June 13, 2019

VIA FOIAONLINE.REGULATIONS.GOV
U.S. Environmental Protection Agency

Re: Freedom of Information Act Request: OIG EEM Report - Corrective Actions

Dear FOIA Officer:

This is a request under the Freedom of Information Act, 5 U.S.C. § 552, *as amended* ("FOIA"), from the Center for Biological Diversity ("Center"), a non-profit organization that works to secure a future for all species hovering on the brink of extinction through science, law, and creative media, and to fulfill the continuing educational goals of its membership and the general public in the process.

REQUESTED RECORDS

The Center requests from the U.S. Environmental Protection Agency ("EPA") Headquarters:

> From June 1, 2017 to the date EPA conducts this search, all records about the development, performance and/or completion of the planned corrective actions agreed to by EPA in response to the five recommendations from EPA Office of Inspector General ("OIG") outlined in OIG Report No. 17-P-0396, "Eleven Years After Agreement, EPA has Not Developed Reliable Emissions Estimation Methods to Determine Whether Animal Feeding Operations Comply with Clean Air Act and Other Statutes" ("OIG Report"). Attachment A (EPA's September 19, 2017 Improving Air Quality Report).

For this request, the term "records" refers to, but is not limited to, documents, correspondence (including, but not limited to, inter and/or intra-agency correspondence as well as correspondence with entities or individuals outside the federal government), emails, letters, notes, recordings, telephone records, voicemails, telephone notes, telephone logs, text messages, chat messages, minutes, memoranda, comments, files, presentations, consultations, biological opinions, assessments, evaluations, schedules, papers published and/or unpublished, reports, studies, photographs and other images, data (including raw data, GPS or GIS data, UTM, LiDAR, etc.), maps, and/or all other responsive records, in draft or final form.

This request is not meant to exclude any other records that, although not specially requested, are reasonably related to the subject matter of this request. If you or your office have destroyed or determine to withhold any records that could be reasonably construed to be responsive to this request, I ask that you indicate this fact and the reasons therefore in your response.

Under the FOIA Improvement Act of 2016, agencies are prohibited from denying requests for information under FOIA unless the agency reasonably believes release of the information will harm an interest that is protected by the exemption. FOIA Improvement Act of 2016 (Public Law No. 114-185), codified at 5 U.S.C. § 552(a)(8)(A).

Should you decide to invoke a FOIA exemption, please include sufficient information for us to assess the basis for the exemption, including any interest(s) that would be harmed by release. Please include a detailed ledger which includes:

1. Basic factual material about each withheld record, including the originator, date, length, general subject matter, and location of each item; and

2. Complete explanations and justifications for the withholding, including the specific exemption(s) under which the record (or portion thereof) was withheld and a full explanation of how each exemption applies to the withheld material. Such statements will be helpful in deciding whether to appeal an adverse determination. Your written justification may help to avoid litigation.

If you determine that portions of the records requested are exempt from disclosure, we request that you segregate the exempt portions and mail the non-exempt portions of such records to my attention at the address below within the statutory time limit. 5 U.S.C. § 552(b).

The Center is willing to receive records on a rolling basis.

FOIA's "frequently requested record" provision was enacted as part of the 1996 Electronic Freedom of Information Act Amendments, and requires all federal agencies to give "reading room" treatment to any FOIA-processed records that, "because of the nature of their subject matter, the agency determines have become the subject of subsequent requests for substantially the same records." *Id*. § 552(a)(2)(D)(ii)(I). Also, enacted as part of the 2016 FOIA Improvement Act, FOIA's Rule of 3 requires all federal agencies to proactively "make available for public inspection in an electronic format" "copies of records, regardless of form or format … that have been released to any person … and … that have been requested 3 or more times." *Id*. § 552(a)(2)(D)(ii)(II). Therefore, we respectfully request that you make available online any records that the agency determines will become the subject of subsequent requests for substantially the same records, and records that have been requested three or more times.

Finally, agencies must preserve all the records requested herein while this FOIA is pending or under appeal. The agency shall not destroy any records while they are the subject of a pending request, appeal, or lawsuit under the FOIA. 40 C.F.R. § 2.106; *see Chambers v. U.S. Dept. of Interior*, 568 F.3d 998, 1004 (D.C. Cir. 2009) ("[A]n agency is not shielded from liability if it intentionally transfers or destroys a document after it has been requested under FOIA or the Privacy Act"). If any of the requested records are destroyed, the agency and responsible officials are subject to attorney fee awards and sanctions, including fines and disciplinary action. A court held an agency in contempt for "contumacious conduct" and ordered the agency to pay plaintiff's costs and fees for destroying "potentially responsive material contained on hard drives and email backup tapes." *Landmark Legal Found. v. EPA*, 272 F. Supp.2d 59, 62 (D.D.C. 2003); *see also*

Judicial Watch, Inc. v. Dept. of Commerce, 384 F. Supp. 2d 163, 169 (D.D.C. 2005) (awarding attorneys' fees and costs because, among other factors, agency's "initial search was unlawful and egregiously mishandled and …likely responsive documents were destroyed and removed"), *aff'd in relevant part*, 470 F.3d 363, 375 (D.C. Cir. 2006) (remanding in part to recalculate attorney fees assessed). In another case, in addition to imposing a $10,000 fine and awarding attorneys' fees and costs, the court found that an Assistant United States Attorney prematurely "destroyed records responsive to [the] FOIA request while [the FOIA] litigation was pending" and referred him to the Department of Justice's Office of Professional Responsibility. *Jefferson v. Reno*, 123 F. Supp. 2d 1, 6 (D.D.C. 2000).

FORMAT OF REQUESTED RECORDS

Under FOIA, you are obligated to provide records in a readily accessible electronic format and in the format requested. 5 U.S.C. § 552(a)(3)(B) ("In making any record available to a person under this paragraph, an agency shall provide the record in any form or format requested by the person if the record is readily reproducible by the agency in that form or format."). "Readily accessible" means text-searchable and OCR-formatted. *See id*. Pursuant to this requirement, we hereby request that you produce all records in an electronic format and in their native file formats. Additionally, please provide the records in a load-ready format with a CSV file index or Excel spreadsheet. If you produce files in .PDF format, then please omit any "portfolios" or "embedded files." Portfolios and embedded files within files are not readily accessible. Please do not provide the records in a single, or "batched," .PDF file. We appreciate the inclusion of an index.

If you should seek to withhold or redact any responsive records, we request that you: (1) identify each such record with specificity (including date, author, recipient, and parties copied); (2) explain in full the basis for withholding responsive material; and (3) provide all segregable portions of the records for which you claim a specific exemption. *Id*. § 552(b). Please correlate any redactions with specific exemptions under FOIA.

RECORD DELIVERY

We appreciate your help in expeditiously obtaining a determination on the requested records. As mandated in FOIA, we anticipate a reply within 20 working days. *Id*. § 552(a)(6)(A)(i); 21 C.F.R. § 20.41(b). Failure to comply within the statutory timeframe may result in the Center taking additional steps to ensure timely receipt of the requested materials. Please provide a complete reply as expeditiously as possible. You may email or mail copies of the requested records to:

Ann K. Brown
Center for Biological Diversity
P.O. Box 11374
Portland, OR 97211
foia@biologicaldiversity.org

If you find that this request is unclear, or if the responsive records are voluminous, please email me to discuss the scope of this request.

REQUEST FOR FEE WAIVER

FOIA was designed to provide citizens a broad right to access government records. FOIA's basic purpose is to "open agency action to the light of public scrutiny," with a focus on the public's "right to be informed about what their government is up to." *NARA v. Favish*, 541 U.S. 157, 171 (2004) quoting *U.S. Dep't of Justice v. Reporters Comm. for Freedom of Press*, 489 U.S. 749, 773-74 (1989) (internal quotation and citations omitted). In order to provide public access to this information, FOIA's fee waiver provision requires that "[d]ocuments shall be furnished without any charge or at a [reduced] charge," if the request satisfies the standard. 5 U.S.C. § 552(a)(4)(A)(iii). FOIA's fee waiver requirement is "liberally construed." *Judicial Watch, Inc. v. Rossotti*, 326 F.3d 1309, 1310 (D.C. Cir. 2003); *Forest Guardians v. U.S. Dept. of Interior*, 416 F.3d 1173, 1178 (10th Cir. 2005).

The 1986 fee waiver amendments were designed specifically to provide non-profit organizations such as the Center access to government records without the payment of fees. Indeed, FOIA's fee waiver provision was intended "to prevent government agencies from using high fees to discourage certain types of requesters and requests," which are "consistently associated with requests from journalists, scholars, and *non-profit public interest groups*." *Ettlinger v. FBI*, 596 F. Supp. 867, 872 (D. Mass. 1984) (emphasis added). As one Senator stated, "[a]gencies should not be allowed to use fees as an offensive weapon against requesters seeking access to Government information ... ." 132 Cong. Rec. S. 14298 (statement of Senator Leahy).

I. The Center Qualifies for a Fee Waiver.

Under FOIA, a party is entitled to a fee waiver when "disclosure of the information is in the public interest because it is likely to contribute significantly to public understanding of the operations or activities of the [Federal] government and is not primarily in the commercial interest of the requester." 5 U.S.C. § 552(a)(4)(A)(iii). EPA's regulations at 40 C.F.R. § 2.107(l)(1)-(3) establish the same standard.

Thus, EPA must consider four factors to determine whether a request is in the public interest: (1) whether the subject of the requested records concerns "the operations or activities of the Federal government," (2) whether the disclosure is "likely to contribute" to an understanding of government operations or activities, (3) whether the disclosure "will contribute to public understanding" of a reasonably broad audience of persons interested in the subject, and (4) whether the disclosure is likely to contribute "significantly" to public understanding of government operations or activities. *Id*. § 2.107(1)(2). As shown below, the Center meets each of these factors.

A. The Subject of This Request Concerns "The Operations and Activities of the Government."

The subject matter of this request concerns the operations and activities of EPA. This request asks for: from June 1, 2017 to the date EPA conducts this search, all records about the development, performance and/or completion of the planned corrective actions agreed to by EPA in response to the five recommendations from EPA OIG outlined in the OIG Report. Attachment A.

This FOIA will provide the Center and the public with crucial insight into EPA's compliance to the Endangered Species Act, 16 U.S.C. §§ 1531-1544 ("ESA") and the Clean Water Act, 33 U.S.C. §§ 1251-1387 ("CWA"). It is clear that a federal agency's adherence to federal laws is a specific and identifiable activity of the government, and in this case it is the executive branch agency of EPA. *Judicial Watch*, 326 F.3d at 1313 ("[R]easonable specificity is all that FOIA requires with regard to this factor") (internal quotations omitted). Thus, the Center meets this factor.

B. Disclosure is "Likely to Contribute" to an Understanding of Government Operations or Activities.

The requested records are meaningfully informative about government operations or activities and will contribute to an increased understanding of those operations and activities by the public.

Disclosure of the requested records will allow the Center to convey to the public information about EPA compliance with the planned corrective actions agreed to through the OIG report, and its oversight and implementation of the CWA. *See* Attachment A. Once the information is made available, the Center will analyze it and present it to its 1.4 million members and online activists and the general public in a manner that will meaningfully enhance the public's understanding of this topic.

Thus, the requested records are likely to contribute to an understanding of EPA's operations and activities.

C. Disclosure of the Requested Records Will Contribute to a Reasonably Broad Audience of Interested Persons' Understanding of the OIG Report and Corrective Actions.

The requested records will contribute to public understanding of whether the EPA's actions are consistent with the ESA and CWA. As explained above, the records will contribute to public understanding of this topic.

Activities of EPA generally, and specifically its compliance with the OIG report's planned corrective actions are areas of interest to a reasonably broad segment of the public. The Center will use the information it obtains from the disclosed records to educate the public at large about these corrective actions. *See W. Watersheds Proj. v. Brown*, 318 F. Supp.2d 1036, 1040 (D. Idaho 2004) (finding that "WWP adequately specified the public interest to be served, that is,

educating the public about the ecological conditions of the land managed by the BLM and also how … management strategies employed by the BLM may adversely affect the environment").

Through the Center's synthesis and dissemination (by means discussed in Section II, below), disclosure of information contained in and gleaned from the requested records will contribute to a broad audience of persons who are interested in the subject matter. *Ettlinger v. FBI*, 596 F. Supp. at 876 (benefit to a population group of some size distinct from the requester alone is sufficient); *Carney v. Dept. of Justice*, 19 F.3d 807, 815 (2d Cir. 1994), *cert. denied*, 513 U.S. 823 (1994) (applying "public" to require a sufficient "breadth of benefit" beyond the requester's own interests); *Cmty. Legal Servs. v. Dep't of Hous. & Urban Dev*., 405 F. Supp.2d 553, 557 (E.D. Pa. 2005) (in granting fee waiver to community legal group, court noted that while the requester's "work by its nature is unlikely to reach a very general audience," "there is a segment of the public that is interested in its work").

Indeed, the public does not currently have an ability to easily evaluate the requested records, which are not currently in the public domain. *See Cmty. Legal Servs.*, 405 F. Supp.2d at 560 (because requested records "clarify important facts" about agency policy, "the CLS request would likely shed light on information that is new to the interested public."). As the Ninth Circuit observed in *McClellan Ecological Seepage Situation v. Carlucci*, 835 F.2d 1282, 1286 (9th Cir. 1987), "[FOIA] legislative history suggests that information [has more potential to contribute to public understanding] to the degree that the information is new and supports public oversight of agency operations… ."[1]

Disclosure of these records is not only "likely to contribute," but is certain to contribute, to public understanding of EPA's compliance with the OIG report's corrective actions, and its oversight of CWA implementation. The public is always well served when it knows how the government conducts its activities, particularly matters touching on legal questions. Hence, there can be no dispute that disclosure of the requested records to the public will educate the public about this topic.

D. <u>Disclosure is Likely to Contribute Significantly to Public Understanding of Government Operations or Activities.</u>

The Center is not requesting these records merely for their intrinsic informational value. Disclosure of the requested records will significantly enhance the public's understanding of EPA's compliance with federal environmental laws, as compared to the level of public understanding that exists prior to the disclosure. Indeed, public understanding will be *significantly* increased as a result of disclosure because the requested records will help reveal more about this issue.

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[1] In this connection, it is immaterial whether any portion of the Center's request may currently be in the public domain because the Center requests considerably more than any piece of information that may currently be available to other individuals. *See Judicial Watch*, 326 F.3d at 1315.

The records are also certain to shed light on EPA's compliance with the ESA and CWA. Such public oversight of agency action is vital to our democratic system and clearly envisioned by the drafters of the FOIA. Thus, the Center meets this factor as well.

II. The Center has a Demonstrated Ability to Disseminate the Requested Information Broadly.

The Center is a non-profit organization that informs, educates, and counsels the public regarding environmental issues, policies, and laws relating to environmental issues. The Center has been substantially involved in the activities of numerous government agencies for over 25 years, and has consistently displayed its ability to disseminate information granted to it through FOIA.

In consistently granting the Center's fee waivers, agencies have recognized: (1) that the information requested by the Center contributes significantly to the public's understanding of the government's operations or activities; (2) that the information enhances the public's understanding to a greater degree than currently exists; (3) that the Center possesses the expertise to explain the requested information to the public; (4) that the Center possesses the ability to disseminate the requested information to the general public; (5) and that the news media recognizes the Center as an established expert in the field of imperiled species, biodiversity, and impacts on protected species. The Center's track record of active participation in oversight of governmental activities and decision making, and its consistent contribution to the public's understanding of those activities as compared to the level of public understanding prior to disclosure are well established.

The Center intends to use the records requested here similarly. The Center's work appears in nearly 5,000 news stories online and in print, radio and TV per month, including regular reporting in such important outlets as *The New York Times*, *Washington Post*, *The Guardian*, and *Los Angeles Times*. Many media outlets have reported on governmental compliance with environmental laws utilizing information obtained by the Center from federal agencies, including EPA. In 2018, more than 2.5 million people visited the Center's extensive website, and viewed pages a total of 4.3 million times. The Center sends out more than 277 email newsletters and action alerts per year to more than over 1.4 million members and supporters. Three times a year, the Center sends printed newsletters to more than 69,500 members. More than 420,000 people have "liked" the Center on Facebook, and there are regular postings regarding environmental protection. The Center also regularly tweets to more than 71,200 followers on Twitter. The Center intends to use any or all of these far-reaching media outlets to share with the public information obtained as a result of this request.

Public oversight and enhanced understanding of the EPA's duties is absolutely necessary. In determining whether disclosure of requested information will contribute significantly to public understanding, a guiding test is whether the requester will disseminate the information to a reasonably broad audience of persons interested in the subject. *Carney*, 19 F.3d 807. The Center need not show how it intends to distribute the information, because "[n]othing in FOIA, the [agency] regulation, or our case law require[s] such pointless specificity." *Judicial Watch*, 326 F.3d at 1314. It is sufficient for the Center to show how it distributes information to the public generally. *Id.*

III. Obtaining the Requested Records is of No Commercial Interest to the Center.

Access to government records, disclosure forms, and similar materials through FOIA requests is essential to the Center's role of educating the general public. Founded in 1994, the Center is a 501(c)(3) nonprofit conservation organization (EIN: 27-3943866) with more than 1.4 million members and online activists dedicated to the protection of endangered and threatened species and wild places. The Center has no commercial interest and will realize no commercial benefit from the release of the requested records.

IV. Conclusion

For all of the foregoing reasons, the Center qualifies for a full fee waiver. We hope that EPA will immediately grant this fee waiver request and begin to search and disclose the requested records without any unnecessary delays.

If you have any questions, please contact me at foia@biologicaldiversity.org. All records and any related correspondence should be sent to my attention at the address below.

Sincerely,

Ann K. Brown
Open Government Coordinator
CENTER FOR BIOLOGICAL DIVERSITY
P.O. Box 11374
Portland, OR 97211-0374
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Attachment

Attachment A (EPA's September 19, 2017 Improving Air Quality Report)

Attachment A

U.S. ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF INSPECTOR GENERAL

Improving air quality

Eleven Years After Agreement, EPA Has Not Developed Reliable Emission Estimation Methods to Determine Whether Animal Feeding Operations Comply With Clean Air Act and Other Statutes

Report No. 17-P-0396 **September 19, 2017**

Report Contributors:

Richard Jones
Erica Hauck
Jim Hatfield
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Abbreviations

AFO	Animal Feeding Operation
CAA	Clean Air Act
CAFO	Concentrated Animal Feeding Operation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DQO	Data Quality Objective
EEM	Emissions Estimating Methodology
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
GAO	U.S. Government Accountability Office
NAEMS	National Air Emissions Monitoring Study
NAS	National Academy of Sciences
OAQPS	Office of Air Quality Planning and Standards
OIG	Office of Inspector General
PM	Particulate Matter
SAB	Science Advisory Board
USDA	U.S. Department of Agriculture
VOC	Volatile Organic Compound

Cover photos: Hogs (left) and chickens (right) in confined spaces at animal feeding operations. (EPA photos)

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17-P-0396
September 19, 2017

U.S. Environmental Protection Agency
Office of Inspector General

At a Glance

Why We Did This Review

We conducted this review to determine what actions the U.S. Environmental Protection Agency (EPA) has taken to evaluate air emissions from animal feeding operations.

The EPA estimates there are about 18,000 large animal feeding operations nationwide, which can potentially emit air pollutants in high-enough quantities to subject these facilities to Clean Air Act and other statutory requirements. A lack of reliable methods for estimating these emissions prevented the EPA and state and local agencies from determining whether these operations are subject to statutory requirements.

In 2005, the EPA and the animal feeding operations industry entered into a compliance agreement to address this challenge. As part of this agreement, the industry agreed to fund an air emissions monitoring study that the EPA would use to develop improved emission estimating methodologies for the industry.

This report addresses the following:

- *Improving air quality.*

Send all inquiries to our public affairs office at (202) 566-2391 or visit www.epa.gov/oig.

Listing of OIG reports.

Eleven Years After Agreement, EPA Has Not Developed Reliable Emission Estimation Methods to Determine Whether Animal Feeding Operations Comply With Clean Air Act and Other Statutes

What We Found

Until the EPA develops sound methods to estimate emissions, the agency cannot reliably determine whether animal feeding operations comply with applicable Clean Air Act requirements.

The industry-funded National Air Emissions Monitoring Study (NAEMS) and the EPA's analyses of the study's results comprised the agency's primary actions to evaluate air emissions from animal feeding operations over the past decade. The NAEMS monitoring was completed more than 7 years ago at a cost of about $15 million, but the EPA had not finalized any emission estimating methodologies for animal feeding operations. In addition, the EPA had only drafted methodologies for about one-fourth of the emission source and pollutant combinations studied in the NAEMS. The EPA expected to develop and begin publishing emission estimating methodologies by 2009, so the methodologies could be used by the EPA, state and local agencies, and industry operators to determine the applicability of Clean Air Act and other statutory requirements.

Delays in developing the emission estimating methodologies stemmed from limitations with NAEMS data, uncertainty about how to address significant feedback from the EPA's Science Advisory Board, and a lack of EPA agricultural air expertise and committed resources. The EPA had not finalized its work plan or established timeframes to finish the methodologies. As a result, the applicability of requirements to control emissions from individual animal feeding operations remained undetermined, enforcement protections for consent agreement participants remained in effect longer than anticipated, and a number of agency actions on animal feeding operation emissions continued to be on hold. Further, because the EPA had not conducted systematic planning, the agency was at risk of developing emission estimating methodologies that cannot be widely applied to animal feeding operations.

Recommendations and Planned Corrective Actions

We recommend that the EPA conduct systematic planning for future development of emission estimating methodologies. Based on the results of this planning, the EPA should determine whether it can develop emission estimating methodologies of appropriate quality for each of the emission source and pollutant combinations studied. If the EPA determines that it cannot develop certain emission estimating methodologies, it should notify agreement participants and end civil enforcement protections. For the emission estimating methodologies that can be developed, the EPA should establish public milestones for issuing the draft methodologies. The EPA agreed with our recommendations, and we accepted the agency's planned corrective actions.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE INSPECTOR GENERAL

September 19, 2017

MEMORANDUM

SUBJECT: Eleven Years After Agreement, EPA Has Not Developed Reliable Emission Estimation Methods to Determine Whether Animal Feeding Operations Comply With Clean Air Act and Other Statutes
Report No. 17-P-0396

FROM: Arthur A. Elkins Jr.

TO: Sarah Dunham, Acting Assistant Administrator
Office of Air and Radiation

Lawrence Starfield, Acting Assistant Administrator
Office of Enforcement and Compliance Assurance

This is our report on the subject evaluation conducted by the Office of Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA). The project number for this evaluation was OPE-FY16-0018. This report contains findings that describe the problems the OIG has identified and corrective actions the OIG recommends. This report represents the opinion of the OIG and does not necessarily represent the final EPA position. Final determinations on matters in this report will be made by EPA managers in accordance with established audit resolution procedures.

Action Required

In accordance with EPA Manual 2750, your office provided planned corrective actions in response to the OIG recommendations. We consider the planned corrective actions for all recommendations to be acceptable. Therefore, you are not required to provide a written response to this final report. The OIG may make periodic inquiries on your progress in implementing these corrective actions. Please update the EPA's Management Audit Tracking System as you complete planned corrective actions.

We will post this report to our website at www.epa.gov/oig.

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Chapter 1
Introduction

Purpose

We conducted this evaluation to determine what actions the U.S. Environmental Protection Agency (EPA) has taken to evaluate air emissions from animal feeding operations (AFOs), including the status of the National Air Emissions Monitoring Study (NAEMS).

Background

AFOs are agriculture operations where animals are kept and raised in confined areas. The U.S. Department of Agriculture (USDA) has estimated that there are about 450,000 AFOs nationwide. While the majority of these are small operations with fewer than 300 animals, the EPA has estimated there are more than 18,000 large AFOs[1] that may raise thousands of animals. For more than two decades, movements to improve profitability within the agriculture industry have resulted in larger AFO facilities that often are geographically concentrated. As facility size has increased and greater numbers of animals are housed in confined spaces, concerns have arisen regarding these facilities' impacts on the environment and public health.

The EPA regulates certain larger AFOs under the Clean Water Act's National Pollutant Discharge Elimination System permit program, which regulates the discharge of pollutants to the waters of the United States. AFO air emissions are not regulated by any AFO-specific standards under the Clean Air Act (CAA), but AFOs that emit air pollutants in sufficient quantities can trigger CAA permit requirements. In the late 1990s, the EPA recognized that it did not have sufficient AFO air emissions data to develop reliable emission estimating methodologies (EEMs) for determining whether individual AFOs are subject to CAA permit requirements or emission reporting requirements under two other statutes: the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Emergency Planning and Community Right-to-Know Act (EPCRA).[2] Both CAA permitting requirements and CERCLA/EPCRA release

[1] EPA water regulations define AFOs and a subset of larger AFOs called concentrated animal feeding operations (CAFOs), and the Clean Water Act includes CAFOs as a type of point source. The CAA does not define or reference these terms, and the EPA's Office of Air and Radiation does not distinguish between an AFO and a CAFO. Thus, we use the term "AFO" throughout our report, even when referring to a facility that would meet the definition of a CAFO under the Clean Water Act.

[2] EPCRA and CERCLA require facilities to report emissions of certain hazardous substances if they are released in quantities at or above certain thresholds. This includes two hazardous substances commonly released by AFOs: ammonia and hydrogen sulfide.

reporting requirements are triggered only if a facility emits certain pollutants at or above specific regulatory thresholds.

The agency began discussions with representatives of the AFO industry in 2001 to address uncertainty in determining the applicability of statutory requirements for air emissions. As a result, the EPA and certain sectors of the AFO industry[3] (e.g., pork and broiler producers, egg layers, and dairy) negotiated a consent agreement, which was published in 2005[4] and entered into by AFO owners/operators who elected to participate. Under this agreement, participating AFO owners/operators agreed to pay a civil penalty, comply with all applicable requirements of the agreement, and participate (if selected) in a national monitoring study. The AFO sectors agreed to fund the monitoring study to provide data the EPA would use to develop EEMs for various AFO pollutants and emission sources.

Air Emissions From AFOs

AFOs can release several pollutants, including but not limited to: ammonia, hydrogen sulfide, particulate matter (PM), volatile organic compounds (VOCs) and hazardous air pollutants. AFO air emissions come from lagoons, barns and other structures, and manure spread on fields. Table 1 lists the key pollutants emitted from AFOs, along with their common emission sources and associated health and air quality effects.

Table 1: Emission sources and health effects of key pollutants from AFOs

Pollutant	Common emission sources	Health and air quality effects
Ammonia (NH_3)	Decomposition of animal manure.	Can cause severe cough and chronic lung disease. It also contributes directly to the formation of $PM_{2.5}$, and deposition can impact sensitive ecosystems.
Volatile organic compounds (VOCs)	Animal feed and waste.	Can cause eye, nose and throat irritation; damage to liver, kidney and central nervous system; and cancer. VOCs also contribute to the formation of ground-level ozone.
Particulate matter (PM)*	Dry manure, bedding and feed materials, and dirt feed lots.	Exposure is linked to a variety of problems, including decreased lung function, increased respiratory symptoms, and premature death in people with heart or lung disease.
Hydrogen Sulfide (H_2S)	Decomposition of animal manure stored in wet conditions such as lagoons.	Can cause eye and respiratory irritation at lower concentrations. At higher concentrations, paralysis of the respiratory center can lead to rapid death. Excess emissions can contribute to the formation of $PM_{2.5}$ and acid rain.

Source: EPA Office of Inspector General (OIG) analysis.

* PM includes both fine particles ($PM_{2.5}$,) and coarser particles (PM_{10}).

[3] According to the EPA, state and local agencies, and an environmental organization also participated in initial discussions on the agreement.

[4] Animal Feeding Operations Consent Agreement and Final Order, 70 Fed. Reg. 4958-4977 (Jan. 31, 2005).

AFOs can be located near residences, and some communities have multiple AFOs nearby. For example, several counties in eastern North Carolina have the highest concentration of swine AFOs in the United States. Some studies have raised concerns that lower-income and minority communities are disproportionately impacted by air emissions from AFOs. Studies conducted in North Carolina found that residents living near swine AFOs were disproportionately low-income people of color. Air pollution from these AFOs is associated with the potential health impacts listed in Table 1 above, as well as a reduced quality of life due to persistent odors[5] and declining property values.[6]

Highlights from external studies on impacts from AFO air emissions:

- **Residential property values were reduced by an average of almost 23 percent within 1.25 miles of a large swine AFO.[a]**
- **The closer children go to school near a large AFO, the greater the risk of asthma symptoms.[b]**
- **Living in close proximity to large swine AFOs may result in impaired mental health and negative mood states, such as tension, depression or anger.[c, d]**

[a] Simons, R.A. et al., 2014. The Effect of a Large Hog Barn Operation on Residential Sales Prices in Marshall County, KY. JOSRE. 6(1).
[b] Mirabelli, M. C. et al., 2006. Asthma Symptoms Among Adolescents Who Attend Public Schools That Are Located Near Confined Swine Feeding Operations. Pediatrics. 118;66-75.
[C] Bullers, S., 2005. Environmental Stressors, Perceived Control, and Health: The Case of Residents Near Large-Scale Hog Farms in Eastern North Carolina. Human Ecology. 33(1).
[d] Schiffman, S. S. et al., 1995. The Effect of Environmental Odors Emanating From Commercial Swine Operations on the Mood of Nearby Residents. Brain Research Bulletin. 37(4): 369-375.

Characterizing air emissions from AFOs is difficult due to a number of factors. AFOs can have many and varied sources of air emissions, including barns, houses, feedlots, pits, lagoons, basins and manure spray fields. Each of these emission sources can emit a variety of air pollutants, and emission rates can fluctuate depending on climate and geographical conditions, among other factors. Further, characterizing AFO air emissions requires expertise in multiple scientific disciplines, including animal nutrition, AFO practices and atmospheric chemistry.

The EPA and the USDA have been collaborating on a manual of voluntary best management practices to provide AFO owner/operators and state and local governments with options to reduce AFO air emissions. The manual contains best management practices for reducing particulate matter, ammonia, hydrogen sulfide, and other air emissions through various aspects of AFO management, including feed management, manure management, land application, and other areas. The EPA plans to publish the manual before the end of 2017, pending agency administration approval.

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[5] Odors are not regulated by the EPA, but may be addressed under some state and local laws.
[6] Simons, R.A. et al., 2014. The Effect of a Large Hog Barn Operation on Residential Sales Prices in Marshall County, KY. JOSRE. 6(1).
Kim, J. et al., 2009. A Spatial Hedonic Approach to Assess the Impact of Swine Production on Residential Property Values. Environ Resource Econ. 42: 509-534.

National Academy of Sciences Report on AFO Air Emissions

In 2001, the EPA and USDA jointly requested that the National Academy of Sciences (NAS) evaluate the body of scientific information used for estimating various kinds of air emissions from AFOs. In 2003, the NAS reported[7] that accurate emissions estimates were needed to determine AFOs' potential impacts and to assess the implementation of measures to control emissions. The NAS also reported that the EPA had not dedicated the necessary resources to estimate AFO air emissions, and that the agency's approach to estimating emissions was inadequate. That approach involved deriving emission factors from published emissions data, as well as gathering emission factors from existing literature. These emission factors were then applied to representative farms to estimate annual mass emissions. The NAS reported that this approach did not account for the variability among AFOs (e.g., differences in geography and climate) and thus cannot adequately estimate air emissions from an individual AFO.

The NAS recommended that the EPA develop a "process-based" approach to estimate AFO air emissions. The NAS favored such an approach for most types of emissions as the primary focus for both short- and long-term research,[8] but also stated that short-term research should focus on providing "defensible estimates of air emissions that could be used to support responsible regulation."[9] The NAS described process-based models as mathematical models "that describe the movement of various substances of interest at each major stage of the process of producing livestock products: movement into the next stage, movement in various forms to the environment, and ultimately movement into products used by humans."[10]

Air Compliance Agreement With AFO Industries

In 2002, spurred in part by uncertainty about emission levels from AFOs and concerns about applicability of CAA requirements, representatives of the pork, egg producers, and other AFO sectors proposed a plan to EPA officials to produce air emissions monitoring data from AFOs. Negotiations between the EPA and AFO sectors[11] lasted for more than 2 years before an agreement was finalized in 2005. As a condition of the 2005 Air Compliance Agreement (henceforth, the "Agreement"), the industry agreed to fund a large-scale emissions monitoring study. The EPA was to use the emissions monitoring data to develop EEMs that

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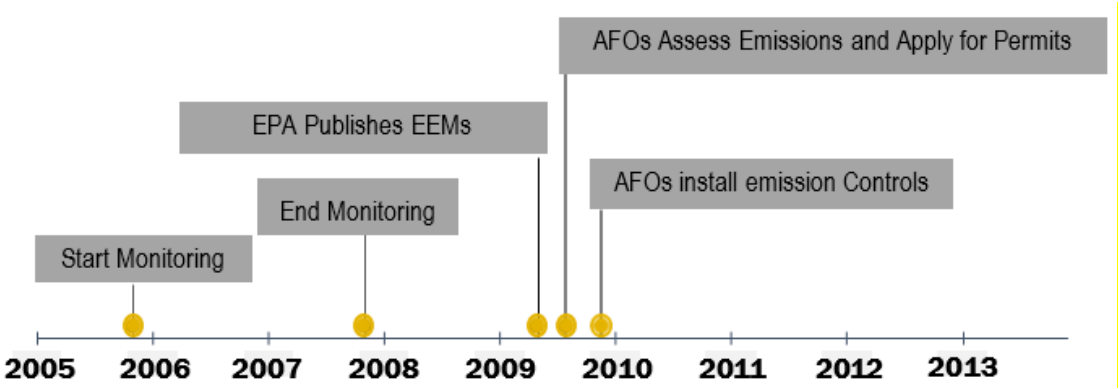
[7] *Air Emissions from Animal Feeding Operations: Current Knowledge, Future Needs*, NAS National Research Council (2003).
[8] 2003 NAS report, pp. 152-153.
[9] 2003 NAS report, p. 25.
[10] 2003 NAS report, p. 9.
[11] Participating AFO sectors included egg layers, broiler chickens, dairy cattle and swine. The turkey sector was a part of the negotiations as well, but not enough turkey AFO owners/operators signed up to fund monitoring. The Agreement did not cover beef cattle.

AFOs could apply to estimate their emissions and determine the applicability of CAA permitting and CERCLA/EPCRA release reporting requirements. Once a facility applied the EEMs to determine its emissions, the facility was to submit all required CAA permit applications and/or report any hazardous substance releases requiring notice under CERCLA/EPCRA.[12]

The Federal Register Notice (henceforth, the "Notice") that published the Agreement included the EPA's expectation that the emissions monitoring study would begin in 2005 and last 2 years. The Notice also described the EPA's expected timeframes for completing the tasks subsequent to the study. Based on these original expectations, the EPA would begin publishing final EEMs in 2009, and AFOs would have obtained any necessary permits and installed emission controls by 2010. Figure 1 shows the timing for these different activities.

Figure 1: Expected timeframes for monitoring study and EEM development



Source: OIG analysis of the Notice publishing the Agreement. 70 Fed. Reg. 4958-4977 (Jan. 31, 2005).

[12] In a 2008 rule, the EPA exempted from CERCLA Section 103 reporting requirements all releases of hazardous substances to the air from animal waste at AFOs. The rule also exempted such releases from EPCRA Section 304 reporting requirements, except when AFOs confine a number of animals at or above the large CAFO threshold, as defined under Clean Water Act regulations. However, on April 11, 2017, the U.S. Court of Appeals for the District of Columbia Circuit ruled in favor of a group of environmental organizations that challenged the exemption and ordered that the 2008 rule be vacated (*Waterkeeper Alliance et al. v. EPA*). On July 17, 2017, the EPA filed a motion requesting the Court grant a stay of the ruling for six months to allow the EPA time to develop guidance for farms on reporting requirements. On August 16, 2017, the Court ordered a stay of the ruling through November 14, 2017. The EPA has 75 days from August 16, 2017, to request an extension of the stay if needed.

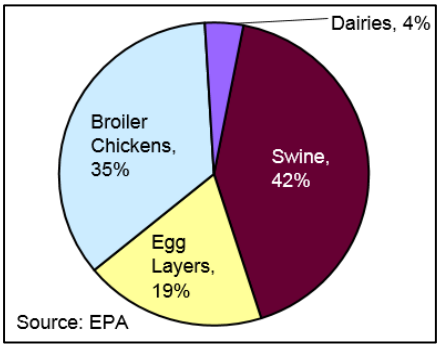
Primary provisions for AFOs participating in the Air Compliance Agreement include:

- **Pay up to $2,500 per farm to fund a 2-year emissions study.**
- **Agree to make their property available for emissions monitoring if selected as a monitoring site for the study.**
- **Pay a civil penalty ranging from $200 to $1,000, depending on the size and number of AFOs covered by the participant's Air Compliance Agreement.**
- **Receive protection from enforcement actions for civil violations of the CAA, CERCLA and EPCRA, to last until either (1) the EPA finalizes EEMs, or (2) the EPA notifies the facility that it was unable to finalize EEMs.**

Under the Agreement, participating AFOs were granted a release and covenant not to sue for potential CAA, CERCLA and EPCRA violations alleged in the Agreement (henceforth, "civil enforcement protections") until the EEMs are developed and AFOs apply for applicable CAA permits and report qualifying releases under CERCLA and EPCRA, or the EPA determines it cannot develop EEMs and notifies Agreement participants accordingly.

The EPA entered into 2,568 separate agreements with AFO owners and operators, which covered about 13,900 AFOs in 42 states. According to the EPA, these 13,900 AFOs comprise more than 90 percent of the largest AFOs in the United States. Figure 2 illustrates the percentage of all Agreement participants by type of animal raised.

Figure 2: Agreement participants by type of animal raised



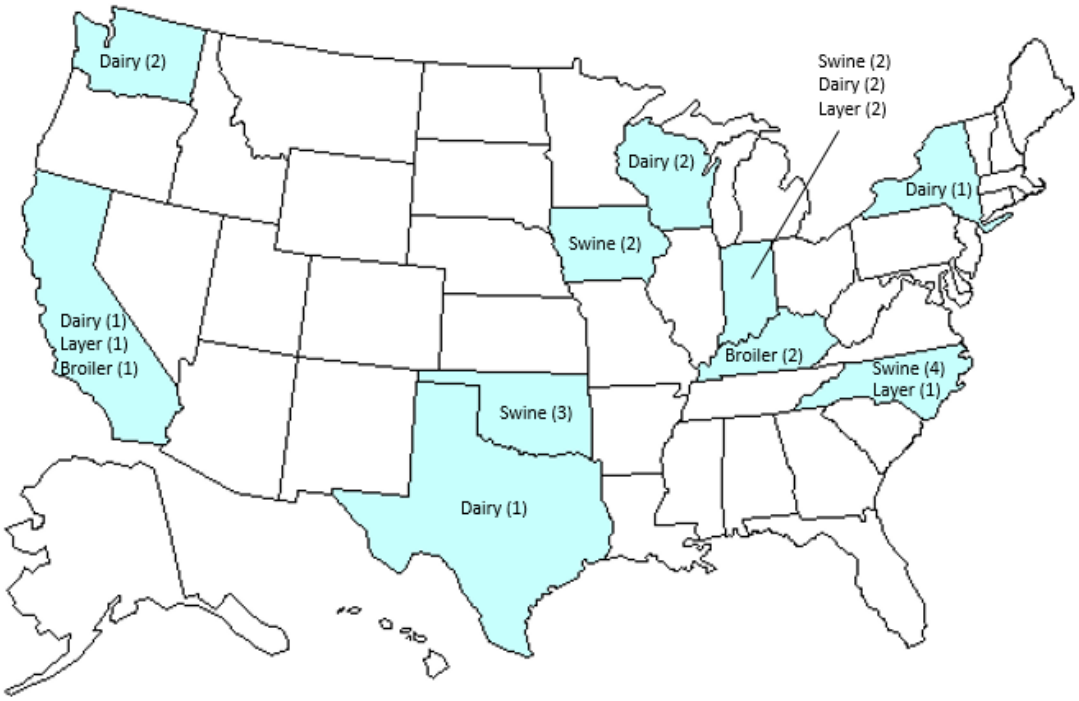
Monitoring Study Methodology

About $15 million was collected from the AFO sectors participating in the Agreement to fund the NAEMS emissions study. The NAEMS protocol provided the framework for the field sampling plan, and was developed through a collaborative effort of industry experts, university scientists, EPA and other government scientists, and other stakeholders knowledgeable in the field. The Agricultural Air Research Council—a nonprofit organization established by industry—was responsible for managing and disbursing funds for the study.

The Agricultural Air Research Council was also responsible for selecting a Science Advisor to develop a detailed study design and quality assurance plan, and to oversee the emissions monitoring work, including work conducted by the contracted principal investigators. The principal investigators—most of whom were researchers at land grant universities with expertise in animal agriculture and/or emissions measurement—carried out the monitoring at selected sites. EPA staff did not collect monitoring data, but conducted audits at monitoring sites to ensure that proper techniques and protocols were followed.

Monitoring was conducted at 27 total sites (i.e., specific sources of emissions such as a barn or a lagoon).[13] Measurements of ammonia, particulate matter (PM_{10} and $PM_{2.5}$),[14] total suspended particulates, VOCs, hydrogen sulfide, and carbon dioxide[15] were taken at broiler chicken, egg layer, swine, and dairy confinement sites (e.g., houses and barns). Measurements of ammonia, hydrogen sulfide, and VOCs were taken at swine and dairy open-source sites (e.g., lagoons and basins). Figure 3 shows the location of monitoring sites across the country.

Figure 3: NAEMS monitoring site locations



Source: OIG analysis of NAEMS site reports.

Other types of measurements were also taken at monitoring sites to help characterize emissions. These measurements included meteorological data (such as temperature and wind speed), and information on the number of animals at AFO monitoring locations, how the animals were housed, and how their waste was managed. The Agreement stated that the EPA would use data from the NAEMS and any other relevant data to develop EEMs.

[13] The 27 monitoring sites were located at 23 AFOs. Monitoring was conducted at two sites (emission sources) for four of the 23 participating AFOs.
[14] PM_{10} describes inhalable particles with diameters that are generally 10 micrometers and smaller. $PM_{2.5}$ describes fine inhalable particles with diameters that are generally 2.5 micrometers and smaller.
[15] While carbon dioxide was measured at confinement sites as part of the NAEMS, the EPA never intended to create EEMs for carbon dioxide emissions.

Responsible Offices

The EPA office primarily responsible for development of the Agreement was the Office of Enforcement and Compliance Assurance. The EPA office responsible for developing EEMs from the NAEMS data is the Office of Air Quality Planning and Standards within the EPA's Office of Air and Radiation, while the Office of Research and Development plays a supporting role.

Scope and Methodology

We conducted our performance audit from April 2016 through May 2017, in accordance with generally accepted government auditing standards. Those standards require that we obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our objective. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

To address our objective, we identified and reviewed applicable statutes, regulations, policies and guidance, including sections of the CAA and the Clean Water Act, CAA permitting requirements and thresholds, and the Agreement and associated monitoring protocol. To help us determine the status of the EPA's NAEMS, as well as other efforts to evaluate AFO air emissions, we obtained and reviewed EPA emission reports and analyses, NAEMS-related reports and studies, an EPA Science Advisory Board (SAB) report, and documents related to EPA legal proceedings.

To determine state efforts to address AFO air emissions, we reviewed state regulations and programs for a selected number of states. We also reviewed petitions requesting that the EPA regulate AFO air emissions, and an administrative complaint alleging discrimination against minorities in North Carolina in permitting AFOs. In addition, we reviewed academic studies and reports to determine AFO air emissions and health impacts, and potential disparate impacts in overburdened communities.

We interviewed EPA staff and managers in the Office of Air Quality Planning and Standards, the Office of Enforcement and Compliance Assurance, the Office of Research and Development, the Office of Civil Rights, the Office of Water, and EPA Region 4 (which covers North Carolina), to gain an understanding of EPA actions to evaluate and address AFO air emissions. We also interviewed the following stakeholders to discuss the Agreement and the history and status of the NAEMS:

- USDA's Natural Resources Conservation Service staff.
- SAB members who reviewed the EPA's draft EEMs.
- An AFO industry advisor.
- AFO academic researchers at Purdue University, North Carolina State University, and University of North Carolina-Chapel Hill.

In addition, we interviewed organizations (Sierra Club, Food & Water Watch, EarthJustice, Waterkeeper Alliance) that submitted CAA petitions to regulate AFO emissions. We also interviewed organizations that submitted a Title VI administrative complaint (the North Carolina Environmental Justice Network and the Rural Empowerment Association for Community Help) alleging discrimination in AFO permitting in North Carolina.

To assess internal controls, we reviewed EPA policies and guidance on quality assurance, including the following:

- The EPA's Quality Policy.
- The EPA's Procedure for Quality Policy.
- The EPA's *Guidance on Systematic Planning Using the Data Quality Objectives Process.*
- The EPA's Office of Air Quality Planning and Standards' Quality Management Plan.

We also reviewed the quality assurance project plans developed for the NAEMS and early draft EEM development.

Prior Report

In September 2008, the U.S. Government Accountability Office (GAO) issued a report on AFOs titled *Concentrated Animal Feeding Operations: EPA Needs More Information and a Clearly Defined Strategy to Protect Air and Water Quality from Pollutants of Concern* (GAO-08-944). GAO reported that the EPA did not have the data needed to effectively regulate CAFO air emissions; specifically, the EPA lacked data on air emission from CAFOs, which the EPA is trying to address through the NAEMS. GAO found that the EPA lacked consistent and accurate data for CAFOs regulated under the Clean Water Act, and that such data—like the locations of the CAFOs—could assist with an assessment of CAFO air emissions. GAO reported that two, then-recent decisions by the EPA suggest that the agency had not yet determined how it intended to regulate air emissions from CAFOs:

- The EPA proposed to exempt releases to the air of hazardous substances from farm manure from both CERCLA and EPCRA notification requirements.

- The EPA stated it will not make key regulatory decisions on how federal air regulations apply to CAFOs until after the NAEMS is completed.

GAO recommended that the EPA (1) reassess the data collection efforts of the NAEMS, and (2) establish a strategy and timetable for developing process-based emission estimating protocols for CAFOs. GAO determined that the EPA has implemented the first recommendation but has not completed the second one.

Chapter 2
EPA Plans for Finalizing EEMs Were Not Accomplished and Potential Air Quality Impacts Continue

The EPA had not published any final EEMs for AFOs, and had not finalized its workplan or established timeframes for completing them. Moreover, progress had been limited since 2013, when the EPA's SAB concluded that draft EEMs developed by the EPA should not be applied on a national scale as intended, and made several recommendations to improve the EPA's statistical analyses. At the time of the Agreement in 2005, the EPA expected that it would begin publishing final EEMs in 2009. Further, the EPA expected that by 2010 the AFO industry would have used the EEMs to assess their emissions, apply for any applicable CAA permits, and install any necessary emission reduction controls.

The EPA collaborated with a committee of external stakeholders to develop a protocol they believed would provide sufficient, representative data for the EPA's EEM development efforts. However, public comments submitted to the EPA on the planned NAEMS protocol, and the 2008 GAO report, questioned whether the NAEMS would provide enough data to produce scientifically and statistically valid EEMs. As a result of the delays, individual AFOs have not applied EEMs to determine whether their air emissions were significant enough to require CAA permits and related emissions controls, while civil enforcement protections for Agreement participants remained in effect.

Development of EEMs Is Years Behind Schedule

Based on the original expectations for completion of the tasks in the Notice, the NAEMS monitoring would have been completed in 2007, and the EPA would have begun publishing EEMs in 2009. By 2010 all facilities would have done the following:

1. Applied the EEMs to determine whether they met or exceeded CAA permitting and/or CERCLA/EPCRA release reporting thresholds, and whether permitting and reporting were required.

2. Submitted any required CAA permit applications and CERCLA/EPCRA release notifications.

3. Implemented the mitigation and emission control requirements described in their permits. At this point, the protections from civil enforcement actions under the Agreement would have ended for participating AFOs.

However, EPA staff told us that this timeline did not account for time required for the EPA's Environmental Appeals Board to approve individual agreements, which took longer than anticipated and was not completed until December 2006. Further, it did not account for monitoring that occurred on a rolling basis, and thus took more than 2 years to complete.

The NAEMS monitoring was completed in early 2010, about 2 years later than originally expected. The EPA began developing draft EEMs after monitoring was completed. In 2012, the EPA placed its draft EEMs on its public website for public comment. Draft EEMs covered eight[16] of the 36[17] emission source and pollutant combinations described in the Agreement. The EPA's Office of Air and Radiation also submitted the draft EEMs to the SAB to obtain feedback on EEM development and related questions. The SAB conducted its review of draft EEMs in 2012 and issued its final report[18] on April 19, 2013.

At the time we finished our review in May 2017, the EPA had not finalized any draft EEMs, or developed any additional draft EEMs. According to the 2005 Agreement, the EPA expected to begin publishing final EEMs within 18 months after completion of the NAEMS monitoring.

Figure 4 shows a timeline of expected and actual NAEMS and EEM development activities up to the 2013 SAB final report.

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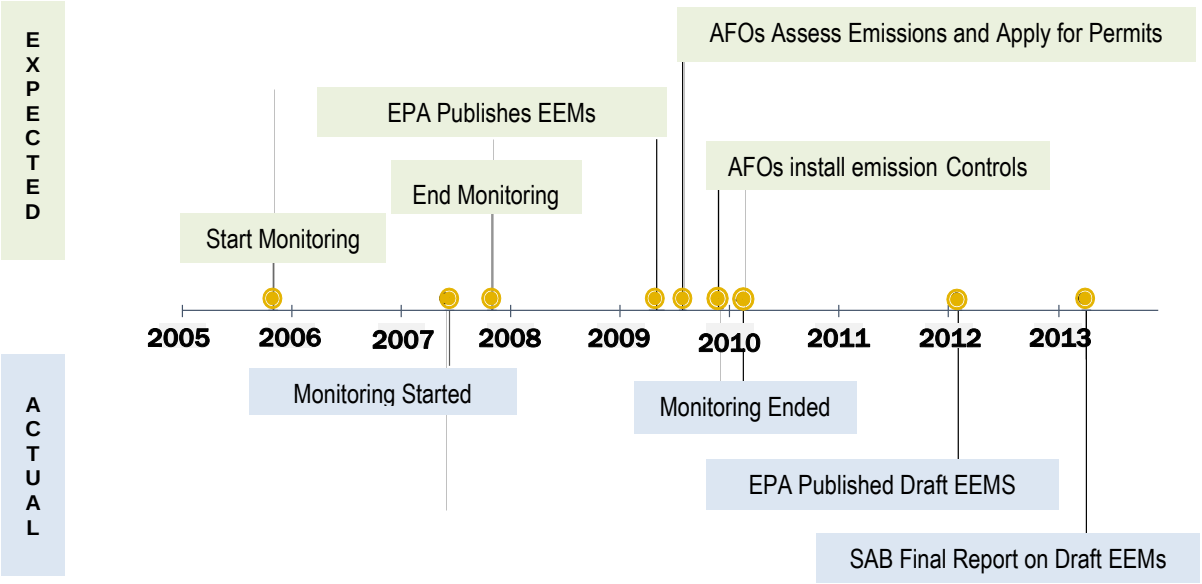
[16] These included EEMs to estimate six different types of emissions from broiler chicken houses, and EEMs to estimate ammonia emissions from dairy and swine lagoons/basins. Also, see Table 2.

[17] According to the Office of Air and Radiation, the number of EEMs that will ultimately be developed will be influenced by factors such as differences in production, management and building conditions, as well as availability of sufficient data.

[18] *SAB Review of Emissions-Estimating Methodologies for Broiler Animal Feeding Operations and for Lagoons and Basins at Swine and Dairy Animal Feeding Operations*, EPA-SAB-13-003 (2013).

Figure 4: Expected and actual NAEMS/EEM development timeline



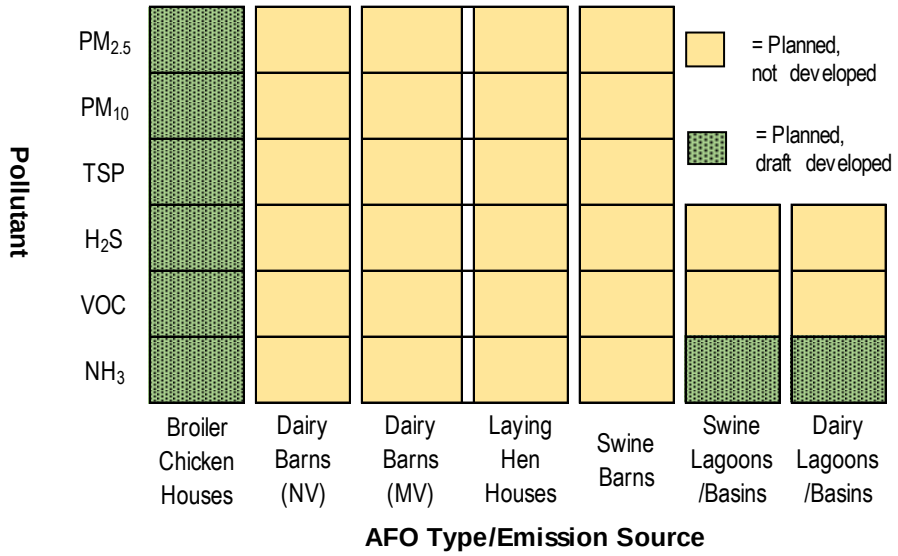
Source: OIG analysis of EPA documents.

Responding to SAB Concerns and a Lack of Resources Slowed Development of EEMs

The SAB identified several concerns with the draft EEMs, and the Office of Air and Radiation did not agree with some of the concerns. Since that time, EEM development slowed considerably, as the EPA decided how to address the SAB's concerns. The EPA also encountered resource constraints and a lack of available technical expertise.

Table 2 shows all emission source and pollutant combinations from the Agreement,[19] and the draft EEMs that were developed and submitted to the SAB for review.

Table 2: Status of EEM development



Source: OIG analysis.

$PM_{2.5}$:	Particulate matter < 2.5 micrometers	H_2S:	Hydrogen Sulfide
PM_{10}:	Particulate matter < 10 micrometers	VOC:	Volatile organic compounds
TSP:	Total suspended particulates	NH_3:	Ammonia

SAB Review of Draft EEMs and EPA Response

The SAB concluded that the data and methodology used to develop the draft EEMs limited the ability of the models to estimate emissions beyond the small number of AFOs in the NAEMS data set. Specifically, the SAB concluded that the number of sites monitored was too small relative to the size of the industry; the models were based on variables that did not accurately predict emissions; the EPA should not have combined swine and dairy lagoon/basin data; and there were significant limitations with the VOC data for broiler houses. Thus, the SAB recommended that the EPA not apply the current version of the EEMs beyond the AFOs in the EPA's dataset.

[19] This included EEMs for both naturally ventilated (NV) and mechanically ventilated (MV) dairy barns, as discussed in the Agreement.

The SAB made a number of other recommendations, including having the EPA do the following:

- Expand its dataset by collecting data from monitoring efforts outside of the NAEMS, and using NAEMS data that were initially excluded due to the EPA's data completeness criteria.
- Not generate an EEM for VOC emissions from broiler operations based on current data limitations.
- Separate swine and dairy lagoon/basin data that had been combined for EEM development.

The SAB also advocated a process-based modeling approach to EEM development. The NAS had advocated a process-based modeling approach to estimating emissions in its 2003 report. Further, in its 2008 report, GAO recommended that the EPA establish a strategy and timetable for developing process-based emission estimating protocols for CAFOs. The SAB noted the following:

> Process-based models would be more likely to be successful in representing a broad range of conditions than the current models because process-based models represent the chemical, biological and physical processes and constraints associated with emissions.

According to the Notice publishing the Agreement, the EPA believed process-based modeling to be a large and complex, multiyear research effort. Therefore, the EPA planned to develop an interim modeling approach, which would be a critical first step to developing a process-based modeling approach. The modeling approach the EPA ultimately selected for the draft EEMs used a statistical software program to analyze the various measurements taken during the NAEMS and identify those variables that predict emissions. The SAB recognized that the EPA may need to apply statistical approaches to assess emissions while it was developing and evaluating process-based models, and thus made recommendations to improve the EPA's chosen approach, as discussed above.

Prior Stakeholder Feedback Questioned the NAEMS Monitoring Approach

The SAB's concerns about the number of monitoring sites being able to support statistically based EEMs was raised in public comments on the Agreement and protocol before the EPA began developing EEMs, and was also raised by GAO in its 2008 report on the EPA's efforts to characterize AFO pollution.

After the NAEMS protocol was made available for public comment in 2005, a number of external groups expressed concerns about the study design and whether it would lead to credible scientific data. Some commenters noted that the number of

sites was too limited to account for all the differences in types of manure management systems, building types, ventilation rates, feeding practices, animal type/age, animal management practices, geography and climate. The commenters noted that even for the types of AFOs monitored, there may not be a sufficient number of samples to establish statistically valid EEMs. Similarly, in its 2008 report, GAO cautioned that the NAEMS may not supply the data needed for the EPA to develop comprehensive EEMs. Further, the GAO report stated that members of the USDA Agricultural Air Quality Task Force had raised concerns about the quality and quantity of data collected, and had pushed for the EPA to review the first 6 months of monitoring data to determine whether the study needed to be revised to yield more useful information.

According to the NAEMS Science Advisor, the NAEMS protocol could be viewed as a compromise between compliance-minded EPA, budget-minded industry, and publication-minded universities. The protocol developers decided on an approach that focused on collecting a comprehensive set of monitoring data (i.e., 2 years of monitoring many different AFO conditions and parameters) at a smaller number of sites, as opposed to collecting a smaller set of data at more sites. According to the EPA, costs were a factor in this decision because mobilizing and demobilizing equipment and then re-deploying at new sites would have depleted funds that could be used for monitoring. The protocol developers believed the chosen monitoring plan would produce sufficient data for EEM development if the selected monitoring sites represented how the majority of animals are raised in the different AFO sectors.

Although the monitoring protocol was developed as a joint effort of researchers knowledgeable about AFO operations and/or monitoring techniques, there was no comprehensive internal or external assessment to determine the amount of data needed to produce scientifically and statistically sound EEMs that could be extrapolated nationwide. The EPA did not perform such an assessment prior to the NAEMS, in part, because it did not know which variables would most impact air emissions at AFOs, and the agency wanted to see the data before selecting a modeling approach for EEM development. Also, the NAEMS protocol and detailed monitoring plans were not peer reviewed to ensure that the NAEMS would provide sufficient data for the EPA to produce a comprehensive suite of EEMs.

EPA's EEM Development Activities Since 2013 Have Been Limited

The EPA planned to continue EEM development using its statistically based approach, and had addressed some of the SAB's recommendations by acquiring additional data sets from other external studies, and reassessing data completeness criteria for the NAEMS. However, the draft EEMs that were submitted to the SAB for review had not been revised, and the EPA had not begun developing EEMs for the remaining 28 emission source and pollutant combinations.

A lack of expertise and resources slowed the agency's work on the EEMs in recent years. According to EPA managers, the agency in recent years did not have staff with combined expertise in agricultural emissions, air quality and statistical analysis. At the time the NAEMS protocol was developed, the EPA had more applicable expertise, but the key staff involved in the NAEMS protocol development retired. Further, competing priorities resulted in the EPA's Office of Air and Radiation putting the EEM effort largely on hold. The EPA had dedicated few agency resources to develop EEMs since the SAB's 2013 final report. The few remaining agency staff who worked on the NAEMS and subsequent data analysis were reassigned to other work, and the EPA stopped funding the contract for NAEMS analysis.

The EPA's most recent draft EEM development work plan, dated March 2016, provided a general framework for how the EPA intended to finish all planned EEMs. The draft plan stated that a new staff person with appropriate expertise, along with student contractor support, would complete the EEMs. The EPA hired the new staff person and a student contractor in January 2017 but had not yet finalized timeframes for completing EEM development.

AFO Air Emissions Remain Largely Uncharacterized and Important Agency Actions Are on Hold

Eleven years after the Agreement was entered, and 7 years after NAEMS monitoring was completed, the EPA, state, local and tribal permitting authorities, and AFO owners/operators, did not have scientifically defensible EEMs needed to make CAA and CERCLA/EPCRA compliance determinations. In addition, the civil enforcement protections for the approximately 14,000 AFOs that participated in the Agreement remained in effect more than 6 years after intended expiration, and several important EPA actions were on hold pending development of the EEMs.

CAA Permit and CERCLA/EPCRA Reporting Determinations Have Not Been Made

Per the Agreement, facilities were not required to determine whether CAA permitting and CERCLA/EPCRA reporting requirements apply to them until the EPA publishes final EEMs. However, once final EEMs are published, participating AFOs are required to use the EEMs to estimate their emissions and come into compliance with applicable CAA and CERCLA/EPCRA requirements.

The Agreement states that a source with emissions exceeding CAA major source permitting thresholds[20] would have to do one of the following:

1. Apply for and obtain a permit that contains a federally enforceable limitation or condition that limits the potential emissions to less than the applicable major source threshold for the area where the source is located.

2. Install either best available control technology in attainment areas,[21] or lowest achievable emission rate technology in nonattainment areas;[22] and then obtain a federally enforceable permit that incorporates the appropriate best available control technology or lowest achievable emission rate limit.

Delays in issuing the EEMs resulted in facilities continuing to have civil enforcement protections even if their emissions were exceeding CAA permit or CERCLA/EPCRA reporting thresholds. Given the lack of reliable EEMs, it was difficult to estimate how many facilities could be exceeding these thresholds. However, monitoring conducted as part of an EPA enforcement case in 2003 demonstrated that some large AFOs can exceed the 250-tons-per-year permitting threshold for PM emissions. That monitoring showed total PM emissions of 550 and 700 tons per year at two large egg-layer AFOs.

The NAEMS Science Advisor analyzed NAEMS data for the pork and egg-layer industries, which indicated that pork and egg-layer AFOs could frequently exceed the EPCRA reporting threshold for ammonia of 100 pounds per day. This analysis indicated that pork and egg layer AFOs were unlikely to exceed 250 tons per year of PM_{10} or VOC emissions. However, the Science Advisor's analysis did not address whether pork or egg-layer AFOs would trigger permitting requirements in poor air quality areas where regulatory thresholds are lower.

Paragraph 38 of the Agreement required the EPA to end civil enforcement protections for those emission sources/types for which the EPA determined it was unable to develop EEMs. As described earlier, the SAB concluded in its 2013 report that the EPA did not have sufficient data to develop an EEM for VOC emissions from broiler houses. Further, more than 7 years since completion of the NAEMS, the EPA had only developed draft EEMs for eight of a possible 36 emission source and pollutant combinations. However, the EPA had not yet determined that it could not develop any of the EEMs, and thus has not waived enforcement protections for any of the emissions sources covered under the 2005 Agreement.

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[20] Applicable regulatory thresholds range from 10 tons per year in areas with very poor air quality (called extreme nonattainment areas) to 250 tons per year in areas with adequate air quality (called attainment areas).
[21] A geographic area is generally designated as being in attainment for a particular criteria air pollutant if the concentration of that pollutant is found to be at or below the regulated or "threshold" level for the associated National Ambient Air Quality Standard.
[22] A geographic area is generally designated as being in nonattainment for a particular criteria air pollutant if the concentration of that pollutant is found to exceed the regulated or "threshold" level for the associated National Ambient Air Quality Standard.

Agency Actions on Hold

Delays in completing EEMs have also caused important agency efforts to address or mitigate AFO air emissions to remain on hold. The EPA stated it would not take the following actions until the EEMs are finalized because they are needed to inform the agency's decision-making:

Responding to citizen petitions to regulate AFOs. The EPA has received petitions to address AFO emissions in regulations beyond the current permitting CAA provisions, which include a 2009 petition to list and regulate AFOs as a source category under CAA Section 111, and a 2011 petition to regulate ammonia as a criteria pollutant under CAA Sections 108 and 109. EPA staff told us they did not plan to evaluate the need for additional regulations as laid out in these petitions until the EEMs are finalized.

Defining "source" for aggregation purposes. The aggregation of sources pertains to how many individual emission sources are counted together to determine whether a facility exceeds CAA major source status, and thus impacts how many facilities could exceed permitting thresholds. For example, if a barn at an AFO rather than the entire AFO is a "source," fewer AFOs could be impacted by CAA permitting requirements. The EPA had not issued guidance on this issue, and said it planned to do so after developing the EEMs.

In our view, final EEMs are also necessary for the EPA to develop compliance and enforcement strategies for Agreement non-participants, and to assess whether AFO emissions may contribute to disproportionate health risks to certain communities.

Conclusion

The EPA's ability to characterize and address AFO air emissions is unchanged since its 2005 Agreement with the AFO industry intended to produce reliable emissions estimation methods. As a result, individual AFOs have not estimated their emissions to determine whether they are required to implement controls to reduce emissions and/or report their emissions to the appropriate emergency responders. Additionally, other important agency actions pertaining to AFO air emission estimates continue to be on hold.

Timeframes for completing EEM development were uncertain, as staffing and contract support needed to finish EEMs only recently became available and the EPA had not yet finalized its work plan at the time we completed our review. Further, SAB concerns about the EPA's EEM development methodology have not been resolved. Despite these uncertainties, parties to the 2005 Agreement continue to receive protections from civil enforcement actions. We make recommendations in Chapters 3 and 4 of this report.

Chapter 3
EPA Needs to Implement Systematic Planning to Assure That EEMs Have Sufficient Quality

The EPA's planning for EEM development did not describe the desired level of quality needed for the EEMs' intended purpose of estimating individual AFO air emissions nationwide. The establishment of such criteria is a key component of systematic planning for agency projects. In accordance with the agency's data quality policies, EPA organizations should conduct systematic planning to ensure that projects will result in scientific products that are defensible and useful for their intended purpose. The agency's most recent EEM development draft work plan used the terms "appropriate" and "meaningful" to describe final EEM products, but did not explain how those terms would be used to evaluate the quality or acceptability of the final EEMs.

As noted in Chapter 2, the agency's SAB concluded that the EPA's 2012 draft EEMs were not suitable for their intended purpose. Consequently, if the agency does not fully implement systematic planning for future EEM development, the EPA is at risk of producing additional draft EEMs that are not sufficient for estimating air emissions at individual AFOs across the United States.

EPA Quality System

The EPA's Procedure for its Quality Policy[23] establishes management principles and responsibilities for ensuring that EPA products and services meet agency quality-related requirements, and are of sufficient quality for their intended use and support the EPA's mission to protect human health and the environment. The policy applies to agency products and services developed for external distribution or dissemination. Each EPA organization is responsible for implementing the EPA Quality Policy and Program within its organization. Requirements for implementing the program include conforming to the minimum specifications of the American National Standards Institute and the American Society for Quality Control standard, ANSI/ASQC E4-1994.[24]

[23] EPA Chief Information Officer's CIO Order 2106-P-01.0 (October 20, 2008).
[24] *Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs*, the American National Standards Institute and the American Society for Quality Control (1994). This standard is the basis for the EPA's Quality System.

At the project level, these minimum specifications include the following:

- Using a systematic planning approach (e.g., the data quality objectives process) to develop acceptance or performance criteria covered by the EPA Quality Policy.

- Having approved quality assurance project plans, or equivalent documents, for all applicable tasks involving environmental data.

To implement the EPA's Quality Policy, each EPA organization must develop a quality management plan that describes its quality system, documents its quality policies, and identifies the environmental programs to which the quality system applies. The EPA's Office of Air Quality Planning and Standards (OAQPS) developed a quality management plan that describes options for ensuring that OAQPS projects are of appropriate quality for their intended purpose. These options include elements of systematic planning to ensure that quality considerations are built into a product at the beginning, and consist of (1) developing a quality assurance project plan or similar document, and/or (2) conducting pre-dissemination review (e.g., peer review) of information.

According to the OAQPS quality management plan, quality documentation describes in detail the activities that must be implemented to assure that the results of work will satisfy the stated performance criteria. The performance criteria may be stated in the form of data quality objectives (DQOs). DQOs are qualitative or quantitative statements that clarify project technical and quality objectives, define the appropriate type of data, and specify tolerable levels of potential decision errors (e.g., uncertainty) that will be used as the basis for identifying the data needed to support decisions. EPA quality assurance guidance[25] recommends that systematic planning include DQOs when data are to be used to make a regulatory decision or emission estimations.

The DQO process is the agency's recommendation when data are to be used to make some type of decision (e.g., compliance or noncompliance with a standard) or estimation (e.g., ascertain the mean concentration level of a contaminant).

Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA/G-4, February 2006

Further, DQOs should be specified for a project before the agency develops its plan for collecting the data, since the DQOs will drive key data collection decisions. For estimation, the guidance states that DQOs are typically expressed in terms of acceptable uncertainty (e.g., width of an uncertainty band or interval) associated with a point estimate at a desired level of statistical confidence.

[25] The EPA's *Guidance on Systematic Planning Using the Data Quality Objectives Process* (2006).

The OAQPS quality management plan also provides for the pre-dissemination review of OAQPS information as a way to provide assurance that quality has been built into the information that the office disseminates. The quality management plan cites peer review as an example of pre-dissemination review, and notes that it can be appropriate to incorporate the pre-dissemination review for project planning documents, such as the quality assurance project plan, prior to beginning the project.

EPA Has Not Fully Implemented a Systematic Planning Process to Assure a Desired Level of Quality for EEMs

The EPA's planning process for EEM development had yet to establish data quality objectives describing the performance or acceptance criteria for the final EEMs. While extensive planning went into assuring the quality of the monitoring data collected during the NAEMS, this planning did not describe the desired quality of the end products resulting from EPA analysis of the NAEMS data (i.e., the EEMs), or the type and extent of emissions monitoring data needed to produce EEMs of desired quality.

Planning for Draft Development of EEMs Was Not Systematic

Ideally, under a systematic planning process, a methodology for producing a final product at the desired quality is determined up front. This methodology then drives the data collection efforts. When data are to be used to make some type of decision or estimation, the EPA recommends that the desired level of quality be expressed in the form of DQOs. As noted in Chapters 1 and 2, the EPA collaborated with external scientists to develop the monitoring protocol. However, several factors influenced the scope of the NAEMS, and that effort was not specifically designed to produce data to satisfy acceptance criteria for the EEMs. Among these factors was that, prior to the study, the EPA did not know which variables most impact air emissions at AFOs. Thus, the EPA tried to create an EEM development methodology using the data that was available from the NAEMS.

> **Unless some form of planning is conducted prior to investing the necessary time and resources to collect data, the chances can be unacceptably high that these data will not meet specific project needs.**
>
> *Guidance on Systematic Planning Using the Data Quality Objectives Process*, EPA QA/G-4, February 2006

The NAEMS protocol stated that the NAEMS and subsequent data analyses and interpretation would allow the EPA and livestock and poultry producers to "reasonably determine" which AFOs were subject to CAA regulatory provisions and CERCLA/EPCRA reporting requirements. However, as part of its planning, the EPA did not define what was meant by "reasonably determine." The EPA developed a quality assurance project plan for its efforts to develop the draft EEMs that were published in 2012, but it focused on assessing the quality of incoming data from the NAEMS and other sources. The quality assurance project

plan did not include DQOs or other performance criteria defining the acceptable level of uncertainty for EEM predictions, or the quality control measures the EPA would use to assure its statistical models were scientifically and statistically sound.

The EPA had its draft EEMs peer reviewed by the SAB, but the agency did not involve the SAB in its planning process to ensure that the NAEMS would provide sufficient data for EEM development. As discussed in Chapter 2, the SAB concluded that the EPA's draft EEMs were not useful for making compliance determinations nationwide due to problems with the underlying data and analysis.

Plans for Completing Development of EEMs Can Be Strengthened

The EPA had not yet conducted systematic planning for the EEM completion effort, but had developed a draft work plan. That draft work plan contained little information about systematic planning to assure the quality of future EEMs. The plan did not address whether a quality assurance project plan would be developed, or commit to peer review of the planned methodology or the draft or final EEMs.[26]

The draft work plan described a future scoping study that would allow the EPA to plan activities and resources for developing "appropriate" EEMs, and stated that EEMs developed in the future would be tested to determine whether they can reproduce "meaningful" emissions estimates. However, the work plan did not define or establish acceptance criteria for "appropriate" or "meaningful" EEMs. Staff from OAQPS stated that they planned to make quality planning decisions once the new staff person had been hired to conduct the scoping study and subsequent EEM development.

Conclusion

As explained in the EPA's quality assurance guidance, systematic planning that defines the level of quality required for an end product should be conducted prior to data collection efforts, to reduce the risk that the data collected is not sufficient. Such planning for the EEMs was not conducted prior to the NAEMS or draft EEM development efforts, in part, because the EPA did not have a full understanding of the factors that influence AFO air emissions. Further, the NAEMS protocol and monitoring plans were not developed exclusively to provide data needed for EEM development. Based on its experience and peer review feedback in developing the initial set of draft EEMs, the EPA should be in a better position to conduct systematic planning for the EEM completion effort.

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[26] In the draft plan, the EPA stated it will provide developed EEMs to "appropriate stakeholders and possibly the Science Advisory Board" for review, and then modify the EEMs based on comments received. However, the plan does not commit to obtaining independent, external peer review of the EEMs or the planned methodology that will be used to develop the EEMs.

Without adequate systematic planning, the EPA is at risk of spending additional time and resources to develop EEMs that still are not sufficient for estimating AFO emissions nationwide.

Recommendations

We recommend that the Assistant Administrator for Air and Radiation:

1. In accordance with EPA quality assurance guidance, conduct comprehensive systematic planning for future emission estimating methodology development through either the quality assurance project plan or pre-dissemination review processes.

    - If the EPA chooses to develop a quality assurance project plan, it should first develop data quality objectives for the emission estimating methodologies.

    - If the EPA chooses to conduct a pre-dissemination review, it should obtain independent, external feedback on the adequacy of its emission estimating methodologies development and plans prior to beginning the project.

2. Based on the results of systematic planning, determine and document the decision as to whether the EPA is able to develop scientifically and statistically sound emission estimating methodologies for each originally planned emission source and pollutant combination.

3. For the emission source and pollutant combinations for which the Office of Air and Radiation determines it can develop scientifically and statistically sound emission estimating methodologies, establish public milestone dates for issuing each draft emission estimating methodology. For any emission source and pollutant combinations for which the Office of Air and Radiation determines that it cannot develop scientifically and statistically sound emission estimating methodologies, notify the Office of Enforcement and Compliance Assurance of that determination.

We recommend that the Assistant Administrator for Enforcement Compliance and Assurance:

4. For any emission source and pollutant combinations for which the Office of Air and Radiation determines it cannot develop emission estimating methodologies, notify Air Compliance Agreement participants of this determination, and that the release and covenant not to sue for those emission sources and pollutant types will expire in accordance with paragraph 38 of the 2005 Air Compliance Agreement.

Agency Response and OIG Evaluation

The Office of Air and Radiation agreed with Recommendations 1, 2 and 3, and provided acceptable planned corrective actions and completion dates. The Office of Enforcement and Compliance Assurance agreed with Recommendation 4 and provided an acceptable corrective action plan.

The agency also provided technical comments that were incorporated into our final report as appropriate. Appendices A and B contain the responses to our report from the Office of Air and Radiation, and the Office of Enforcement and Compliance Assurance, respectively.

Chapter 4
EPA Has Not Updated Some Stakeholders and Public on Current Status of EEM Efforts

The 2005 Air Compliance Agreement between the AFO industry and the EPA generated significant stakeholder and public interest in AFO air emissions, and any actions the agency would take to address those emissions. Leading up to the monitoring study, and for 2 years after monitoring data was available, the EPA provided frequent public updates related to the NAEMS and EEMs. However, since the SAB's 2013 final report, the agency had provided only high-level updates to selected stakeholders. This left many stakeholders and the public uninformed about the current status of the work, the reasons for delays, and current timelines for finalizing the EEMs. The EPA should resume providing public updates on the status of EEM development through its website or other public means, to ensure the transparency of its process and accountability in setting completion dates.

EPA Provided Extensive Public Outreach During Early Stages

The EPA issued four press releases in 2006 announcing individual agreements entered into between the EPA and AFOs. Further, in the years after it received all monitoring data in 2010, the EPA provided frequent updates on EEM development efforts and the SAB's review of draft EEMs. In 2011, the EPA published data from the NAEMS monitoring, issued a Call for Information to collect information to supplement the NAEMS data, and updated the public on processes related to the planned SAB review. In 2012, the EPA released its draft EEMs for public comment.

EPA Has Not Publicly Communicated on EEM Development Efforts Since 2013

Since the EPA posted the SAB's 2013 final report on its public website, the EPA had not updated some stakeholders and the public on recent aspects of its NAEMS data analysis and EEM development efforts. An OAQPS manager told us that the agency planned to post final EEMs on its public webpage, but used other mechanisms to provide updates on the status of EEM development. Such updates were provided only upon request, and typically to groups with which the agency had regular contact, such as the USDA's Agricultural Air Quality Task Force. Numerous interested parties—including the SAB Chair, a SAB panel member, and three external groups—told us that they had no information about the ongoing NAEMS data analysis, the reasons for delays, or how long it might take the EPA to publish final EEMs.

Further, staff at the USDA told us that while they periodically received high-level updates from the EPA at Agricultural Air Quality Task Force and intra-agency

workgroup meetings, they were not aware of the EPA's current plans for completing EEM development. The EPA's 2016 update to the Agricultural Air Quality Task Force provided the SAB's recommendations regarding the draft EEMs, as previous updates had done, and stated that the EPA will continue developing EEMs to account for air emissions from AFOs.

Conclusion

Despite being years behind schedule in finalizing the EEMs, the EPA has not provided public updates since 2013 on the NAEMS data analysis and the agency's current efforts to finalize the EEMs. Thus, stakeholders and the public do not know where the EPA currently stands with respect to EEM development. To ensure transparency and accountability in completing EEMs for the $15 million investment in the NAEMS study, the EPA should provide public updates on the status of EEM development and establish public milestones for completion of each draft EEM.

Recommendation

We recommend that the Assistant Administrator for Air and Radiation:

5. Provide the public with the status of emission estimating methodology development and the agency's planned next steps for analyzing the National Air Emissions Monitoring Study data and finalizing the emission estimating methodologies, including the completion of milestone dates for each draft emission estimating methodology it plans to develop.

Agency Response and OIG Evaluation

The Office of Air and Radiation agreed with Recommendation 5, and provided an acceptable corrective action plan and completion date. The Office of Air and Radiation also provided technical comments that were incorporated into our final report as appropriate. Appendix A contains the Office of Air and Radiation's response to our report.

Status of Recommendations and Potential Monetary Benefits

RECOMMENDATIONS

Rec. No.	Page No.	Subject	Status[1]	Action Official	Planned Completion Date	Potential Monetary Benefits (in $000s)
1	23	In accordance with EPA quality assurance guidance, conduct comprehensive systematic planning for future emission estimating methodology development through either the quality assurance project plan or pre-dissemination review processes. o If the EPA chooses to develop a quality assurance project plan, it should first develop data quality objectives for the emission estimating methodologies. o If the EPA chooses to conduct a pre-dissemination review, it should obtain independent, external feedback on the adequacy of its emission estimating methodologies development and plans prior to beginning the project.	R	Assistant Administrator for Air and Radiation	3/31/18	
2	23	Based on the results of systematic planning, determine and document the decision as to whether the EPA is able to develop scientifically and statistically sound emission estimating methodologies for each originally planned emission source and pollutant combination.	R	Assistant Administrator for Air and Radiation	6/30/18	
3	23	For the emission source and pollutant combinations for which the Office of Air and Radiation determines it can develop scientifically and statistically sound emission estimating methodologies, establish public milestone dates for issuing each draft emission estimating methodology. For any emission source and pollutant combinations for which the Office of Air and Radiation determines that it cannot develop scientifically and statistically sound emission estimating methodologies, notify the Office of Enforcement and Compliance Assurance of that determination.	R	Assistant Administrator for Air and Radiation	6/30/18	
4	23	For any emission source and pollutant combinations for which the Office of Air and Radiation determines it cannot develop emission estimating methodologies, notify Air Compliance Agreement participants of this determination, and that the release and covenant not to sue for those emission sources and pollutant types will expire in accordance with paragraph 38 of the 2005 Air Compliance Agreement.	R	Assistant Administrator for Enforcement and Compliance Assurance	9/30/18 [2]	
5	26	Provide the public with the status of emission estimating methodology development and the agency's planned next steps for analyzing the National Air Emissions Monitoring Study data and finalizing the emission estimating methodologies, including the completion of milestone dates for each draft emission estimating methodology it plans to develop.	R	Assistant Administrator for Air and Radiation	6/30/18	

[1] C = Corrective action completed.
R = Recommendation resolved with corrective action pending.
U = Recommendation unresolved with resolution efforts in progress.

[2] If applicable, based on the Office of Air and Radiation's determination in response to Recommendation 3.

Appendix A

Office of Air and Radiation Response to Draft Report

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 23 2017

OFFICE OF
AIR AND RADIATION

MEMORANDUM

SUBJECT: Response to the Office of Inspector General's Draft Report, *Emissions From Animal Feeding Operations Remain Largely Uncharacterized More Than 7 Years After Study Completed* (Project No. OPE-FY16-0018)

FROM: Sarah Dunham
Acting Assistant Administrator

TO: Carolyn Copper
Assistant Inspector General
Office of Program Evaluation
Office of Inspector General

The EPA's Office of Air and Radiation (OAR) appreciates the opportunity to review and comment on the Office of Inspector General (OIG) draft report titled "*Emissions From Animal Feeding Operations Remain Largely Uncharacterized More Than 7 Years After Study Completed.*" OAR agrees in general with the OIG's recommendations.

OAR's current task is the development of Emissions Estimating Methodologies (EEMs) for animal feeding operations (AFOs), using statistically-based methodologies to develop emissions factors for select types of AFOs from data collected through the National Air Emissions Monitoring Study (NAEMS). In partnership with the Office of Research and Development (ORD), we are undertaking this effort and incorporating a National Academy of Sciences (NAS) recommendation that the EPA develop an interim method for estimating emissions while we participate in a longer-term effort to develop process-based EEMs. In addition, our work will include objectives outlined in the 2005 Air Compliance Agreement (Agreement) the EPA entered into with participating AFOs. The AFO sectors represented in the Agreement covered the monitoring study costs. Individual participating AFOs did not directly pay monitoring study funds. The EPA remains committed to fulfilling this goal of developing EEMs for AFOs based on scientifically and statistically sound methods. The

statistically-based EEMs must also be easily implemented by the agricultural community and other users, and be based on non-proprietary inputs.

While we generally agree with your characterizations of the Agreement and the associated NAEMS, there are a few places where information in the draft report is slightly unclear where the information differs from our understanding of specific facts. Please refer to the attached list of these instances and suggested revisions intended to help clarify and improve the draft report's accuracy.

Below are OAR's responses to the OIG's specific recommendations (recommendation numbers 1, 2, 3 and 5), which we developed in consultation with ORD. On June 9, 2017, OECA provided a separate response to recommendation number 4 as it is assigned to their office. In the attached technical comments, we provide suggested additional detailed changes in the form of a markup.

Recommendation 1: In accordance with EPA quality assurance guidance, conduct comprehensive systematic planning for future emission estimating methodology development through either the quality assurance project plan or pre-dissemination review processes.

- **If the EPA chooses to develop a quality assurance project plan, it should first develop data quality objectives for the emission estimating methodologies.**

- **If the EPA chooses to conduct a pre-dissemination review, it should obtain independent, external feedback on the adequacy of its emission estimating methodologies development and plans prior to beginning the project.**

Response 1: OAR and ORD agree with this recommendation and have initiated development of a quality assurance project plan (QAPP) for evaluation of the data and completion of the EEMs. As part of the QAPP development, appropriate data quality objectives will be defined. We intend to make this document publicly available on our website (see below).

Planned completion date: FY 2018, Q2 (March).

Recommendation 2: Based on the results of systematic planning, determine and document the decision as to whether the EPA is able to develop scientifically and statistically sound emission estimating methodologies for each originally planned emission source and pollutant combination.

Response 2: OAR agrees with this recommendation. As noted, completion of this task is contingent upon the results and decisions made during the QAPP development. Upon completion of the QAPP, OAR and ORD will determine which EEMs can be completed and the appropriate schedules for their completion. We intend to make the schedules publicly available on our website (see below).

Planned Completion Date: As stated above, development of the QAPP is ongoing with completion anticipated in the second quarter of FY 2018. Upon completion of the QAPP, decisions

on EEM development and schedules will be determined and transmitted to the Office of Enforcement and Compliance Assurance (OECA). We anticipate that the schedules will be established in third quarter of FY 2018.

Recommendation 3: For the emission source and pollutant combinations for which the Office of Air and Radiation determines it can develop scientifically and statistically sound emission estimating methodologies, establish public milestone dates for issuing each draft emission estimating methodology. For any emission source and pollutant combinations for which the Office of Air and Radiation determines that it cannot develop scientifically and statistically sound emission estimating methodologies, notify the Office of Enforcement and Compliance Assurance of that determination.

Response 3: OAR agrees with this recommendation and will develop a schedule for completion of the EEMs after completion of data review and QAPP development, which is currently planned for completion in the second quarter of FY 2018.

Planned Completion Date: As stated above, development of the QAPP is ongoing with completion anticipated in the second quarter of FY 2018. Upon completion of the QAPP, decisions on EEM development and schedules will be determined and transmitted to OECA and made available to the public. We anticipate that the schedules will be established in the third quarter of FY 2018.

Recommendation 5: Provide the public with the status of emission estimating methodology development and the agency's planned next steps for analyzing the National Air Emissions Monitoring Study data and finalizing the emission estimating methodologies, including the completion milestone dates for each draft emission estimating methodology it plans to develop.

Response 5: OAR agrees with this recommendation and will post the schedule on our website for completion of the EEMs after completion of data review and QAPP development, which is currently planned for completion in the second quarter of FY 2018. We anticipate providing updates on our progress with subsequent website postings.

Planned Completion Date: As stated above, development of the QAPP is ongoing with completion anticipated in the second quarter of FY 2018. Upon completion of the QAPP, decisions on EEM development and schedules will be determined and milestones will be made available to the public. We anticipate that the schedules will be established in the third quarter of FY 2018.

If you have any questions regarding this response, please contact Mike Jones, Office of Air Quality Planning and Standards (OAQPS) Audit Liaison, at (919) 541-0528.

Attachment

Appendix B

Office of Enforcement and Compliance Assurance Response to Draft Report

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN - 9 2017

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

MEMORANDUM

SUBJECT: Response to the Office of Inspector General Draft Report: "Emissions from Animal Feeding Operations Remain Largely Uncharacterized More Than 7 Years After Study Completed," Project No. OPE-FY16-0018 (May 12, 2017)

FROM: Lawrence E. Starfield
Acting Assistant Administrator
Office of Enforcement and Compliance Assurance

TO: Carolyn Copper
Assistant Inspector General
Office of Program Evaluation
Office of Inspector General

Thank you for the opportunity to respond to the Office of Inspector General (OIG) Draft Report, "Emissions from Animal Feeding Operations Remain Largely Uncharacterized More Than 7 Years After Study Completed" (Draft Report). The Office of Enforcement and Compliance Assurance (OECA) appreciates OIG's careful examination of this issue, and we are committed to following the terms of the Animal Feeding Operations (AFO) Air Compliance Agreement (Agreement) and OIG's recommendation for OECA – Recommendation Number 4. We concur with Recommendation Number 4, and we provide a high-level intended corrective action with an estimated completion date below.

While we generally agree with your characterizations of the Agreement and its associated National Air Emissions Monitoring Study (NAEMS), there are a few places where the Draft Report is slightly unclear or where the information differs from our understanding of specific facts. Enclosed for your consideration, we include a list of these instances and suggested revisions intended to help clarify and improve the Draft Report's accuracy.

OECA has discussed the Draft Report with the Office of Air and Radiation (OAR) and we understand that OAR will be providing a separate response addressing the Draft Report's findings and recommendations for OAR – Recommendation Numbers 1, 2, 3, and 5.

OECA Response to Recommendation Number 4 – Concur

No.	Recommendation	High-Level Intended Corrective Action	Planned Completion Date
4	For any emission source and pollutant combinations for which the Office of Air and Radiation determines it cannot develop emission estimating methodologies, notify Air Compliance Agreement participants of this determination and that the release and covenant not to sue for those emission sources and pollutant types will expire in accordance with paragraph 38 of the 2005 Air Compliance Agreement.	If the EPA determines it cannot develop emission estimating methodologies for any emission source and pollutant combinations, OECA will notify Agreement participants in writing that the EPA has made such a determination and that the release and covenant not to sue will expire in accordance with paragraph 38 of the Agreement.	If necessary, OECA will complete the intended corrective action within 60 days of OAR finalizing its determination.

We concur with OIG's recommendation that OECA notify Agreement participants if OAR determines that it cannot develop emission estimating methodologies for any emission source and pollutant combinations. OECA notes that this recommendation will only require a corrective action if OAR determines it cannot develop emission estimating methodologies for any source and pollutant combinations. Paragraph 38 of the Agreement requires the EPA to notify Agreement participants in writing if the Agency makes such a determination. OECA intends to continue abiding by the Agreement's terms, and we will notify Agreement participants if the Agency determines it cannot develop emission estimating methodologies for any emission source and pollutant combinations.

If you have any questions regarding this response, please contact OECA Audit Liaison, Gwendolyn Spriggs, at 202.564.2439.

Attachment

cc: Susan Shinkman, OECA/OCE
Rosemarie Kelley, OECA/OCE
Lauren Kabler, OECA/OCE
Apple Chapman, OECA/OCE
Tim Sullivan, OECA/OCE

Gwendolyn Spriggs, OECA/OAP
Sarah Dunham, OAR
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Mike Jones, OAR/OAQPS

Appendix C

Distribution

The Administrator
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