoln
- Dr. Bret D. Marsh, State Veterinarian, Indiana State Board of Animal Health, and immediate past president of the United States Animal Health Association
- Dr. James D. McKean, Extension Veterinarian and University Professor, Department of Veterinary Diagnostic & Production Animal Medicine, College of Veterinary Medicine, Iowa State University
- Mr. Douglas O'Brien, Co-Director, National Agricultural Law Center, University of Arkansas School of Law, and Staff Attorney, Drake University Agricultural Law Center
- Dr. James W. Oltjen, Professor and Extension Specialist, Animal Management Systems, Department of Animal Science, University of California, Davis
- Dr. Derrell Peel, Professor, and Livestock Extensionist, Department of Agricultural Economics, Oklahoma State University
- Dr. Valerie Ragan, President, AgWorks Solutions LLC, and former Assistant Deputy Administrator for USDA's Animal and Plant Health Inspection Service, Veterinary Services

**Appendix III: Members of GAO's Expert Panel
on NAIS**

- Dr. Kris Ringwall, Animal Scientist and Director of the Dickinson Research Extension Center, North Dakota State University, and Executive Secretary, North Dakota Beef Cattle Improvement Association
- Dr. Joan Dean Rowe, Associate Professor, Department of Population Health & Reproduction, University of California, Davis
- Dr. Ted Schroeder, Professor and Director of Graduate Program, Department of Agricultural Economics, Kansas State University
- Dr. Clifford F. Shipley, Clinical Associate Professor, College of Veterinary Medicine, University of Illinois
- Dr. Ronnie E. Silcox, Associate Professor and Extension Beef Specialist, Animal & Dairy Science Department, University of Georgia
- Dr. Michael A. Tomaszewski, Professor and Extension Dairy Specialist, Department of Animal Science, Texas A&M University
- Dr. Glynn Tonsor, Assistant Professor, Department of Agricultural Economics, Michigan State University
- Dr. Wendy J. Umberger, Assistant Professor and Extension Economist, Department of Agricultural and Resource Economics, Colorado State University
- Dr. Kelly Zering, Associate Professor, Department of Agricultural and Resource Economics, North Carolina State University, Raleigh

Appendix IV: GAO Expert Panel Questions and Responses on NAIS

Expert Panel: USDA's Implementation of the National Animal Identification System

We conducted the following survey as part of our review of USDA's implementation of NAIS. We received a 100 percent response rate from a panel of 32 experts who filled out a Web-based questionnaire in late December 2006 and early January 2007. For presentation purposes in this appendix, we have combined the category "No expertise on topic" with "No answer" and the category "50% or less" with "51 to 60%." However, when the experts filled out the questionnaire, those categories were not combined. The views expressed by the panel members do not necessarily represent the views of GAO.

Part I: Participation in the NAIS Voluntary Program

In USDA's November 2006 draft *National Animal Identification System (NAIS): A User Guide and Additional Information Resources (NAIS User Guide)*, USDA states that NAIS is a voluntary program that helps producers and animal health officials respond rapidly and effectively to animal disease events for livestock and poultry in the United States. The next three questions ask for your opinion on likely participation levels for the three components of NAIS (premises registration, animal identification, and animal tracking) under a voluntary program.

In this questionnaire, the term "producer" refers to all individuals engaged in the ownership, management, or marketing of any of the species of livestock included in NAIS. For example, in the beef cattle industry, this refers to cow-calf producers as well as stocker, backgrounder, and feedlot operators. While owners or managers of certain species, for example horses, may not typically be referred to as producers, these individuals are included in this definition of producer. This definition is consistent with USDA's draft NAIS User Guide (pg. 5). The term "livestock market" refers to livestock auction markets, sale barns, and sale yards.

**Appendix IV: GAO Expert Panel Questions
and Responses on NAIS**

Q1. What do you believe will be the percentage of premises registered for each sector of livestock production under the NAIS voluntary program?

	60% or less	61-70%	71-80%	81-90%	91-100%	No expertise/ No answer	Number of respondents
a. Producers	24	4	2	1	0	1	32
b. Livestock Markets	9	4	5	6	5	3	32
c. Slaughter Facilities	6	1	3	12	8	2	32

Q2. What do you believe will be the percentage of animals identified (as individuals or, where applicable, as a group) for each species of animal under the NAIS voluntary program?

	60% or less	61-70%	71-80%	81-90%	91-100%	No expertise/ No answer	Number of respondents
a. Bison	18	1	1	0	1	11	32
b. Camelids (e.g., alpacas, llamas)	14	1	2	1	0	14	32
c. Cattle (beef)	24	2	2	1	0	3	32
d. Cattle (dairy)	10	4	7	5	3	3	32
e. Cervids (e.g., deer, elk)	14	3	0	1	1	13	32
f. Equine (e.g., horses, donkeys, mules)	22	1	0	0	1	8	32
g. Goats	18	3	1	0	0	10	32
h. Poultry (commercial)	8	1	2	8	7	6	32
i. Poultry (non- commercial)	25	0	0	0	0	7	32
j. Sheep	15	4	5	1	1	6	32
k. Swine (individual)	28	0	0	1	0	3	32
l. Swine (group)	8	3	3	11	4	3	32

**Appendix IV: GAO Expert Panel Questions
and Responses on NAIS**

Q3. What do you believe will be the percentage of animals tracked for each sector of livestock production under the NAIS voluntary program?

	0-25%	26-50%	51-75%	76-100%	No expertise/ No answer	Number of respondents
a. Producers	17	12	2	0	1	32
b. Livestock markets	10	9	8	2	3	32
c. Slaughter facilities	7	6	5	10	4	32

Part II: Achieving Rapid and Effective Trace Back

The next four questions ask for your opinion on the participation levels in NAIS that are necessary for producers and animal health officials to respond quickly and effectively to animal disease events by tracing livestock animals throughout the production process.

Q4. USDA's draft *NAIS User Guide* does not define the time period for rapid trace back. In your opinion, what time period defines a "rapid" trace back in an animal disease event?

24 hours or less	25-48 hours	49-72 hours	73-96 hours	Other	No expertise/ No answer	Number of respondents
10	15	3	2	1	1	32

Q5. What percentage of premises registered do you believe is necessary to achieve the NAIS program's goal of rapid and effective animal disease trace back?

	60% or less	61-70%	71-80%	81-90%	91-100%	No expertise/ No answer	Number of respondents
a. Producers	2	2	1	11	16	0	32
b. Livestock markets	0	0	1	3	27	1	32
c. Slaughter facilities	0	0	1	2	28	1	32

**Appendix IV: GAO Expert Panel Questions
and Responses on NAIS**

Q6. What percentage of animals identified is necessary to achieve the goal of rapid animal disease trace back?

	60% or less	61-70%	71-80%	81-90%	91-100%	No expertise/ No answer	Number of respondents
a. Bison	3	0	3	5	11	10	32
b. Camelids (e.g., alpacas, llamas)	3	0	3	4	9	13	32
c. Cattle (beef)	1	0	8	5	17	1	32
d. Cattle (dairy)	1	0	6	8	16	1	32
e. Cervids (e.g., deer, elk)	0	2	4	4	10	12	32
f. Equine (e.g., horses, donkeys, mules)	2	3	5	3	10	9	32
g. Goats	3	1	4	7	10	7	32
h. Poultry (commercial)	0	1	4	5	17	5	32
i. Poultry (non- commercial)	1	0	4	3	18	6	32
j. Sheep	1	2	5	6	15	3	32
k. Swine (individual)	5	1	3	4	15	4	32
l. Swine (group)	0	1	4	7	18	2	32

Q7. What percentage of animals tracked is necessary to achieve the goal of rapid animal disease trace back?

	0-25%	26-50%	51-75%	76-100%	No expertise/ No answer	Number of respondents
a. Producers	2	1	7	22	0	32
b. Livestock markets	2	0	2	27	1	32
c. Slaughter facilities	2	0	2	27	1	32

Part III: Implementation of NAIS

NAIS is being implemented for all livestock species, including bison, camelids, cattle (beef and dairy), cervids, equine, goats, poultry, sheep, and swine. Countries that have already implemented national animal ID programs (e.g., Canada, EU, Australia) generally started with cattle and, in some cases, later extended their program to cover a few other species. No other country has attempted to reach the number of species that USDA aims to cover with NAIS, nor has any other country implemented a program for multiple species simultaneously.

Q8. What types of incentives do you believe could be used to achieve a high level of participation in the premises registration, animal identification, and/or animal tracking components of NAIS?

Number of experts who provided a response	No expertise/No response
32	0

Q9. In your opinion, should participation in NAIS be mandatory?

Definitely yes	Probably yes	Uncertain	Probably no	Definitely no	No expertise/No answer	Number of respondents
17	10	2	2	1	0	32

Q10. How would you characterize USDA's effectiveness in communicating roles and responsibilities for NAIS?

	Very effective	Generally effective	Neither effective nor ineffective	Generally ineffective	Very ineffective	No expertise/No answer	Number of respondents
a. Producers	0	2	3	18	7	2	32
b. Livestock markets	0	5	3	14	5	5	32
c. Slaughter facilities	1	9	4	6	5	7	32
d. State animal health officials	4	14	2	3	3	6	32

Q11. If you believe that USDA's communications are not as effective as they could be, please describe any actions that USDA could take to make communications better.

Number of experts who provided a response	No expertise/No response
27	5

**Appendix IV: GAO Expert Panel Questions
and Responses on NAIS**

Q12. In your opinion, should USDA limit NAIS to one or a few species or continue with its current approach to include all species?

Definitely limit to one or few species	Probably limit to one or few species	Uncertain	Probably continue with current approach of including all species	Definitely continue with current approach of including all species	No expertise/No answer	Number of respondents
6	4	1	16	5	0	32

Q13. In your opinion, should USDA implement NAIS incrementally by species, or continue with its current approach to implement NAIS for all species simultaneously?

Definitely implement incrementally by species	Probably implement incrementally by species	Uncertain	Probably continue with current approach of implementing for all species simultaneously	Definitely continue with current approach of implementing for all species simultaneously	No expertise/No answer	Number of respondents
13	8	2	6	2	1	32

Q14. In your opinion, what criteria should be used to determine the priority given to each species in implementing NAIS?

Number of experts who provided a response	No expertise/No response
30	2

Q15. In your opinion, what priority should be given to each species in implementing NAIS?

	Lowest priority	Low priority	Medium priority	High priority	Highest priority	No expertise/No answer	Number of respondents
a. Bison	5	8	7	5	3	4	32
b. Camelids (e.g., alpacas, llamas)	14	9	2	2	0	5	32
c. Cattle (beef)	0	0	1	7	23	1	32
d. Cattle (dairy)	0	0	1	6	24	1	32
e. Cervids (e.g., deer, elk)	4	11	6	4	4	3	32
f. Equine (e.g., horses, donkeys, mules)	7	7	11	3	0	4	32
g. Goats	4	8	11	1	5	3	32

**Appendix IV: GAO Expert Panel Questions
and Responses on NAIS**

	Lowest priority	Low priority	Medium priority	High priority	Highest priority	No expertise/ No answer	Number of respondents
h. Poultry (commercial)	1	1	5	9	13	3	32
i. Poultry (non-commercial)	3	5	10	6	6	2	32
j. Sheep	2	5	8	10	6	1	32
k. Swine (individual)	3	12	5	5	6	1	32
l. Swine (group)	1	1	2	11	16	1	32

Part IV: Costs and Benefits of NAIS

USDA has not released detailed information on the cost of implementing and maintaining NAIS for producers, livestock markets, slaughter facilities, states, and others that are subject to NAIS. In the November 2006 draft *NAIS User Guide* (pg. 12) USDA states that it plans to conduct a cost-benefit analysis that will help forecast more precisely the potential economic effects of NAIS.

Q16. Should USDA publish a cost-benefit analysis for NAIS that contains detailed cost and benefit information for the different sectors of the livestock industry, states, and USDA?

Definitely yes	Probably yes	Uncertain	Probably no	Definitely no	No expertise/ No answer	Number of respondents
21	8	2	1	0	0	32

Q17. Do you believe there are other actions that USDA should take to address the cost(s) of implementing and maintaining NAIS?

Definitely yes	Probably yes	Uncertain	Probably no	Definitely no	No expertise/ No answer	Number of respondents
14	15	2	0	0	1	32

Q18. If you answered "Definitely yes" or "Probably yes" to question 17, what other actions should USDA take to address the cost of implementing and maintaining NAIS?

Number of experts who provided a response	No expertise/ No response
29	3

**Appendix IV: GAO Expert Panel Questions
and Responses on NAIS**

Q19. Do you believe there are other actions that USDA could take to make known the benefit(s) of implementing and maintaining NAIS?

Definitely yes	Probably yes	Uncertain	Probably no	Definitely no	No expertise/ No answer	Number of respondents
19	10	2	1	0	0	32

Q20. If you answered "Definitely yes" or "Probably yes" to Question 19, what other actions could USDA take to make known the benefit(s) of implementing and maintaining NAIS?

Number of experts who provided a response	No expertise/No response
29	3

Q21. In your opinion, what overall, net effect (considering all costs and benefits) will NAIS likely have on producers, livestock markets, and/or slaughter facilities?

	Definitely negative	Probably negative	No effect	Probably positive	Definitely positive	No expertise/ No answer	Number of respondents
a. Producers	1	6	0	13	11	1	32
b. Livestock markets	1	6	3	9	11	2	32
c. Slaughter facilities	0	2	6	8	14	2	32

Part V: Impact on the Livestock Industry and Consumers

This section asks about vertical coordination, which refers to the way products are exchanged between different stages of production in a market, such as between farmers, processors, and retailers. The three basic types of vertical coordination are: (1) open-production, where a firm purchases a commodity from a producer at the market price determined at the time of purchase; (2) contract-production (contracting), where a firm commits to purchase a commodity from a producer at a price established in advance of the purchase; and (3) vertical integration, where a single firm controls the flow of the commodity across two or more stages of production. There are also questions about horizontal consolidation, the process by which production is organized into fewer, but larger, plants or farms.

Q22. In your opinion, will NAIS make contracting, vertical integration, and/or horizontal consolidation in the livestock industry (all species) more or less likely to occur?

	Definitely more likely	Probably more likely	No effect	Probably less likely	Definitely less likely	No expertise/No answer	Number of respondents
a. Contracting	3	13	15	1	0	0	32
b. Vertical integration	4	8	18	2	0	0	32
c. Horizontal consolidation	0	16	15	1	0	0	32

Q23. In the textbox below, please provide a brief explanation for why you think NAIS will make contracting, vertical integration, and/or horizontal consolidation more or less likely to occur.

Number of experts who provided a response	No expertise/No response
31	1

Q24. In what ways, if any, should USDA address any of the effects NAIS could have on the industry due to contracting, vertical integration, and/or horizontal consolidation?

Number of experts who provided a response	No expertise/No response
29	3

**Appendix IV: GAO Expert Panel Questions
and Responses on NAIS**

Q25. In your opinion, will NAIS result in higher or lower prices for meat and/or other animal products?

Definitely higher	Probably higher	No effect	Probably lower	Definitely lower	No expertise/ No answer	Number of respondents
3	9	15	2	0	3	32

Q26. In your opinion, if NAIS causes costs of livestock markets and/or slaughter facilities to increase, what effect will that have on the prices paid to producers for livestock?

Definitely increase	Probably increase	No effect	Probably decrease	Definitely decrease	No expertise/ No answer	Number of respondents
0	2	8	17	4	1	32

Q27. In your opinion, if NAIS causes costs of livestock markets and/or slaughter facilities to decrease, what effect will that have on the prices paid to producers for livestock?

Definitely increase	Probably increase	No effect	Probably decrease	Definitely decrease	No expertise/ No answer	Number of respondents
2	14	13	1	0	2	32

Part VI: Animal Identification and Tracking Technologies

Canada and Australia have adopted standards that limit the acceptable identification and tracking technologies to certain electronic devices for their national animal (cattle) ID programs. However, USDA has taken a "technology-neutral" position so that many different types of ID devices, both visual and electronic, are acceptable under NAIS. Some of USDA's NAIS Species Working Groups have recommended specific ID devices for their industries, such as cattle RFID ear tags and equine neck microchips, but USDA has not adopted these recommendations as NAIS standards.

Q28. Does USDA's "technology-neutral" position encourage or discourage investment by producers in animal identification technology (e.g., individual animal ID devices)?

Definitely encourages	Probably encourages	Neither encourages nor discourages	Probably discourages	Definitely discourages	No expertise/ No answer	Number of respondents
3	3	2	14	9	1	32

**Appendix IV: GAO Expert Panel Questions
and Responses on NAIS**

Q29. Please use the space below to elaborate on your answers to Question 28.

Number of experts who provided a response	No expertise/No response
32	0

Q30. Does USDA's "technology-neutral" position encourage or discourage investment in animal tracking technology (e.g., ID readers, databases, and retrofitting facilities) by producers, livestock markets, and slaughter facilities?

	Definitely encourages	Probably encourages	Neither encourages nor discourages	Probably discourages	Definitely discourages	No expertise/No answer	Number of respondents
a. Producers	1	1	5	12	12	1	32
b. Livestock markets	1	1	4	14	8	4	32
c. Slaughter facilities	1	3	6	11	6	5	32

Q31. Please use the space below to elaborate on your answers to Question 30.

Number of experts who provided a response	No expertise/No response
30	2

Q32. Do you know of any specific problems regarding the **interoperability** (compatibility) of animal ID and tracking devices made by different manufacturers? If yes, please describe below.

Number of experts who provided a response	No expertise/No response
18	14

Q33. What actions could USDA take to address problems affecting the interoperability of animal ID and tracking devices?

Number of experts who provided a response	No expertise/No response
21	11

**Appendix IV: GAO Expert Panel Questions
and Responses on NAIS**

Q34. Do you know of any specific problems affecting the **accuracy** of animal tracking devices? If yes, please describe below.

Number of experts who provided a response	No expertise/No response
18	14

Q35. What actions could USDA take to address problems affecting the accuracy of animal tracking devices?

Number of experts who provided a response	No expertise/No response
19	13

Q36. Do you know of any specific problems affecting the **longevity** of animal ID or tracking devices? If yes, please describe below.

Number of experts who provided a response	No expertise/No response
16	16

Q37. What actions could USDA take to address problems affecting the longevity of animal ID or tracking devices?

Number of experts who provided a response	No expertise/No response
21	11

Q38. Do you know of any specific problems affecting the ability of animal tracking devices to keep up with the **“speed of commerce”** when animals change ownership? If yes, please describe below.

Number of experts who provided a response	No expertise/No response
23	9

Q39. What actions could USDA take to address any problems affecting the ability of animal tracking devices to keep up with the speed of commerce?

Number of experts who provided a response	No expertise/No response
22	10

Part VII: Databases for Tracking Animals

USDA's original plan for animal tracking, the third component of NAIS, was for USDA to manage a centralized database that would contain all animal movements input by industry in the birth-to-slaughter production process. To address concerns about the protection of proprietary information, Secretary Johanns announced in August 2005 that USDA would allow data from approved state and private animal tracking databases (ATDs) to be transferred to a USDA information system. However, some industry groups and states have expressed concerns about the cost, quality, and timeliness of this new, decentralized approach.

Q40. What actions could USDA take to address any concerns about the **cost(s)** of the decentralized approach?

Number of experts who provided a response	No expertise/No response
29	3

Q41. What actions could USDA take to address concerns about the **quality and timeliness** of the decentralized approach?

Number of experts who provided a response	No expertise/No response
28	4

Part VIII: Final Comments

Q42. Are you in favor of a national animal ID program?

Definitely yes	Probably yes	Uncertain	Probably no	Definitely no	No answer	Number of respondents
25	4	2	0	0	1	32

Q43. Are you in favor of NAIS as it is currently planned?

Definitely yes	Probably yes	Uncertain	Probably no	Definitely no	Number of respondents
0	7	5	15	5	32

**Appendix IV: GAO Expert Panel Questions
and Responses on NAIS**

Q44. If applicable, please explain any discrepancy in your answers to Questions 42 and 43.

Number of experts who provided a response	No expertise/No response
29	3

Q45. What changes, if any, would you make to NAIS as it is currently planned? *(Please limit to the 3 most important issues.)*

Number of experts who provided a response	No expertise/No response
32	0

Q46. If you have additional comments about NAIS that you would like to make, please do so here.

Number of experts who provided a response	No expertise/No response
19	13

Appendix V: Select International Animal Identification and Tracking Programs

Select International Animal Identification and Tracking Programs						
Country	Program name/Law title	Species	Voluntary or mandatory	Year implemented	Current type of ID device used	Production cycle covered
Argentina	Export Cattle Identification System	Cattle	Mandatory for export	2003	Visual ear tag	Farm of origin to slaughter
Australia	National Livestock Identification System	Cattle, sheep, and goats	Mandatory	Cattle: premises registration since 1960s; individual identification in 2005. Sheep and goats: initial implementation in 2006; full implementation in 2009.	Cattle: electronic (radio frequency identification) ear tag or ear tag/rumen bolus combination Sheep and goats: visual ear tags	Farm of origin to slaughter
Brazil	Brazilian System of Identification and Certification of Origin for Bovine and Buffalo	Cattle and bison	Mandatory	First phase (2002): mandatory participation only by those exporting beef to the European Union. Second phase (2006): mandatory participation for all foreign exports. Third phase (2006): mandatory requirement for all foot-and-mouth disease affected areas, regardless of whether the product is being sold overseas. Fourth phase (2007): all beef producers must participate, regardless of whether the product is being exported.	Visual ear tag combined with one of the following: button ear tag, electronic device, tattoo, or iron brand	Farm of origin to slaughter
Canada	Canadian Cattle Identification Program	Cattle and bison	Mandatory	2001	Radio frequency identification	Farm of origin to carcass inspection or export
	Canadian Sheep Identification Program	Sheep	Mandatory	2004	Visual ear tags	Farm of origin to carcass inspection

Appendix V: Select International Animal Identification and Tracking Programs

Select International Animal Identification and Tracking Programs						
Country	Program name/Law title	Species	Voluntary or mandatory	Year implemented	Current type of ID device used	Production cycle covered
European Union	N/A	Cattle, buffalo, bison, sheep, goats, equine, and swine	Mandatory	Cattle, buffalo, bison, and equine: 2000 Sheep and goats: 1992 Swine: 1992	Cattle, buffalo, and bison: double ear tag and passport Equine: passport Sheep and goats: double identification (two ear tags or one ear tag and a tattoo, mark on the pastern (for goats only), or electronic identifiers) Swine: ear tags or tattoos	Farm of origin to retail
Japan	Beef Traceability Law	Beef cattle	Mandatory	2003	Ear tags with minimum requirements	Farm of origin to retail

Source: GAO summary of reports and articles on international animal ID programs.

Note: We did not independently verify the information on foreign countries' animal ID systems.

Appendix VI: Information on NAIS Cooperative Agreements

Table 2: USDA Funding for NAIS Cooperative Agreements to States, Territories, and Tribes, Fiscal Years 2004 through 2006

State	Fiscal year 2004 (CCC) funds		Fiscal year 2005		Fiscal year 2006	Total
	Premises registration	Field trials/ Premises registration	Premises registration	Field trials ^a	Premises registration	
Alabama		\$115,000	\$245,000			\$360,000
Alaska			35,488			35,488
Arizona			169,000		\$141,000	310,000
Arkansas		115,000	281,000		203,000	599,000
California	\$752,000		625,000	\$350,000	387,000	2,114,000
Colorado	1,214,579		365,000	295,227	264,000	2,138,806
Connecticut			78,735			78,735
Delaware		31,500	34,800			66,300
Florida	531,840		273,000		191,000	995,840
Georgia		120,000	42,173		238,160	400,333
Hawaii			100,000			100,000
Idaho	1,164,000		299,000		203,000	1,666,000
Illinois		130,000	245,000		141,000	516,000
Indiana		130,000	201,000		100,073	431,073
Iowa		130,000	472,000		130,400	732,400
Kansas	805,000		685,000	441,430		1,931,430
Kentucky	269,093		352,000			621,093
Louisiana		100,000				100,000
Maine		78,343	94,000		21,500	193,843
Maryland		73,500	81,200			154,700
Massachusetts			95,348			95,348
Michigan		120,000	207,000			327,000
Minnesota	434,578		342,000		203,000	979,578
Mississippi		153,327	170,129		43,294	366,750
Missouri		511,707	561,000		237,000	1,309,707
Montana	431,928		349,000			780,928
Nebraska		130,000	672,000		448,000	1,250,000
Nevada		99,999	129,000		80,000	308,999
New Hampshire			47,171			47,171
New Jersey		100,000	92,000		72,108	264,108
New Mexico			244,000		203,000	447,000
New York		93,000	250,000		202,941	545,941

**Appendix VI: Information on NAIS
Cooperative Agreements**

	Fiscal year 2004 (CCC) funds		Fiscal year 2005		Fiscal year 2006		Total
	Premises registration	Field trials/ Premises registration	Premises registration	Field trials ^a	Premises registration		
North Carolina		120,000	197,000				317,000
North Dakota	515,000		272,000				787,000
Ohio		130,000	258,000		129,746		517,746
Oklahoma	675,000		629,000		309,599		1,613,599
Oregon			248,000				248,000
Pennsylvania	615,000		257,000	205,856	142,238		1,220,094
Rhode Island							
South Carolina		199,865	139,000		141,000		479,865
South Dakota	505,240		334,277		326,000		1,165,517
Tennessee		130,000	347,000	142,973	129,408		749,381
Texas	1,000,000		1,038,975		235,000		2,273,975
Utah	182,100		194,000				376,100
Vermont		100,000	114,000				214,000
Virginia		112,636	266,000	220,000			598,636
Washington		100,956	206,000		141,000		447,956
West Virginia		100,000	138,000		64,079		302,079
Wisconsin		100,000	444,000				544,000
Wyoming	361,929		235,000		141,000		737,929
Subtotal	\$9,457,287	\$3,324,833	\$13,154,296	\$1,655,486	\$5,268,546		\$32,860,448
Territories							
Puerto Rico			\$70,000				\$70,000
Virgin Islands			22,213		\$7,381		29,594
Subtotal	\$0	\$0	\$92,213	\$0	\$7,381		\$99,594
Tribes							
Cheyenne River Sioux Tribe of the Cheyenne River Reservation, South Dakota				\$250,000	\$15,000		\$265,000
Chippewa-Cree Indians of the Rocky Boy's Reservation, Montana					9,175		9,175

**Appendix VI: Information on NAIS
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	Fiscal year 2004 (CCC) funds		Fiscal year 2005		Fiscal year 2006	Total
	Premises registration	Field trials/ Premises registration	Premises registration	Field trials ^a	Premises registration	
Fort Belknap Indian Community of the Fort Belknap Reservation of Montana ^b	\$200,000		\$417,000		242,500	859,500
Hopi Tribe of Arizona			18,000			18,000
Hualapai Indian Tribe of the Hualapai Indian Reservation, Arizona			18,000		10,000	28,000
Jicarilla Apache Nation, New Mexico			18,000		10,000	28,000
Minnesota Chippewa Tribe, Minnesota (White Earth Band)			18,000		15,000	33,000
Navajo Nation, Arizona, New Mexico & Utah			18,000		10,000	28,000
Oglala Sioux Tribe of the Pine Ridge Reservation, South Dakota			18,000		15,000	33,000
Osage Tribe, Oklahoma		\$50,000	18,000			68,000
Poarch Band of Creek Indians of Alabama					15,000	15,000
Pueblo of Acoma, New Mexico			18,000			18,000
Pueblo of Isleta, New Mexico			9,000			9,000
Pueblo of Jemez, New Mexico			9,000			9,000
Pueblo of Laguna, New Mexico			9,000			9,000
Pueblo of Pojoaque, New Mexico			9,000			9,000

**Appendix VI: Information on NAIS
Cooperative Agreements**

	Fiscal year 2004 (CCC) funds		Fiscal year 2005		Fiscal year 2006	Total
	Premises registration	Field trials/ Premises registration	Premises registration	Field trials ^a	Premises registration	
Pyramid Lake Paiute Tribe of the Pyramid Lake Reservation, Nevada			18,000			18,000
San Carlos Apache Tribe of the San Carlos Reservation, Arizona			18,000		10,000	28,000
Shoshone Tribe of the Wind River Reservation, Wyoming ^c					347,500	347,500
Shoshone-Bannock Tribes of the Fort Hall Reservation of Idaho			18,000		10,000	28,000
Shoshone-Paiute Tribes of the Duck Valley Reservation, Nevada			18,000			18,000
Spirit Lake Tribe, North Dakota			18,000			18,000
St Regis Band of Mohawk Indians of New York			18,000			18,000
Three Affiliated Tribes of the Fort Berthold Reservation, North Dakota			18,000			18,000
Tohono O'odham Nation of Arizona			18,000			18,000
Tule River Indian Tribe of the Tule River Reservation, California					20,000	20,000
Turtle Mountain Band of Chippewa Indians of North Dakota			18,000			18,000

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	Fiscal year 2004 (CCC) funds		Fiscal year 2005		Fiscal year 2006		Total
	Premises registration	Field trials/ Premises registration	Premises registration	Field trials ^a	Premises registration		
Walker River Paiute Tribe of the Walker River Reservation, Nevada			18,000		10,000		28,000
White Mountain Apache Tribe of the Fort Apache Reservation, Arizona			13,493		10,000		23,493
Subtotal	\$200,000	\$50,000	\$790,493	\$250,000	\$749,175		\$2,039,668
Total	\$9,657,287	\$3,374,833	\$14,037,002	\$1,905,486	\$6,025,101		\$34,999,710

Source: GAO analysis of USDA data.

Note: This information was compiled from data provided by USDA summarizing signed cooperative agreements between USDA and state, territory, and tribal governments; we did not independently assess whether states received funding in these amounts. The award amounts listed have been adjusted to reflect additional obligations, or deobligations, reported by USDA.

^aSome of these pilot projects were funded from CCC fiscal year 2004 funding. Awards that have been committed, but not yet signed, are not included in this column.

^bThe Fort Belknap Indian Community of the Fort Belknap Reservation of Montana fiscal year 2006 cooperative agreement for \$35,000 included funding for the following tribes: Fort Belknap Indian Community of the Fort Belknap Reservation of Montana; Confederated Tribes of the Warm Springs Reservation of Oregon; and Ute Indian Tribe of the Uintah & Ouray Reservation, Utah.

^cThe Shoshone Tribe of the Wind River Reservation, Wyoming fiscal year 2006 cooperative agreement for \$115,000 included funding for the following tribes: Shoshone Tribe of the Wind River Reservation, Wyoming; Crow Tribe of Montana; Shoshone-Paiute Tribes of the Duck Valley Reservation, Nevada; Yomba Shoshone Tribe of the Yomba Reservation, Nevada; Te-Moak Tribe of Western Shoshone Indians of Nevada (South Fork Band); Washoe Tribe of Nevada & California; Skull Valley Band of Goshute Indians of Utah; Pyramid Lake Paiute Tribe of the Pyramid Lake Reservation, Nevada; Arapahoe Tribe of the Wind River Reservation, Wyoming; and Blackfeet Tribe of the Blackfeet Indian Reservation of Montana.

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Table 3: Species Covered by USDA NAIS Cooperative Agreement Field Trials, Fiscal Years 2004 and 2005

Recipient of award	Award amount	Species ^a									
		Bison	Dairy cattle	Beef cattle	Swine	Sheep	Equine	Poultry	Cervids	Goats	Camelids
Fiscal year 2004 (CCC) funding^b											
California Department of Food and Agriculture	\$752,000		•								
Colorado Department of Agriculture	1,214,579	•	•	•		•	•		•	•	•
Florida Department of Agriculture	531,840		•	•							
Fort Belknap Indian Community	200,000	•		•							
Idaho State Department of Agriculture	1,164,000		•	•	•	•			•		
Kansas Animal Health Department	805,000			•							
Kentucky Department of Agriculture	269,093		•	•							
Minnesota Board of Animal Health	434,578		•	•	•						
Montana Department of Livestock	431,928	•		•			•		•		
North Dakota State Board of Animal Health	515,000	•	•	•		•					
Oklahoma Department of Agriculture	675,000		•	•		•	•		•	•	
Pennsylvania Department of Agriculture	615,000		•	•							
South Dakota Animal Industry Board	505,240		•	•	•	•					

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Recipient of award	Award amount	Species ^a									
		Bison	Dairy cattle	Beef cattle	Swine	Sheep	Equine	Poultry	Cervids	Goats	Camelids
Texas Animal Health Commission	1,000,000		•	•		•	•		•	•	
Utah Department of Agriculture and Food	182,100								•		
Wyoming Livestock Board	361,929		•	•	•	•	•				
Fiscal year 2005 funding^b											
California Department of Food and Agriculture	350,000		•	•		•					
Colorado Department of Agriculture	295,227			•	•	•				•	
Kansas Animal Health Department	441,430			•							
Virginia Department of Agriculture and Consumer Services	220,000			•		•					
Cheyenne River Sioux Tribe of the Cheyenne River Reservation, South Dakota	250,000			•							
Tennessee Department of Agriculture	142,973			•							
Pennsylvania State University	205,856						•				
Total	\$11,562,773	4	13	20	5	11	5	0	6	4	1

Source: GAO analysis of USDA data.

^aThis information was compiled from applications to USDA by cooperative agreement recipients. We did not independently assess whether the cooperative agreements involved work with these species. Additional cooperative agreements are undergoing final revisions but have not yet been signed.

^bFiscal year 2004 funding was provided for both field trials and premises registration activities. Fiscal year 2005 funding was provided exclusively for field trial activities.

**Appendix VI: Information on NAIS
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Table 4: NAIS Premises Registration Statistics, by State, as of June 4, 2007

State	Estimated number of premises^a	Premises registered^b	Percentage of premises registered
Alabama	35,538	3,881	10.9%
Alaska	354	59	16.7
Arizona	5,170	610	11.8
Arkansas	37,614	7,463	19.8
California	32,500	5,017	15.4
Colorado	22,951	6,280	27.4
Connecticut	2,539	17	0.7
Delaware	1,553	651	41.9
Florida	28,731	3,972	13.8
Georgia	35,431	3,793	10.7
Hawaii	1,391	288	20.7
Idaho	18,754	18,046	96.2
Illinois	30,046	8,151	27.1
Indiana	34,790	28,581	82.2
Iowa	47,273	18,136	38.4
Kansas	39,346	5,048	12.8
Kentucky	61,251	12,095	19.7
Louisiana	19,677	1,121	5.7
Maine	4,213	416	9.9
Maryland	7,837	1,332	17.0
Massachusetts	3,555	1,685	47.4
Michigan	29,011	18,351	63.3
Minnesota	44,193	11,741	26.6
Mississippi	29,312	1,405	4.8
Missouri	79,018	13,546	17.1
Montana	19,708	790	4.0
Nebraska	30,841	13,616	44.1
Nevada	2,522	1,209	47.9
New Hampshire	2,277	39	1.7
New Jersey	5,315	992	18.7
New Mexico	11,250	962	8.6
New York	25,559	16,132	63.1
North Carolina	36,142	9,455	26.2
North Dakota	14,085	8,209	58.3
Ohio	48,073	5,697	11.9

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State	Estimated number of premises^a	Premises registered^b	Percentage of premises registered
Oklahoma	71,420	7,150	10.0
Oregon	28,634	2,503	8.7
Pennsylvania	42,302	27,658	65.4
Rhode Island	504	5	1.0
South Carolina	16,120	2,418	15.0
South Dakota	22,356	4,950	22.1
Tennessee	68,010	13,375	19.7
Texas	187,118	28,616	15.3
Utah	12,460	8,606	69.1
Vermont	4,438	306	6.9
Virginia	37,673	4,388	11.6
Washington	22,155	1,415	6.4
West Virginia	17,670	8,671	49.1
Wisconsin	51,373	57,742	112.4
Wyoming	8,227	1,216	14.8

Source: USDA NAIS Web site, http://animalid.aphis.usda.gov/nais/premises_id/update.shtml, updated weekly.

Note: According to USDA, this information represents a snapshot of the progress being made with regard to premises registration in each state. The figures are USDA estimates, and we did not independently verify this information.

^aThe National Agriculture Statistics Survey estimates 1.4 million livestock farms in the United States (premises more than \$1,000 in annual income). Premises with more than one species are counted one time.

^bPremises registered in the National Animal Identification System.

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Table 5: USDA's Criteria for Distributing NAIS Cooperative Agreement Funding in Fiscal Year 2007

State	Reserved amount	Midyear performance review required ^a	Greater than 25% of premises registered: Minimum of 60% of funds must be spent on outreach and premises registration ^b	Between 11% and 25% of premises registered: Minimum of 70% of funds must be spent on outreach and premises registration ^b	Between 6% and 10% of premises registered: Minimum of 80% of funds must be spent on outreach and premises registration ^b	Less than 6% of premises registered: 100% of funds must be spent on education and outreach only ^b
AL	\$276,000	•			•	
AK	80,000				•	
AZ	178,000	•		•		
AR	277,000	•		•		
CA	575,000	•		•		
CO	376,000	•		•		
CT	80,000					•
DE	80,000		•			
FL	277,000	•		•		
GA	180,000	•			•	
HI	81,000			•		
ID	278,000		•			
IL	180,000	•		•		
IN	179,000		•			
IA	474,000	•		•		
KS	673,000	•		•		
KY	375,000	•		•		
LA	178,000	•				•
ME	80,000				•	
MD	81,000			•		
MA	80,000		•			
MI	179,000		•			
MN	279,000		•			
MS	179,000	•				•
MO	572,000	•		•		
MT	279,000	•				•
NE	672,000		•			
NV	82,000		•			
NH	80,000					•

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State	Reserved amount	Midyear performance review required^a	Greater than 25% of premises registered: Minimum of 60% of funds must be spent on outreach and premises registration^b	Between 11% and 25% of premises registered: Minimum of 70% of funds must be spent on outreach and premises registration^b	Between 6% and 10% of premises registered: Minimum of 80% of funds must be spent on outreach and premises registration^b	Less than 6% of premises registered: 100% of funds must be spent on education and outreach only^b
NJ	80,000			•		
NM	276,000	•			•	
NY	276,000		•			
NC	179,000	•		•		
ND	277,000		•			
OH	276,000	•				•
OK	575,000	•				•
OR	276,000	•			•	
PA	277,000		•			
RI	80,000					•
SC	177,000	•		•		
SD	474,000	•		•		
TN	279,000	•		•		
TX	1,200,000	•		•		
UT	179,000		•			
VT	81,000					•
VA	277,000	•			•	
WA	179,000	•				•
WV	177,000		•			
WI	378,000		•			
WY	276,000	•			•	
Total	\$13,609,000	27	14	18	8	10

Source: GAO analysis of USDA data.

^aStates with less than \$82,000 reserved and states that have achieved greater than 25 percent of premises registered are not subject to a midyear performance review and are eligible to apply for an amount up to the total reserved amount. States that have awards larger than \$82,000 and have achieved 25 percent or less of premises registered are subject to a midyear performance review. States subject to this review will be provided only 90 percent of the reserved amount at the beginning of the funding period. Depending on successful achievement of measurable outcomes proposed in the initial work plan as of a midyear review, the remaining 10 percent, or appropriate portion of the remaining 10 percent, of the reserved amount may be allocated to the state for the remaining 6 months of the funding period.

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^bPremises registration information is current as of application announcement in November 2006. The remaining funds can be spent on automatic data collection equipment for livestock markets and dealers to support NAIS integration with established state/federal cooperative animal health programs and for incentives, such as promotional items, to encourage producers to implement portions of NAIS.

Appendix VII: Comments from the U.S. Department of Agriculture

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



United States Department of Agriculture

Office of the Secretary
Washington, D.C. 20250

JUN 7 2007

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US GAO

Ms. Lisa Shames, Director
Natural Resources and Environment
United States Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Ms. Shames:

The United States Department of Agriculture (USDA) has reviewed the U.S. Government Accountability Office's (GAO) draft report, "National Animal Identification System: USDA Needs to Resolve Several Key Implementation Issues to Achieve Rapid and Effective Disease Traceback" (07-592). USDA appreciates GAO's comprehensive evaluation of the National Animal Identification System (NAIS), which has been, and will continue to be, a top priority for the USDA. USDA concurs with most of the GAO's eight recommendations but also provides points of clarification to several as well as discussion about parts of recommendations that conflict with established Departmental policies. Specific details regarding each recommendation are provided below, along with current and future actions that the Administrator of the Animal and Plant Health Inspection Service (APHIS) has taken or will undertake in the near future.

USDA concurs with **Recommendation 1** to reestablish participation benchmarks to gauge progress, and believes these benchmarks are an appropriate measure of the progress of NAIS premises registration, animal identification, and tracing animals. APHIS understands that implementation strategies are critical to ensure necessary levels of participation are achieved, but remains committed to a voluntary program that will meet the needs of the industry.

Regarding the actions to achieve effective traceback, APHIS is utilizing a variety of different methods and tools to determine the most effective and efficient strategies to maximize traceability for animal diseases. APHIS will establish priorities in populations or industry sectors of significant economic importance where current voids or shortfalls exist in traceability. Also, APHIS will develop, in collaboration with various Species Working Groups, a NAIS Short-Term, and Long-Term Implementation Strategies document that will contain actions for the remainder of 2007 through 2011.

The Short-Term Implementation Strategies document, targeted for publication in August 2007, will outline strategies through 2009 and will target species/industry sectors that have the greatest needs for advancing premises registration, animal identification, and tracing. The Long-Term Implementation Strategies document will be distributed in early 2008 and will feature longer-term participation benchmarks through 2011. The Long-Term plan will call for an evaluation of participation through 2009 to determine what actions, such as incentives, if any, are needed to accelerate participation while maintaining the voluntary program. Of critical importance, APHIS

See comment 1.

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will continue to maintain collaboration with the industry to fine tune the short-term strategies and to advance the longer-term plans.

With regard to **Recommendation 2**, APHIS acknowledges that the need to advance traceability for certain sectors is greater than for others and concurs that implementing certain components of the NAIS or addressing issues that are more species-specific, incrementally by species and/or sectors is necessary and appropriate at this time.

APHIS appreciates GAO's comments in prioritizing implementation of NAIS. However, animal diseases are not always species-specific. For example, Foot-and-Mouth disease (FMD) was first diagnosed in swine in the UK outbreak but soon affected cattle and sheep. Therefore, APHIS recognizes that NAIS must be inclusive for all livestock and poultry. Thus, the initial development and implementation efforts of NAIS involved the establishment of standards for data elements that are basic for all species to ensure systems would not require changes as more species participate. The foundation of NAIS, premises registration, continues to be appropriate for all species, in particular for operations that have multiple species to avoid duplication and/or inefficiencies for the registration of premises. Since premises registration is the foundation for the system and is appropriate for all species, APHIS will continue to encourage participation of all producers and animal owners in this component of the program, rather than implementing premises registration incrementally by species.

Regarding the other two components of the program – animal identification and animal tracing- APHIS recognizes the value of GAO's recommendation for prioritizing implementation. To address this need, the NAIS Short-Term Implementation Strategies document will also identify the major food animal species and others that have significant economic impact to animal agriculture as "Tier 1" priorities with the balance of the species targeted as "Tier 2." Such an approach will ensure that all industries continue to maintain dialogue and collaborate in the development of plans that support AIS, while the immediate implementation strategies target "Tier 1" industries.

For Tier 1, methodologies are being defined to prioritize species and/or industry sectors as well as strategies for maximizing traceability for animal disease. The factors being considered include: (1) the potential of the species industry having a disease event of significant economic impact; (2) the risk of such disease to human health; (3) the void in current traceback capabilities; (4) the economic importance of the species from a value of production standpoint; and (5) potential association of disease spread with other species.

For **Recommendation 3**, APHIS is accelerating actions to further advance the integration with existing disease programs. Additionally, APHIS is participating in a Brand State Working Group to explore and consider recommendations on how brand systems can be utilized more extensively in NAIS. The November 2004 interim rule on Alternative Numbering Systems established the Premises Identification Number (PIN) as a standard for identifying locations that

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manage and/or hold livestock. The use of the PIN format is being established as the standard for all disease programs regardless of participation in NAIS to ensure the locations are uniquely identified across all disease programs. The Animal Identification Number (AIN) was established as an additional official numbering system and is official for all disease program activities (Bovine Tuberculosis (TB), Brucellosis, Scrapie, etc.) if its use is preferred by the producer. In Michigan, for example, the AIN has become the standard numbering system for its TB eradication program.

As another example, the National Scrapie Eradication Program extensively uses a unique individual numbering system that combines the flock identification number with a unique herd management number. The Code of Federal Regulations recognizes this as an official numbering system and NAIS also incorporates this numbering system, since it is nationally unique and easy to determine the origin of the animal. Future strategies will be established to ensure the PIN is linked to locations that manage sheep to ensure a uniform location identifier, while recognizing that the flock identifier remains important for the sheep industry, and in many cases, may be maintained by the producer.

APHIS will undertake steps to advance the integration of NAIS with existing disease programs. The Short-Term Implementation Strategies document will further define plans to advance integration. The NAIS User Guide will be updated in October 2007 to more clearly reflect the use of other official identification numbers within NAIS, and the NAIS Program Standards document will clearly list all current official identification devices. APHIS will publish a Notice of Availability in the *Federal Register* for both documents. As with all previous NAIS plans, stakeholders will be encouraged to comment on these documents.

USDA concurs, in part, with **Recommendation 4**. Specifically, APHIS agrees with the need to establish more robust processes for having identification devices tested to meet minimum performance standards and will continue to call for appropriate public standards like those defined through the International Organization for Standardization (ISO). However, with regard to GAO's recommendation to establish a process to select devices, APHIS acknowledges that there remains controversy within the industry regarding the capabilities of existing animal identification technologies and believes that working with stakeholders to resolve such issues is imperative before determination and selection of technologies is made.

APHIS has already endorsed the incorporation of technical standards, such as ISO 11784 and 11785 for the Radio Frequency Identification of Animals. APHIS believes such standards are imperative to achieve compatibility of a technology across multiple vendors. In addition, APHIS believes that in-depth measurable performance standards must be clearly defined through a consensus of affected stakeholders. This approach will ensure the technologies can successfully be applied for other uses beyond NAIS, including management and marketing opportunities.

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APHIS has initiated dialogue with an international organization that can provide the necessary venue for facilitating the development of performance standards for livestock animal identification. The first action item of the organization will be to establish a Task Force of industry experts. The organization anticipates organizing this task force in the third quarter of 2007, but until the task force can define a work plan, it is premature to suggest a timeline for the publication of resulting performance standards. As the performance standards are established and tested, the selection of such devices will then be warranted and well-documented.

APHIS maintains that testing of devices be done in the private sector at the expense of the device manufacturer. As part of the evaluation process, APHIS will specify the testing standards and protocols and then review the manufacturer's documentation of laboratory testing and field trials.

USDA concurs with **Recommendation 5** that certain traceback timelines and goals should be established in consultation with Species Working Groups and State and industry partners. USDA would like to add that the proper interpretation of the goal is necessary. Specifically, APHIS believes that a time frame and goals should be established for when information is to be available to animal health officials after the detection of a disease of concern. These administrative time frames are independent of species, animal industry sector, or disease entity.

While the timeline or level of urgency for response to different disease varies, highly contagious diseases require the timeliest response possible. APHIS also recognizes that the degree of tracing required may differ depending on the disease in question. For instance, when a highly contagious disease such as FMD is detected, animal health officials recognize that the animal has not been infected for very long because of the relatively short incubation period (2-14 days). In this case, tracing the location of the infected animal may only need to account for the 2-3 incubation periods prior to detection. On the other hand, a slow incubating disease such as TB may need to be traced to the premises of birth. For this reason, it may take less time to trace an FMD-infected animal than one infected with TB.

APHIS continues to support 48-hour traceback capability as the ultimate, long-term goal of NAIS and believes it is a reasonable goal from which to work. However, we intend to continue to develop reasonable time frames consistent with the needs of different disease eradication efforts. We will also need to assess current levels of manpower and other resources that might impact the attainment of an acceptable tracing time frame. In order to accomplish this assessment, we will be working with State and Federal animal health officials, veterinary epidemiologists, and program staff experts.

Developing a system that can support the response to the worst case scenario is imperative. While not all responses would utilize all the system capabilities, it is important that the system is robust and can receive and manage large volumes of data efficiently and effectively. In addition to the timeline itself, determining the reliability of the system for achieving an effective and complete traceback or trace forward within a specified time is a critical but complex issue.

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USDA appreciates GAO's recommendation regarding the development of species-specific plans and will work through the working groups to document and define current capabilities within each respective industry in order to establish practical, realistic, and cost effective traceback goals that are warranted for each species. The Long-Term Implementation document will include general timelines for progressing toward acceptable goals.

For Recommendation 6, USDA concurs. APHIS has conducted significant discussion on this issue with stakeholders through the Species Working Groups and in collaboration with industry. Participants identified the minimum data elements needed to conduct a traceback investigation. APHIS incorporated these data requirements into NAIS through the Animal Tracking Databases' (ATDs) requirements. Other data elements, such as species, date of birth, and gender, are often contained in information systems maintained by service providers in animal agriculture and may be provided when necessary. Requiring additional information for an animal record to be considered a "qualifying" record, however, must be closely evaluated so as not to exclude otherwise valuable information.

USDA appreciates GAO's insightfulness and believes there is justification in evaluating this issue to ensure information necessary to conduct a traceback is available to animal health officials. Through the development of the ATDs, APHIS has established a process to ensure that any consideration of expanding data elements is done in collaboration with the Species Working Groups and through the recommendation of the NAIS Subcommittee. Experience with the ATDs as they come on-line with the Animal Trace Processing System will allow APHIS to document the availability of necessary information. APHIS anticipates that ATDs will be used more fully in late 2008/early 2009 and that GAO's recommended evaluation be considered at that time. If warranted, discussions with the Species Working Groups and through the Subcommittee to consider additional required data elements can also be considered at that time.

USDA concurs with **Recommendation 7**. The majority of the NAIS cooperative agreements are provided to States and Tribes to implement the program. Premises registration and outreach activities have been a priority and APHIS publishes the level of premises registration achieved by each State on a weekly basis on the NAIS Web site. In 2007, a base plus performance system has been implemented that provides an incentive for States to advance NAIS and offers the States flexibility for moving forward with animal identification as premises registration progresses in their State. APHIS will continue to provide participation levels by State on our Web site. Further, APHIS has published three reports on the initial Pilot Projects funded through the 2004 Commodity Credit Corporation funds. Several additional field trial projects have been awarded since the initial pilot projects, and, as part of their approval, more defined measurable and documented outcomes are being established for monitoring as well as reporting outcomes. These criteria, currently in place, will ensure results can be more fully published in a timelier manner.

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USDA concurs with **Recommendation 8** regarding the planned analysis of the costs and benefits of NAIS following the criteria established in OMB guidance for conducting cost-benefit analyses for federal program. As such, the request for proposal was published on March 21, 2007 with a proposal deadline of June 4, 2007. It is anticipated that the agreement for the analysis can be made in early June with approximately twelve months planned for conducting and preparing the report. The publication of the cost-benefit analysis is targeted for mid-2008.

And lastly, USDA appreciates the opportunity to work with GAO on the evaluation of this program. NAIS has been, and will remain, a top priority for USDA, and specifically for APHIS, because it supports one of our most important missions: maintaining the health of U.S. animals. Identification of animals in the production chain is a critical tool for safeguarding our Nation's herds and flocks from disease. USDA has invested a great deal of time and resources into the program, and we are encouraged by the progress being made. As we continue to move forward, we believe GAO's evaluation and recommendations are of great value to the NAIS.

Sincerely,



Bruce I. Knight
Under Secretary
Marketing and Regulatory Programs

The following are GAO's comments on the U.S. Department of Agriculture's letter dated June 7, 2007.

GAO Comments

1. We added a statement about USDA's developing, in collaboration with the species working groups, a NAIS Short-Term and Long-Term Implementation Strategies document that will contain actions for the remainder of 2007 through 2011.
2. We added a statement about USDA's plans to update the *NAIS User Guide* in October 2007 to more clearly reflect the use of other official ID numbers within NAIS.

Appendix VIII: GAO Contact and Staff Acknowledgments

GAO Contact

Lisa Shames, (202) 512-3841 or ShamesL@gao.gov

Staff Acknowledgments

In addition to the individual named above, Josey Ballenger and Heather Hill made significant contributions to this report. Kevin Bray, Nancy Crothers, John de Ferrari, Mary Denigan-Macauley, Barbara El-Osta, J. Erin Lansburg, Allen Lomax, Lynn Musser, Shannin O'Neill, and Susan Ragland also provided key assistance.

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