



AMES  
LABORATORY

# ANNUAL SITE ENVIRONMENTAL REPORT CALENDAR YEAR 2016

Iowa State University

Ames, Iowa 50011-3400

Prepared for the  
U.S. Department of Energy  
Under Contract No. DE-AC02-07CH11358



Ames Laboratory  
*Creating Materials & Energy Solutions*

U.S. DEPARTMENT OF ENERGY

## Table of Contents

	Page
<b>1.0 EXECUTIVE SUMMARY</b>	1
Feedback Form	3
<b>2.0 INTRODUCTION</b>	4
2.1 Site Description	4
2.2 Organization and Administration	5
Figure 2.2-1 Organizational Chart	5
2.3 Mission	6
2.4 Purpose of Site Environmental Report	6
<b>3.0 COMPLIANCE SUMMARY</b>	6
3.1 Calendar Year 2016 Compliance Status	6
3.2 Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)	6
3.3 Resource Conservation and Recovery Act (RCRA)	6
Figure 3.3-1 RCRA Waste Generation	7
3.4 Federal Facilities Compliance Act (FFCA)	8
3.5 National Environmental Policy Act (NEPA)	8
3.6 Clean Air Act (CAA) and National Emissions Standards for Hazardous Air Pollutants (NESHAPs)	8
3.7 Clean Water Act (CWA)	9
Figure 3.7-1 Wastewater Generation	9
3.8 Safe Drinking Water Act (SDWA)	9
Table 3.8-1 Drinking Fountain Analysis for Lead	10
3.9 Superfund Amendments and Reauthorization Act (SARA) Title III and Iowa Administrative Code (IAC), Rule 567, Chapter 131, Spill Response	10
Table 3.9-1 Status of EPCRA Reporting	10
3.10 Toxic Substances Control Act (TSCA)	11
Figure 3.10-1 Asbestos Containing Material Generation	11
Figure 3.10-2 PCB Ballast Waste Generation	11
3.11 Federal Insecticides, Fungicide and Rodenticide Act (FIFRA)	12
3.12 Endangered Species Act (ESA)	12
3.13 National Historic Preservation Act (NHPA)	12
3.14 Migratory Bird Treaty Act	12
3.15 Executive Order 11988, "Floodplain Management"	12
3.16 Executive Order 11990, "Protection of Wetlands"	12
3.17 Summary of Environmental Permits	12
Table 3.17-1 DOE RCRA Generator Identification Numbers	13
Table 3.17-2 Ames Laboratory Air Emission Sources	13
<b>4.0 ENVIRONMENTAL PROGRAM</b>	13
4.1 Environmental Management System	13
4.1.1 EMS Effectiveness	14
4.2 Pollution Awareness, Waste Minimization and Recycling Programs	14
4.3 Performance Measures	15
<b>5.0 ENVIRONMENTAL RADIOLOGICAL PROGRAM</b>	15
5.1 DOE Order 458.1, "Radiation Protection of the Public and the Environment"	15
5.2 DOE Order 435.1, "Radioactive Waste Management"	15
5.3 Property Release	15
5.4 Radiation Emissions and Doses	15

5.5 Unplanned Releases	16
5.6 Environmental Monitoring	16
5.7 Areas of Concern	16
5.7.1 Inactive Waste Sites (IWS)	16
<b>6.0 ENVIRONMENTAL NON-RADIOLOGICAL PROGRAM</b>	<b>17</b>
6.1 Emissions Monitoring	17
<b>7.0 GROUNDWATER MONITORING AND PROTECTION</b>	<b>17</b>
<b>8.0 QUALITY ASSURANCE PROGRAMS</b>	<b>17</b>
<b>9.0 REFERENCES</b>	<b>18</b>
<b>10.0 LIST OF ACRONYMS</b>	<b>19</b>
<b>11.0 REPORT DISTRIBUTION</b>	<b>21</b>
<b>APPENDIX A (Air Permit Correspondences)</b>	<b>24</b>
1) U.S. Department of Energy Air Emissions Annual Report, Calendar Year 2016.	
<b>APPENDIX B (Inactive Waste Site Correspondences)</b>	<b>27</b>
1) Letter from IDPH, Closure of nine waste sites, January 11, 1996.	
2) Letter from IDPH granting “unrestricted” release of the CDS, October 15, 1998.	
3) Letter from IDPH, Closure of the Former Iowa State College Dump Site, September 17, 2001.	
4) Letter from IDPH, Closure of the Fire Service Institute Training Area, February 26, 2002.	
<b>APPENDIX C (EPA and DOE Correspondences)</b>	<b>33</b>
1) DOE-AMSO memorandum approving Laboratory’s EMS, December 9, 2015.	
2) EPA letter (RCRA Inspection), April 27, 2006.	

## 1.0 EXECUTIVE SUMMARY

This report summarizes the environmental status of Ames Laboratory for calendar year 2016. It includes descriptions of the Laboratory's site, mission, the status of its compliance with applicable environmental regulations, its planning and activities to maintain compliance, and a comprehensive review of its environmental protection, surveillance and monitoring activities.

Ames Laboratory is located on the campus of Iowa State University (ISU) and occupies 13 buildings owned by the Department of Energy (DOE). See the Laboratory's [Web page](#) for location and Laboratory overview. The Laboratory also leases space in ISU owned buildings.

In 2016, the Laboratory accumulated and disposed of hazardous waste under an U.S. Environmental Protection Agency (EPA) issued generator number. All waste was handled according to applicable EPA, State, and local regulations and DOE Orders. The Laboratory operates as a Small Quantity Generator (SQG) of hazardous waste.

The Laboratory was in compliance with all applicable Federal, State, local and DOE regulations and Orders in 2016.

There were no radiological air emissions or exposures to the general public due to Laboratory activities in 2016 (See U.S. Department of Energy Air Emissions Annual Report in Appendix A.)

As indicated in prior Site Environmental Reports, formal pollution prevention awareness, waste minimization and recycling programs have been in practice since 1990, with improvements implemented most recently in 2015. Included in these efforts were battery, cathode ray tube (CRT), miscellaneous electronic office equipment, white and green computer paper, corrugated cardboard, mixed paper, newsprint, food/beverage container recycling and laboratory glassware recycling. Ames Laboratory also recycles/reuses salvageable metal, used oil, foamed polystyrene peanuts, fluorescent lamps and telephone books.

Ames Laboratory reported to DOE-Ames Site Office (AMSO), through the Laboratory's Performance Evaluation Measurement Plan, on its Affirmative Procurement Performance Measure. A performance level of "A-" was achieved in 2016 for Integrated Safety, Health and Environmental Protection.

As reported in Site Environmental Reports for prior years, the Laboratory's Environmental Management System (EMS) has been integrated into the Laboratory's Integrated Safety Management System (ISMS) since 2005. The integration of EMS into Laboratory business practices allows the Laboratory to systematically review, address and respond to environmental impacts. In addition to DOE-identified objectives and targets, the EMS Steering Committee recommends annual environmental goals for the Laboratory. The Laboratory achieved a 2016 goal of publishing a chemical redistribution inventory within the Laboratory-wide chemical inventory system to encourage use of surplus chemicals within the organization. This initiative aligns with the Laboratory's ISMS policy statement and Waste Minimization/Pollution Prevention Plan by reducing purchases and the packaging discarded from new items and using surplus commercial grade chemicals and reducing waste.

Beryllium was used routinely at Ames Laboratory in the 1940s and 1950s in processes developed for the production of highly pure uranium and thorium in support of the

historic Manhattan Project. Laboratory metallurgists also worked on a process to produce pure beryllium metal from beryllium fluoride. In the early 1950s, beryllium oxide powder was used to produce shaped beryllium and crucibles. As a result of that work, beryllium contamination now exists in many interstitial spaces (e.g., utility chases) and ventilation systems in Wilhelm Hall, Spedding Hall and Metals Development. Extensive characterization and remediation efforts occurred in 2009 and 2010 in order to better understand the extent of the contamination. Analysis of extensive sampling data suggests that a fairly wide dispersion of beryllium occurred (most likely in the 1950s and 60s) in Wilhelm Hall and in certain areas of Spedding Hall and Metals Development. Area air-sampling results and work-area surface characterizations indicate the exposure potential to current workers, building visitors and the public remains extremely low. This information is now used to guide cleaning efforts and to provide worker protection during remodeling and maintenance activities. Results were shared with the DOE's Former Worker Program to support former worker medical testing and compensation programs. A complete discussion of the Laboratory's beryllium characterization and remediation efforts can be found on the Ames Laboratory [Beryllium Information webpage](#).

## 2016 Ames Laboratory Site Environmental Report Feedback Form

This feedback form is provided to solicit public input on the development and improvement of future Site Environmental Reports. Public input is encouraged and appreciated. Remove and copy as needed. Attach additional pages as needed or send comments to [sarahmb@ameslab.gov](mailto:sarahmb@ameslab.gov).

Return to: Ames Laboratory  
Environment, Safety, & Health  
G40 TASF, Iowa State University  
Ames, IA 50011-3400  
ATTN: Sarah Morris-Benavides

1. What prompted your interest in environmental activities at Ames Laboratory?
2. In what ways can this report document and/or format be improved?
3. Do you have any questions on specific items or issues in this report?
4. Do you have any other comments?

## 2.0 INTRODUCTION

### 2.1 Site Description

Ames Laboratory is a U.S. DOE facility located on the campus of Iowa State University (ISU) in Ames, Iowa. See the Laboratory's [Web page](#) for locations and Laboratory overview. Ames is a government-owned, contractor-operated (GOCO) facility. ISU is the Laboratory's contractor. The Technical and Administrative Services Facility (TASF) houses most of the Laboratory's management offices. The buildings owned by the DOE are listed below.

<u>Building</u>	<u>Gross Square Feet</u>
Spedding Hall	107,630
Metals Development Building	69,663
Wilhelm Hall	56,541
TASF	46,991
Campus Warehouse Building	16,506
Sensitive Instrument Facility	13,304
Mechanical Maintenance Building	8,540
Paint and Air Conditioning Shops	4,998
Construction Storage Shed	4,440
Maintenance Shop Bldg	7,503
Records Storage	1,689
Storage Shed 1	1,461
Storage Shed 2	1,702
<hr/>	
Total DOE Owned	340,968

In addition to the buildings owned by the DOE, Ames Laboratory also leased space from ISU in 2016.

The city of Ames, Iowa surrounds the ISU main campus. In 2016 the population of Ames was approximately 66,191, which includes the ISU student population of approximately 36,600. Ames is located in Story County, which has a population of approximately 97,090.

The climate is temperate continental, and is subject to wide temperature and precipitation ranges throughout the year. Mean monthly temperature varies from a low of minus -11.3 degrees Celsius (12°F) in January to a high of 29.1 degrees Celsius (84°F) in July. Average rainfall equivalent precipitation varies from 1.8 centimeters (0.7 inches) in January to 12.6 centimeters (4.96 inches) in June.

The region's topography is gently rolling with a slight overall negative gradient to the southeast. Under the shallow topsoil, the soils are glacial till with a depth of approximately 19.8 meters (65 feet). This material is underlain by predominantly limestone bedrock. In the central campus area, the depth to first groundwater is approximately 3.0 meters (10 feet). Surface run-off flows into Squaw Creek, a tributary of the South Skunk River. The streams have a combined average daily flow of approximately 644 million liters (170 million gallons).

## 2.2 Organization and Administration

ISU operates Ames Laboratory for the United States Government under Contract Number DE-AC02-07CH11358 with the U.S. DOE. The DOE Office of Science, through the AMSO, administers the contract. In 2016, the Laboratory employed a total of 644 people. Approximately 387 full and part time employees and 257 associate (non-payroll) employees. See Organizational Chart, Figure 2.2-1.

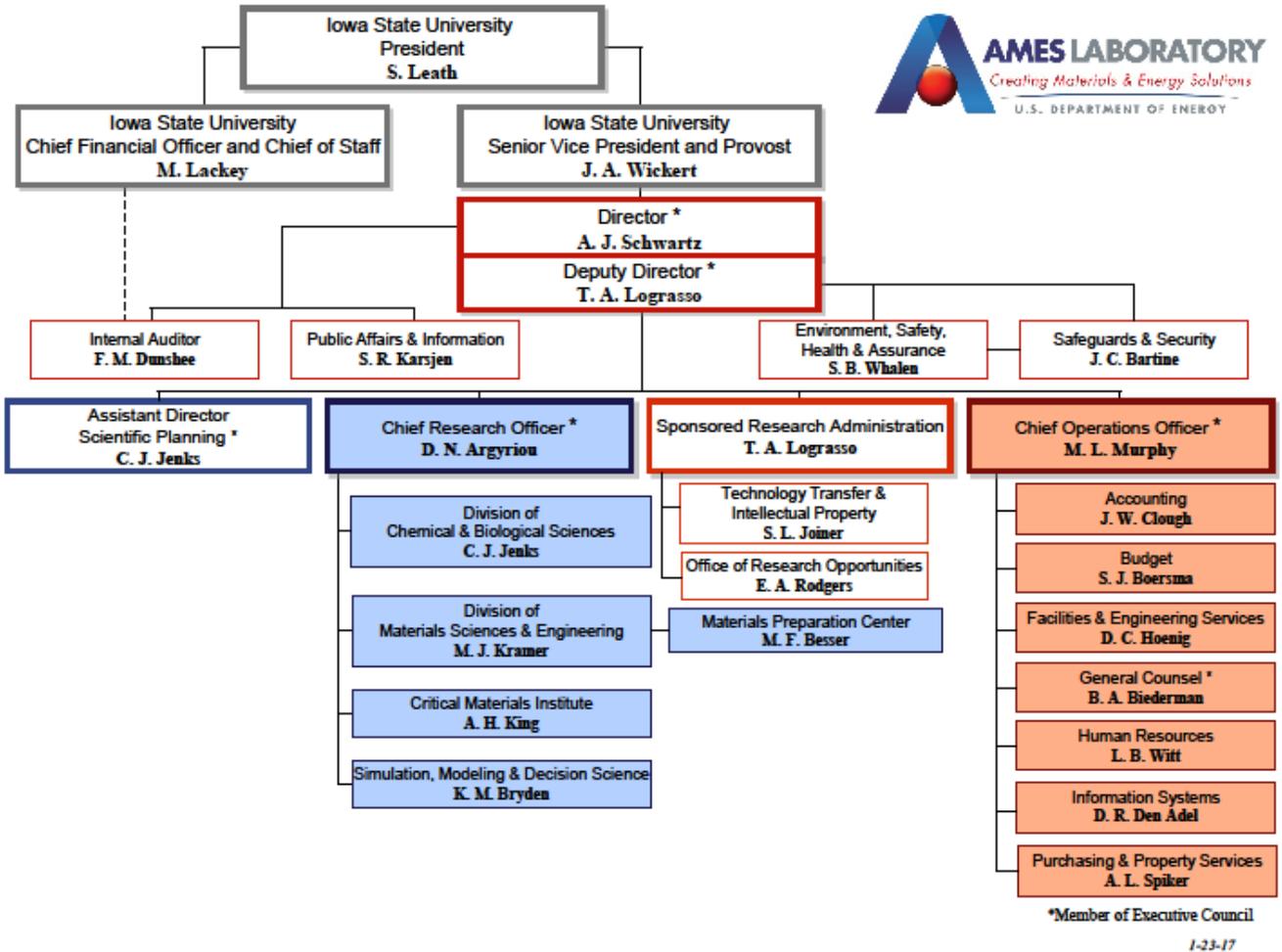


Figure 2.2-1 Organizational Chart

## 2.3 Mission

The Laboratory's mission is to conduct fundamental research in the physical, chemical, materials, and mathematical sciences and physics, which underlie energy generating, conversion, transmission and storage technologies, environmental improvement, and other technical areas essential to national needs. These efforts are maintained to contribute to the achievement of the DOE's missions and goals; more specifically, to increase the general level of scientific knowledge and capability, to prepare engineering and physical sciences students for future scientific endeavors, and to initiate nascent technologies and practical applications arising from the Laboratory's scientific programs.

The Laboratory approaches all of its operations with the safety and health of all workers as a constant objective and with genuine concern for the environment and the public. Ames Laboratory does not conduct classified research.

## 2.4 Purpose of Site Environmental Report

The primary purpose of this report is to summarize the performance of Ames Laboratory's environmental programs, present highlights of significant environmental activities, and confirm compliance with environmental regulations and requirements for calendar year 2016. This report is a working requirement of Department of Energy Order 231.1B, *Environment, Safety and Health Reporting*.

## 3.0 **COMPLIANCE SUMMARY**

### 3.1 Calendar Year 2016 Compliance Status

The Laboratory was in compliance with all applicable environmental regulations in 2016.

### 3.2 Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

There were no sites regulated under CERCLA.

Proper public comment periods have been observed for former site restoration activities. The Community Advisory Group (CAG), formed in May 1994, was and is the primary vehicle for public input to these activities. The CAG has been inactive over the past several years. The most recent interaction with CAG members includes a letter regarding the Energy Employees Occupational Illness Compensation Program Act (EEOICPA) and a letter regarding the Laboratory's support of the Special Exposure Cohort Petition for employees who worked at the Laboratory from 1942-1955. EEOICPA's mission is to deliver benefits to eligible employees and former employees of the DOE, its contractors and subcontractors or to certain survivors of such individuals, as provided in the EEOICPA.

### 3.3 Resource Conservation and Recovery Act (RCRA)

All waste generated by Ames Laboratory under the contract with DOE is DOE waste. In 2016, the Laboratory had one active RCRA generator identification number and two inactive generator identification numbers (see the summary table in Section 3.17). Activities associated with the main campus EPA ID number were those of a small quantity generator (SQG). A SQG is defined as generating 100 to 1000 kg/month of non-acutely hazardous waste and/or  $\leq$  1.0 kg/month of acutely hazardous waste.

In calendar year 2016, 1,101 kg of hazardous waste was properly disposed of through a contracted vendor. Figure 3.3-1 shows the RCRA hazardous waste generation over the past several years.

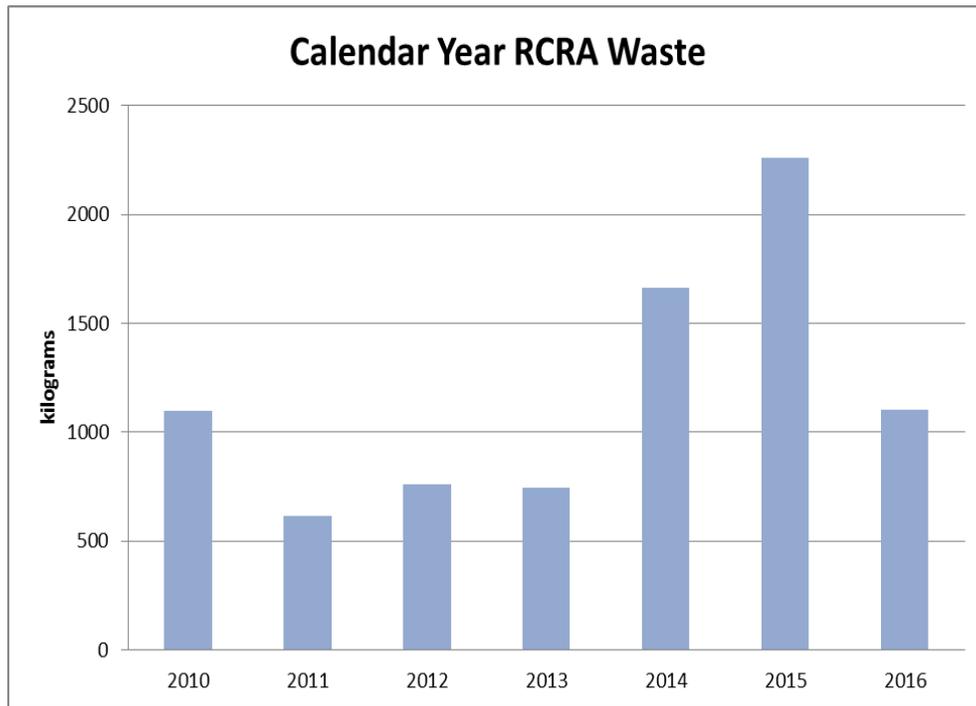


Figure 3.3-1 RCRA Waste Generation

The RCRA generator identification numbers associated with the former Waste Handling Facility (WHF) and the former Chemical Disposal Site (CDS) have been designated by EPA as “non-generator” sites because waste is no longer generated at these sites.

Ames Laboratory is registered with the EPA as a Small Quantity Generator (SQG) of Hazardous Waste. Prior to 2006, the Laboratory was a Large Quantity Generator and was required to submit a biennial report (aka: *Hazardous Waste Report*) of RCRA waste removed from the facility. The report was last completed and submitted to the EPA, in January 2006 for the 2005 calendar year.

The Laboratory generates small amounts of radioactive low-level waste (LLW) from legacy contaminated buildings during renovation activities. Approximately 2-3 cubic meters of LLW are generated each year. There were no LLW shipments in 2016. LLW is shipped offsite for disposal every 5-6 years. The last shipment occurred in July 2012.

The Laboratory disposed of RCRA waste at an out-of-state EPA permitted facility. There were two shipments of RCRA hazardous waste in 2016.

Sanitary waste is disposed of through the University’s sanitary sewer system which is treated at the City of Ames’ wastewater treatment plant. Solid waste is sent to the City of Ames Resource Recovery Plant for processing and energy recovery.

The Laboratory had no underground storage tanks (USTs) in 2016. One aboveground, double walled diesel tank with interstitial leak detection is in place for two backup generators. There were no leaks or container integrity problems noted in the tank’s monthly inspections in 2016.

### 3.4 Federal Facilities Compliance Act (FFCA)

The FFCA is part of 42 USC 6901 and amends a part of RCRA. FFCA requires the preparation of site treatment plans for the handling of mixed wastes. EPA approved the Ames Laboratory Site Treatment Plan (STP) in January 1996.

Any newly generated mixed waste is handled and disposed of according to EPA, State, and local regulations and DOE Orders.

### 3.5 National Environmental Policy Act (NEPA)

All research activities in 2016 were covered under the Laboratory's site-wide Categorical Exclusion (CX) for "Indoor Bench-Scale Research Projects and Conventional Laboratory Operations". Routine facility upgrades and renovations are covered under the Laboratory's site-wide CX; "Renovations and maintenance activities for buildings, structures, infrastructures and equipment". Both exclusions were submitted to DOE-AMSO for approval and are valid through June 3, 2018. These "site-wide" CXs eliminate unnecessary documentation but still uphold the integrity of NEPA. Categorical exclusions are classes of actions that DOE (10 CFR 1021 Subpart D, App. B) has determined do not individually or cumulatively have a significant effect on the environment and do not require the preparation of either an environmental assessment or an environmental impact statement. The newly completed Sensitive Instrument Facility (SIF) underwent a NEPA review and was determined to be excluded from further NEPA review as it meets the requirements for Categorical Exclusion B3.6 of 10 CFR part 1021. An archaeological consulting firm was hired to conduct an archaeological survey of the land where the proposed SIF was constructed. The survey was required to fulfill the requirements of section 106 of the National Historic Preservation Act. The survey found no archaeological sites in the project (SIF) area. The survey report was sent to the State Historical Preservation Officer (SHPO) as required by section 106 of the National Historic Preservation Act. No further action was required by the SHPO.

### 3.6 Clean Air Act (CAA) and National Emissions Standards for Hazardous Air Pollutants (NESHAPs)

U.S. EPA Region VII has delegated CAA authority to the State of Iowa Department of Natural Resources (IDNR). The IDNR issued an official ruling for Ames Laboratory on July 18, 1994, stating that no permitting and no monitoring is required for the Laboratory's fume hoods.

The Laboratory maintains two construction air permits which were issued by the IDNR in December 1996. These are for the paint booth and sand blaster. The Laboratory also has ten exempt air emission sources (See Section 3.17 for a summary of permits).

Asbestos containing materials (ACM) are removed and handled according to applicable asbestos NESHAP regulations (40 CFR 61 subpart M). Annually, notifications are sent to the IDNR for estimated small abatement and demolition projects in association with routine maintenance and revisions are submitted when necessary.

The Laboratory was in compliance with all CAA requirements, including the NESHAP regulations for radionuclide emissions from DOE facilities. The Laboratory used small quantities of chemicals and radioactive materials for laboratory bench-top research and development activities in 2016. The Laboratory did not have any air emissions in 2016 that could have exposed the public to radioactivity (See correspondences in APPENDIX A).

### 3.7 Clean Water Act (CWA)

Ames Laboratory does not have any point sources of effluents requiring National Pollutant Discharge Elimination System (NPDES) permits. The Laboratory discharges wastewater to the ISU sanitary sewer system, which discharges into the City of Ames sanitary sewer system. The City of Ames has an NPDES permit. The City of Ames has an agreement for wastewater pre-treatment with ISU, which includes Ames Laboratory's wastewater. Both the City of Ames and ISU sampled the University's wastewater effluent using EPA protocols and methods in 2016 as part of this agreement. The Laboratory discharged approximately 2,609,730 gallons of wastewater to ISU's sanitary sewer system in 2015. Wastewater trends are summarized in Figure 3.7-1.

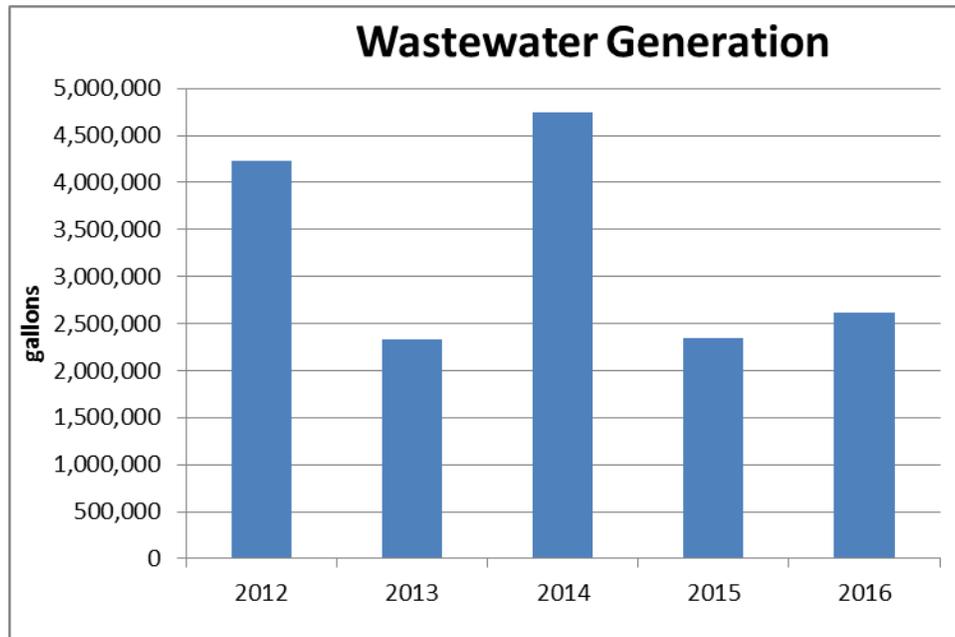


Figure 3.7-1, Wastewater Generation

Under 40 CFR Part 112, the Laboratory is required to have a Spill Prevention, Control and Countermeasure (SPCC) Plan as the Laboratory's storage (2,864 gallons) exceeds the 1,320 gallon storage capacity threshold for oil storage. The Laboratory's Plan is part of Iowa State University's overall Plan. The SPCC Plan documents how the Laboratory prevents potential oil spills/releases from entering navigable waters and the environment. Preventions include, but are not limited to, monthly inspections of qualified oil filled equipment and training to applicable employees.

DOE buildings are on land leased from ISU, the ISU storm-water permit (MS4s) covers Ames Laboratory activities.

### 3.8 Safe Drinking Water Act (SDWA)

Drinking water for the Laboratory is supplied by the City of Ames public water system through the University's water mains. The Ames public water system is tested by the city to verify SDWA standards are being met. The Laboratory used 2,609,730 gallons of potable water in 2016.

Ames Laboratory drinking fountains are sampled for lead by Ames Laboratory Facilities and Engineering Services. Fountains were sampled for lead in 2014. Historical data

shows no evidence of lead in drinking water. Drinking water is sampled every three years. Results are summarized in Table 3.8-1.

**Table 3.8-1, Drinking Fountain Analysis for Lead**

Building Location	2002 (mg/L)	2003 (mg/L)	2005 (mg/L)	2008 (mg/L)	2011 (mg/L)	2014 (mg/L)
Spedding Hall, ground floor east hallway	<0.005	<0.005	<0.005	No test	<0.0005	No test
Spedding Hall, ground floor west hallway	No test	No test	No test	<0.001	No test	<0.0005
Wilhelm Hall, 3rd floor east hallway	< 0.005	<0.005	<0.005	<0.001	<0.002	<0.001
Metals Development, room 158	< 0.005	<0.005	<0.005	<0.001	<0.0005	<0.0005

\* The regulatory limit for lead is 0.015 mg/L.

3.9 Superfund Amendments and Reauthorization Act (SARA) Title III and Iowa Administrative Code (IAC), Rule 567, Chapter 131, Spill Response

SARA Title III created the Emergency Planning & Community Right to Know Act (EPCRA), a statute designed to improve community access to information about community hazards and to facilitate the development of chemical emergency response plans by state/tribe and local governments. The Laboratory was required to report sulfuric acid from lead acid batteries used in fork trucks and UPSs due to quantities exceeding the 500 pound threshold reporting limit, under EPCRA Section 12 Laboratory research chemicals are exempt from EPCRA Sections 302-303, 311-312 and 313. The Laboratory did not store any research-related chemicals in excess or near EPCRA threshold limits in 2016. The Laboratory maintains memoranda of understanding (MOUs) with the Iowa State University Department of Public Safety and the City of Ames Fire Department for emergency and hazardous material situations. Copies of MOUs are located in the Ames Laboratory Emergency Plan (Plan 46300.001). The Laboratory was not required to report under EPCRA Section 304 as there were no reportable releases in 2016.

Releases to the environment are reported to the Iowa Department of Natural Resources (IDNR) in accordance with the IAC, Rule 567, Chapter 131. Spills/releases are cleaned up in accordance with the IAC, Rule 567, Chapter 133. There is no minimum reportable quantity under Chapter 131. There were no reportable spills or releases in 2016. Reportable spills, releases and occurrences are entered in DOE's Occurrence Reporting and Processing System (ORPS) as prescribed in DOE Manual 231.1-2. The Laboratory also reports any "reportable" spills/releases to DOE-AMSO.

**Table 3.9-1, Status of EPCRA Reporting**

<b><i>EPCRA Section</i></b>	<b><i>Description of Reporting</i></b>	<b><i>Status</i></b>
EPCRA Sec. 302-303	Planning Notification	Not Required
EPCRA Sec. 304	EHS Release Notification	Not Required
EPCRA Sec. 311-312	MSDS/Chemical Inventory	Required for sulfuric acid in batteries/ Voluntarily reporting for research chemicals
EPCRA Sec. 313	TRI Reporting	Not Required

### 3.10 Toxic Substances Control Act (TSCA)

The Laboratory complies with the State of Iowa Solid Waste Disposal Rule #102.14 and 40 CFR 61, Subpart M (asbestos NESHAP) when disposing of ACM. ACM quantities are dependent upon the amount of renovation activities involving removal of floor tile, fume hoods, and pipe insulation. Several fume hoods were disposed of during CY2016 as is reflected in Figure 3.10-1, which shows ACM quantities shipped for disposal over the past six years.



Figure 3.10-1 Asbestos Containing Material Disposal

The Laboratory disposed of one oil filled transformer during 2016. The fluid contained was sampled in December of 2015 and determined to contain 86.6ppm making it a PCB Contaminated Transformer for a total disposal weight of 1,938kg. Figure 3.10-2 shows amounts of PCB waste over the past six years.

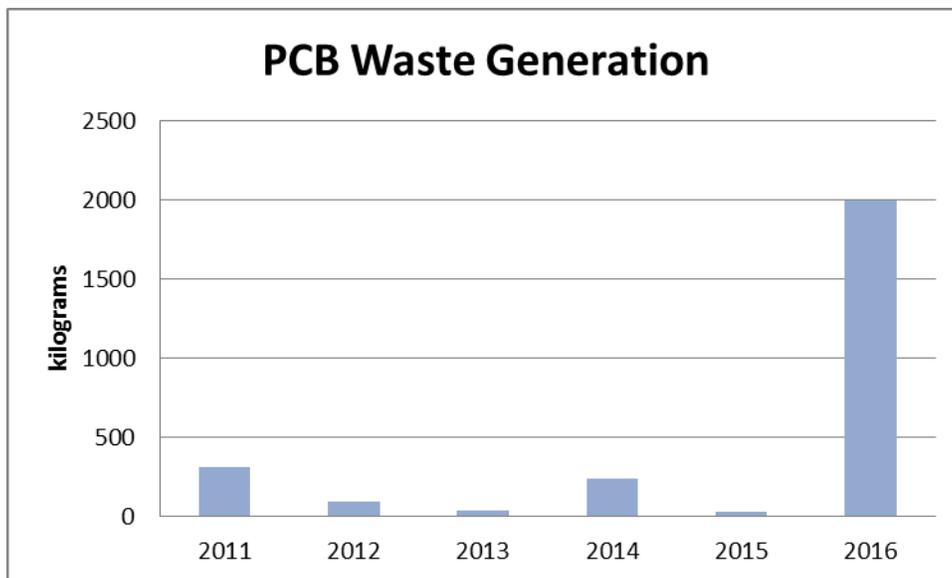


Figure 3.10-2 PCB Waste Generation

### 3.11 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

Ames Laboratory does not purchase or use pesticides regulated by FIFRA. Pesticide spraying is done in portions of buildings by a licensed applicator using approved chemicals.

### 3.12 Endangered Species Act (ESA)

The Indiana Bat, is a state and federally listed endangered species found throughout story county, including on or near Ames controlled areas; however this is not a critical habitat.

### 3.13 National Historic Preservation Act (NHPA)

There are nine structures on ISU's campus that are on the state historic register. None of them are associated with Ames Laboratory activities.

DOE-owned buildings at the Ames Laboratory are on land leased to DOE by Iowa State University. A detailed building survey ([\*Historical & Architectural Survey & Evaluation\*](#)) was conducted in June 2009 as required by the National Historic Preservation Act, Section 110. The building survey was conducted by a contracted architectural historian. The *Historical & Architectural Survey & Evaluation* report indicates that three Ames Laboratory buildings could be nominated to the National Historic Registry. DOE, in consultation with the State Historical Preservation Officer (SHPO), determines eligibility for listing on the National Register for Historical Places. At this time the DOE is not pursuing nomination of these three buildings (Spedding Hall, Wilhelm Hall and Metals Development). However, any adverse impact to an eligible building would be mitigated in consultation with the SHPO.

The Ames Laboratory procedure for identifying hazards prior to disposition of excess materials requires that excess items be evaluated for historical significance.

### 3.14 Migratory Bird Treaty Act

There are over 200 bird species that may migrate through Ames, IA. However, there are no activities at Ames Laboratory that impact migratory birds.

### 3.15 Executive Order 11988, "Floodplain Management"

All Laboratory facilities are well outside the 100-year flood line as mapped by the U.S. Geological Survey (USGS) and the Iowa Geological Survey Bureau (GSB). The Laboratory is in full compliance with 10 CFR 1022.

### 3.16 Executive Order 11990, "Protection of Wetlands"

No wetlands are impacted by Ames Laboratory activities. The Laboratory is in full compliance with 10 CFR 1022.

### 3.17 Summary of Environmental Permits

DOE held three waste generator identification numbers for Ames Laboratory in 2016 (see table 3.17.1 below), although two of the sites were inactive. In 2006, the Laboratory was reclassified from Large Quantity Generator (LQG) RCRA status to Small Quantity Generator (SQG) status.

In 2016, Ames Laboratory had two air emission source construction permits and ten exempt sources (see table 3.17.2 below). Ames had no environmental discharge, operational, storage, treatment or disposal permits for gaseous, liquid or solid effluents.

**Table 3.17-1, DOE RCRA Generator Identification Numbers**

RCRA Generator ID #	Type	Ames Laboratory Facility/Area	Expiration
IA6890008950	SQG	Ames Lab #3-DOE (main campus)	None
* IAD984617605	CESQG	Ames Lab #1-DOE (Waste Handling Facility)	None
* IA0000365973	SQG	Ames Lab #2-DOE/ISU (chemical disposal site)	None

\* Both sites have been designated by the EPA as “non-generators”.

**Table 3.17-2, Ames Laboratory Air Emission Sources**

Description	Permit Number	Location	Regulatory Citation
Paint Spray Booth – Construction Permit	96-A-1282	Paint Booth	567 IAC 22.3 and IAC 23.4(13)
Sand Blaster – Construction Permit	96-A-1283	Mechanical Maintenance Building	567 IAC 22.3 and IAC 23.4(6)
Graphite Lathe – Exempt	NA	Metals Development Building	567 IAC 22.1(2)u
Graphics Spray Booth – Exempt	NA	TASF – 132	567 IAC 22.1(2)o
Dust Collector – Exempt	NA	Wood Shops	567 IAC 22.1(2)u
Compactor – Small Unit Exemption	NA	Mechanical Maintenance Building – RWA	567 IAC 22.1(2)w(l)
Engineering Services Shop Exhaust – Exempt	NA	Metals Development Building – 160	567 IAC 22.1(2)u
Engineering Services Shop Welders – Exempt	NA	Metals Development Building – 160	567 IAC 22.1(2)p
Diesel Generators – Exempt	NA	Wilhelm Hall, SIF	567 IAC 22.1(2)r
Canopy Hood in Paint Shop – Small Unit Exemption	NA	Paint Shop	567 IAC 22.1(2)w(1)
Laboratory Fume Hoods – Exempt	NA	SPH, HWH, MD	567 IAC 22.1(2)s

## 4.0 ENVIRONMENTAL PROGRAM

### 4.1 Environmental Management System

In 2009, the Laboratory self-declared that its Environmental Management System (EMS) was in compliance with DOE O 450.1A, and most recently the EMS conforms to elements of the ISO14001:2004 standard and DOE O 436.1. To ensure conformity, the Laboratory undergoes an external DOE audit every three years. The EMS is also incorporated into the Laboratory’s Integrated Safety Management System (ISMS). The ISMS consists of systems, programs, plans, policies, and processes that include protection of the environment, pollution prevention and compliance. Examples include, but are not limited to, readiness review, training, program walkthroughs, and adherence to the National Environmental Protection Act (NEPA).

#### 4.1.1 EMS Effectiveness

The Laboratory's environmental aspects have not drastically changed over the past several years, and with the integration of the EMS into the Laboratory's ISMS there are mechanisms in place to detect new environmental aspects and impacts. The Laboratory has an Environmental Management System Steering Committee that consists of researchers, safety personnel, facilities personnel, and transportation and procurement personnel. This committee is tasked with recommending targets and objectives to the Laboratory's Executive Council. These recommendations help meet DOE sustainability goals and other Laboratory EMS goals. Approved recommendations are tracked in the Ames Laboratory Corrective Action Tracking System (ALCATS) for completion. The Laboratory achieved a 2016 goal of publishing a chemical redistribution inventory within the Laboratory wide chemical inventory system to encourage use of surplus chemicals within the organization. The committee has identified longer term goals that remain ongoing initiatives.

The Laboratory's EMS was last reviewed by DOE-CH in February, 2015. The Laboratory maintains a strong recycling program and culture and strives to help meet DOE sustainability goals. The review team identified two minor nonconformities based on the requirements of DOE O 436.1, Departmental Sustainability, as well as four opportunities for improvement. The nonconformities were addressed through corrective actions that have been completed and the identified opportunities for improvement have been integrated into the EMS.

#### 4.2 Pollution Awareness, Waste Minimization and Recycling Programs

As indicated in prior Site Environmental Reports, pollution prevention awareness, waste minimization and recycling programs have been in practice since 1990, with improvements implemented most recently in 2015. The plan conforms to Executive Order 13693. Elements of the plan include:

- A statement of management support and commitment.
- A waste minimization policy for the Laboratory.
- Goals.
- Waste minimization and recycling activities.
- Employee awareness.
- Environmentally Preferred Purchasing.

The Laboratory engaged in waste minimization activities in 2016. These activities helped reduce the quantities of non-hazardous and hazardous wastes generated by recycling:

- Steel and scrap metal
- Styrofoam peanuts
- Fluorescent bulbs
- CRTs
- Batteries
- Corrugated Cardboard
- Laboratory glassware
- Toner cartridges
- Newspaper\*
- Food/beverage containers\*
- White and mixed paper\*
- Telephone books\*

\*Marked items have been combined to one-bin recycling for ease of use.

All other non-hazardous waste generated by the Laboratory was collected and transported to the City of Ames' Resource Recovery Plant for processing. Combustible waste is used as fuel in the city's electrical utility power plant.

Waste generation, recycling and environmentally preferred purchasing data are entered every fiscal year into DOE's pollution prevention web based database.

Ames Laboratory's Facilities & Engineering Services is capable of recovering R-12 refrigerants, except from vehicles, and R-22 refrigerants for recycling or disposal. Recovery equipment is registered with EPA Region VII under Number 608. Freon is recycled through the Laboratory's waste disposal vendor.

The Laboratory's [Site Sustainability Plan](#) outlines the Laboratory's commitment to meeting Executive Order 13693 sustainability goals.

#### 4.3 Performance Measures

For calendar year 2016, Ames Laboratory reported to DOE-AMSO through the Laboratory's Performance Evaluation and Measurement Plan on its affirmative procurement performance within a measure entitled, "Provide Efficient and Effective Waste Management, Minimization and Pollution Prevention". The Laboratory strives to purchase EPA-designated items to the maximum extent practicable, and has achieved adequate performance.

### 5.0 ENVIRONMENTAL RADIOLOGICAL PROGRAM

#### 5.1 DOE Order 458.1, "Radiation Protection of the Public and the Environment"

Ames Laboratory has prepared the Environmental Radiation Protection Plan (Plan 10200.041) according to the requirements of DOE O 458.1. The plan demonstrates that the Laboratory has plans, policies and procedures in place to protect the public and the environment against undue risk from radiation associated with DOE radiological activities. There were no detectable or reportable radiological releases to the public or the environment in 2016 (See U.S. Department of Energy Air Emissions Annual Report, Calendar Year 2016 in Appendix B).

#### 5.2 DOE Order 435.1, "Radioactive Waste Management"

The majority of the Laboratory's radioactive waste is generated through renovation activities that occur in DOE buildings. These buildings were contaminated by past activities. All waste generated is low-level waste. The Laboratory has written procedures to manage these radioactive materials.

#### 5.3 Property Release

DOE O 458.1, Radiation Protection of the Public and the Environment, was put into the Laboratory's contract on October 22, 2012. The Environmental Radiation Protection Plan (Plan 10200.041) demonstrates that the Laboratory has plans, policies and procedures in place for monitoring the release of radiological contaminated property according to DOE O 458.1. No real and/or personal property containing residual radioactive material associated with DOE activities was released to the public in 2016.

#### 5.4 Radiation Emissions and Doses

There were no point source releases from the Ames Laboratory complex in 2016. Diffuse source emissions were limited to low-level waste activities and renovation

activities. Emissions from these activities were minimized or eliminated by engineering devices/structures, when necessary (e.g. containment cells with HEPA filtration).

Using the guidance in 40 CFR 61.94, the annual radionuclide NESHAP report was prepared. According to the guidance, and based on the isotope inventory in curies per year used at the Laboratory, air emissions were not required to be monitored. IDNR and Iowa Department of Public Health (IDPH) do not require permits or monitoring for laboratory fume hoods under Chapter 20 IAC 567 22.1(2) (1). However, Appendix D to 40 CFR Part 61 does provide a method for estimating the radionuclide emissions for a year, for reporting purposes, based on the amount of radionuclides in curies used at a facility. Prescribed parameters were used to calculate potential dose equivalent to the public due to estimated radionuclide emissions from the Laboratory (See correspondences in APPENDIX A).

#### 5.5 Unplanned Releases

There were no planned, unplanned or accidental radiological releases from Ames Laboratory in 2016.

#### 5.6 Environmental Monitoring

Ames Laboratory performed no storm water, sanitary sewer water or environmental air sampling in 2016 as there were no activities that warranted monitoring. The City of Ames and ISU sampled the University's wastewater effluent using EPA protocols and methods in 2016 as part of ISU's pretreatment agreement with the City of Ames.

#### 5.7 Areas of Concern

Ames Laboratory, DOE, and ISU have addressed all known contaminated sites in or near the City of Ames. There are no known areas of concern.

##### 5.7.1 Inactive Waste Sites (IWS)

The IDNR has released a total of 12 IWS's (See Correspondence in Appendix B). The status of the sites released follows.

<u>Site</u>	<u>Release Status</u>	<u>Date Released</u>
Old Sewage Plant	Unrestricted use	1995
Grand Avenue Underpass	Unrestricted use	1996
Ames Municipal Cemetery	Unrestricted use	1996
Applied Sciences Complex	Unrestricted use	1996
Block House	Unrestricted use	1996
Little Ankeny Debris	Unrestricted use	1996
Annex I	Approved for current use	1996
Annex II	Approved for current use	1996
Ames Municipal Airport	Approved for current use	1996
Chemical Disposal Site	Unrestricted use	1998
Former Iowa State College Dump Site	Unrestricted use	2001
Fire Service Institute Training Area	Unrestricted use	2002

Additional information regarding these sites can be found in previous [Site Environmental Reports](#), by contacting Ames Laboratory Public Affairs at 515-294-5643, or by visiting the Laboratory's [Web page](#).

## **6.0 ENVIRONMENTAL NON-RADIOLOGICAL PROGRAM**

### **6.1 Emissions Monitoring**

The Laboratory has two air permits (paint booth and a sandblaster) that require mass balance monitoring. An annual log is required for each air permit. Material quantities and duration are included in the log. The log is monitored and reviewed to verify the Laboratory is not exceeding its permitted limits. Limits were not exceeded in 2016.

The Laboratory does not perform any other non-radiological monitoring (i.e. air, water or soil sampling).

## **7.0 GROUNDWATER MONITORING AND PROTECTION**

There are no current Ames Laboratory activities that pose a hazard to groundwater or surface water. The Laboratory has no underground storage tanks. Three DOE owned monitoring wells were plugged and abandoned in June 2005. Currently there is no monitoring of the groundwater and ISU is not required to monitor groundwater on the main campus.

## **8.0 QUALITY ASSURANCE PROGRAMS**

Quality Assurance at Ames Laboratory is implemented through the Quality Assurance Program Plan (Plan 10200.026). This plan outlines the policies, procedures, training and inspection, and testing requirements for equipment and processes within the Laboratory.

Radioactive sources and solutions used to calibrate radiation-detection instrumentation are obtained with quantitative calibration directly traceable to the National Institute of Standards and Technology. Ames Laboratory's quality assurance effort relies on established U.S. EPA, IDNR, IDPH, and DOE regulations, standards and methods. This applies to both radioactive and non-radioactive environmental sampling and analyses.

Ames Laboratory's air quality assurance procedure consists of maintaining an exhaust hood inventory, maintaining a radiological material balance, tracking chemicals, and waste collection and management. These measures determine if the Laboratory has a source in need of monitoring or permitting, in accordance with IDNR guidance. The Laboratory uses EPA's COMPLY modeling program, when necessary, to produce the annual NESHAP report (See Appendix A).

In 2016, the Laboratory continued to apply its Readiness Review (Procedure, 10200.010) process to new or significantly modified research activities for risk identification, categorization, and ESH review of activities. This review helps prevent and/or control releases of hazardous materials to the environment. It was developed to ensure that an appropriate level of rigor, commensurate to the risk associated with an activity's hazards, is applied to the activity's ESH review. Fifty activities were reviewed and approved in 2016. Approved activities are reviewed on a one, three, or five year cycle based on the hazard level assigned to that activity.

Line management holds Laboratory group leaders responsible for ensuring measuring and test equipment is of the proper type, accuracy, and tolerance to accomplish the specified requirements.

## 9.0 REFERENCES

1. Ames City Manager's Office, demographic information.
2. Ames Laboratory Site Environmental Reports.
3. City of Ames and ISU Pretreatment Agreements #3593-3 and #4093-3.
4. DOE Order 231.1B, Environment, Safety and Health Reporting
5. DOE Order 458.1, Radiation Protection of the Public and the Environment
6. DOE Order 474.2, Nuclear Material Control and Accountability
7. Executive Order 13693, Planning for Federal Sustainability in the Next Decade
8. Characterization Report for the Ames Laboratory Chemical Disposal Site, Iowa State University, September 1998.
9. IATA Dangerous Goods Regulations
10. Iowa Administration Code, Rule 567, Chapters 20-24 and 28, "Air Quality."
11. Iowa Administration Code, Rule 567, Chapter 60, "Wastewater Treatment and Disposal: Definitions, Rules of Practice."
12. Iowa Administration Code, Rule 567, Chapter 61, "Water Quality Standards."
13. Iowa Administration Code, Rule 567, Chapter 100, 101, 109, 118, 119, "Solid Waste Management and Disposal."
14. Iowa Administration Code, Rule 567, Chapter 131, "Notification of Hazardous Conditions."
15. Iowa Administration Code, Rule 567, Chapter 133, "Rules for Determining Cleanup Actions and Responsible Parties."
16. 10 CFR Part 1021, "National Environmental Policy Act Implementation Procedures."
17. 10 CFR Part 835, "Occupational Radiation Protection."
18. 29 CFR Part 1910.120, "Hazardous Waste Operations and Emergency Response."
19. 40 CFR Part 63, "National Emission Standards for Hazardous Air Pollutants for Source Categories."
20. 40 CFR Part 82, "Protection of Stratospheric Ozone."
21. 40 CFR Part 112, "Oil Prevention; Spill Prevention, Controls and Countermeasures."
22. 40 CFR Part 131, "Water Quality Standards."
23. 40 CFR Part 141, "National Primary Drinking Water Regulations."
24. 40 CFR Parts 260-264 (subpart S), 265 and 268, "Hazardous Waste Implementing Rules."
25. 40 CFR Part 279, "Standards for the Management of Used Oil."
26. 40 CFR Part 300, "National Oil and Hazardous Substances Pollution Contingency Plan."
27. 40 CFR Part 302, "Designation, Reportable Quantities and Notification."
28. 40 CFR Part 355, "Emergency Planning and Notification."
29. 40 CFR Part 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing Distribution in Commerce, and Use Prohibitions."
30. Consent Agreement and Consent Order, executed February 27<sup>th</sup>, 1996.

## 10.0 LIST OF ACRONYMS

<b>ALCATS:</b>	Ames Laboratory Corrective Action Tracking System
<b>AMSO:</b>	Ames Site Office
<b>CAA:</b>	Clean Air Act and Amendments
<b>CAG:</b>	Community Advisory Group for Ames Laboratory environmental activities
<b>CDS:</b>	Chemical Disposal Site
<b>CERCLA:</b>	Comprehensive Environmental Response, Compensation and Liability Act
<b>CESQG:</b>	conditionally exempt small quantity generator
<b>CFR:</b>	Code of Federal Regulations
<b>CG:</b>	concentration guide, DOE derived
<b>CH:</b>	Chicago Operations Office of the U.S. Department of Energy
<b>Ci:</b>	Curie, 3.7E10 disintegration's per second
<b>CWA:</b>	Clean Water Act
<b>CX:</b>	categorical exclusion, a class of activities determined to have no environmental impact
<b>DOE:</b>	U.S. Department of Energy
<b>EA:</b>	environmental assessment
<b>EIS:</b>	environmental impact statement
<b>EMR:</b>	environmental management review
<b>EMS:</b>	environmental management system
<b>EPA:</b>	U.S. Environmental Protection Agency
<b>EPCRA:</b>	Emergency Planning and Community Right to Know Act
<b>ERPP:</b>	Environmental Radiological Protection Plan
<b>ESA:</b>	Endangered Species Act
<b>ESH:</b>	Environment, Safety, Health and Assurance office of Ames Laboratory
<b>FFCA:</b>	Federal Facilities Compliance Act
<b>FIFRA:</b>	Federal Insecticide, Fungicide and Rodenticide Act
<b>FS:</b>	feasibility study
<b>FSP:</b>	field sampling plan
<b>GOCO:</b>	a government owned, contractor operated facility
<b>HEPA:</b>	high efficiency particulate air, a filter element or filtration system
<b>HQ:</b>	Headquarters of U.S. Department of Energy
<b>IAC:</b>	Iowa Administration Code
<b>IDNR:</b>	Iowa Department of Natural Resources
<b>IDPH:</b>	Iowa Department of Public Health
<b>ISMS:</b>	Integrated Safety Management System
<b>ISU:</b>	Iowa State University
<b>IWS:</b>	inactive waste site
<b>LDR:</b>	land disposal restriction
<b>LQG:</b>	large quantity generator
<b>MCL:</b>	maximum contaminant level

<b>mg/L:</b>	milligrams per liter; equivalent to ppm
<b>mrem:</b>	millirem
<b>MS4s:</b>	Municipal Separate Storm Sewer Systems
<b>mSv:</b>	millisievert, $10^{-3}$ Sieverts
<b>NEPA:</b>	National Environmental Policy Act
<b>NESHAP:</b>	National Emission Standards for Hazardous Air Pollutants
<b>NHPA:</b>	National Historic Preservation Act
<b>NOV:</b>	notice of violation
<b>NPDES:</b>	National Pollutant Discharge Elimination System
<b>NRC:</b>	Nuclear Regulatory Commission
<b>ODS:</b>	ozone depleting substance
<b>PCB:</b>	polychlorinated biphenyls
<b>pCi:</b>	picocurie, $10^{-12}$ Curies
<b>PIDS:</b>	performance indicator database system
<b>QA:</b>	quality assurance
<b>QAP:</b>	Quality Assessment Program, DOE
<b>RCRA:</b>	Resource Conservation Recovery Act
<b>Rem:</b>	Roentgen equivalent man, radiation dose
<b>RESRAD:</b>	residual radiation model for sites
<b>RI:</b>	remedial investigation
<b>RPP:</b>	Radiological Protection Plan, for Ames Laboratory
<b>SARA:</b>	Superfund Amendments and Reauthorization Act
<b>SDWA:</b>	Safe Drinking Water Act
<b>SER:</b>	Site Environmental Report
<b>SHPO</b>	State Historical Protection Officer
<b>TASF:</b>	Technical and Administrative Support Facility, the Ames Laboratory office building
<b>TCLP:</b>	Toxicity Characteristic Leaching Procedure
<b>TPQ:</b>	threshold-planning quantity
<b>TRU:</b>	transuranic waste
<b>TSCA:</b>	Toxic Substances Control Act
<b>WAS:</b>	work authorization system of Ames Laboratory

## 11.0 REPORT DISTRIBUTION

### Organization

Ms. Cynthia Baebler, Manager  
Ames Site Office  
9800 South Cass Avenue  
Argonne, IL 60439  
[Cynthia.baebler@ch.doe.gov](mailto:Cynthia.baebler@ch.doe.gov)

Ms. Jennifer Harling, Chief Counsel  
Office of Chief Counsel  
DOE Chicago Office  
9800 South Cass Avenue  
Argonne, IL 60439  
[jennifer.harling@science.doe.gov](mailto:jennifer.harling@science.doe.gov)

Mr. Matthew Moury, Associate Under Secretary for Environment, Health, Safety and Security Office of Environment, Health, Safety and Security (AU-1)  
1000 Independence Ave, SW  
Washington, DC 20585  
[Matthew.Moury@hq.doe.gov](mailto:Matthew.Moury@hq.doe.gov)

Mr. Andrew Lawrence, Deputy Associate Under Secretary for Environment, Health, Safety and Security Office of Environment, Health, Safety and Security (AU-1)  
1000 Independence Ave, SW  
Washington, DC 20585  
[Andrew.Lawrence@hq.doe.gov](mailto:Andrew.Lawrence@hq.doe.gov)

Mr. Michael "Josh" Silverman, Acting Director for Office of Environmental Protection and ES&H Reporting  
Office of Environmental Protection and ES&H Reporting (AU-20)  
1000 Independence Ave, SW  
Washington, DC 20585  
[Josh.Silverman@hq.doe.gov](mailto:Josh.Silverman@hq.doe.gov)

Ms. Colette Broussard, Director for Office of ES&H Reporting and Analysis  
Office of ES&H Reporting and Analysis (AU-23)  
1000 Independence Ave, SW  
Washington, DC 20585  
[Colette.Broussard@hq.doe.gov](mailto:Colette.Broussard@hq.doe.gov)

Rosario "Ross" Natoli, Environmental Protection Specialist  
Office of ES&H Reporting and Analysis (AU-23)  
1000 Independence Ave, SW  
Washington, DC 20585  
[Ross.Natoli@hq.doe.gov](mailto:Ross.Natoli@hq.doe.gov)

Dr. Colleen Ostrowski, Environmental Protection Specialist  
Office of Public Radiation Protection (AU-22)  
1000 Independence Ave, SW  
Washington, DC 20585  
[Colleen.Ostrowski@hq.doe.gov](mailto:Colleen.Ostrowski@hq.doe.gov)

Mr. Gene Gunn, Chief  
FFSEsUPR  
USEPA Region VII  
901 North Fifth Street  
Kansas City, KS 66101  
[Gunn.gene@epa.gov](mailto:Gunn.gene@epa.gov)

Ms. Rebecca Weber  
Director, Air and Waste Management Division  
USEPA Region 7  
*Mail Code: AWMD*  
11201 Renner Blvd.  
Lenexa, KS 66219  
[Weber.rebecca@epa.gov](mailto:Weber.rebecca@epa.gov)

Ms. Angela Leek, Chief  
Iowa Department of Public Health  
Bureau of Radiological Health  
Lucas State Office Building  
321 East 12<sup>th</sup> Street  
Des Moines, IA 50319-0075  
[angela.leek@idph.iowa.gov](mailto:angela.leek@idph.iowa.gov)

Dr. David Inyang, Director  
Environmental Health and Safety  
1122 EHSSB  
Iowa State University  
Ames, IA 50011-3660  
[adinyan@iastate.edu](mailto:adinyan@iastate.edu)

Senator Charles Grassley  
135 Hart Senate Office Building  
Washington, DC 20510-0001

Senator Joni Ernst  
111 Russell Senate Office Building  
Washington, D.C. 20510

Representative Steve King  
2210 Rayburn Office Building  
Washington, DC 20515

State Senator Herman Quirnbach  
Senate Chambers  
State House  
Des Moines, IA 50319-0001  
[Herman.quirnbach@legis.state.ia.us](mailto:Herman.quirnbach@legis.state.ia.us)

State Representative Lisa Heddens  
State Capital  
Des Moines, IA 50319  
[lisa.heddens@legis.state.ia.us](mailto:lisa.heddens@legis.state.ia.us)

**Ames Laboratory Community Advisory Group:**

Mr. Robert (Toby) Ewing  
1411 Summit Avenue  
Ames, IA 50010

Mr. Joe Lynch  
3700 Onion Creek Lane  
Ames, IA 50014

**Ames Laboratory Management and Discipline Specialists:**

Laboratory Director, Dr. Adam Schwartz, [ajschwartz@ameslab.gov](mailto:ajschwartz@ameslab.gov)

Deputy Director, Dr. Thomas Lograsso, [lograsso@ameslab.gov](mailto:lograsso@ameslab.gov)

Chief Research Officer, Dr. Dimitri Argryiou, [argryiou@ameslab.gov](mailto:argryiou@ameslab.gov)

Chief Operations Officer, Mr. Mark Murphy, [murphy@ameslab.gov](mailto:murphy@ameslab.gov)

Information Officer, Mr. Steve Karsjen, [karsjen@ameslab.gov](mailto:karsjen@ameslab.gov)

Intellectual Property and Technical Information, Ms. Stacy Joiner, [joiner@ameslab.gov](mailto:joiner@ameslab.gov)

ESH Manager, Mr. Sean Whalen, [sbwhale@ameslab.gov](mailto:sbwhale@ameslab.gov)

ESH Assistant Manager, Mr. Shawn Nelson, [nelsons@ameslab.gov](mailto:nelsons@ameslab.gov)

Environmental Specialist, Mrs. Sarah Morris-Benavides, [sarahmb@ameslab.gov](mailto:sarahmb@ameslab.gov)

Radiation Safety Officer, Mr. Mike McGuigan, [m McGuigan@ameslab.gov](mailto:m McGuigan@ameslab.gov)

Training Coordinator, Mrs. Hiliary Burns, [hburns@ameslab.gov](mailto:hburns@ameslab.gov)

Documents & Quality Assurance Coordinator, Ms. Molly Granseth, [mgranseth@ameslab.gov](mailto:mgranseth@ameslab.gov)

**APPENDIX A**  
**Air Permit Correspondences**

- 1. U.S. Department of Energy Air Emissions Annual Report, Calendar Year 2016**



Ames Laboratory

*Creating Materials & Energy Solutions*

U.S. DEPARTMENT OF ENERGY

**U.S. Department of Energy  
Air Emissions Annual Report  
Calendar Year 2016**

**SECTION I**

Facility Information

Site Name: Ames Laboratory, Iowa State University

Operations Office: Chicago Operations

Address: 9800 South Cass Avenue  
Argonne, IL 60439

Contact: Bruce Goplin Phone: 515-294-8037

Site Operator: Iowa State University

Site Address: G40 TASF, Iowa State University  
Ames, IA 50011

Contact: Sarah Morris-Benavides Phone: 515-294-2153

Site Description:

The Ames Laboratory is located on the campus of Iowa State University (ISU) in Ames, Iowa. The Ames Laboratory is operated by ISU for the Department of Energy (DOE) under contract No. DE-AC02-07CH11358 in 2016. There are thirteen buildings owned by the DOE. The Ames Laboratory conducts basic and intermediate applied research in chemical, physical, mathematical, and engineering sciences that underlie energy technologies and other areas of national importance.



Ames Laboratory

Creating Materials & Energy Solutions

U.S. DEPARTMENT OF ENERGY

## SECTION II

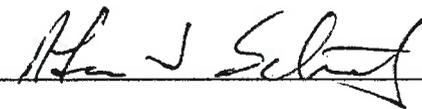
### Methods for Dose Assessment/Air Emissions Data

- 1) There were no activities resulting in radioactive air emissions from Ames Laboratory activities during Calendar Year 2016 based on a review of research and operations.
- 2) Ames Laboratory does not have a registered radioactive air emissions unit.
- 3) Ames' limited annual possession quantities are less than 40 CFR Part 61 Appendix E limits which demonstrates compliance with the 10 mrem/yr dose standard for the general public.

### CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment. (See, 18 U.S.C. 1001).

Name: Dr. Adam Schwartz Title: Director, Ames Laboratory

Signature:  Date: 1-5-16 <sup>17</sup> <sup>SAS</sup>

**APPENDIX B**  
**Inactive Waste Site Correspondences**

- 1. Letter from IDPH, Closure of nine sites, January 11, 1996**
- 2. Letter from IDPH granting “unrestricted” release of the CDS, October 15, 1998**
- 3. Letter from IDPH, Closure of the Former Iowa State College Dump Site, September 17, 2001**
- 4. Letter from IDPH, Closure of the Fire Service Institute Training Area, February 26, 2002**



TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF PUBLIC HEALTH  
CHRISTOPHER G. ATCHISON, DIRECTOR

January 11, 1996

Warren R. Madden  
Vice President for Business and Finance  
Iowa State University  
125 Beardshear Hall  
Ames, Iowa 50011-2038

Dear Mr. Madden:

Reference is made to your letter of January 5, 1996 in which you request our concurrence on the status of nine inactive waste sites which we possibly contaminated with radioactive materials as a result of the operation of Ames Laboratory as a DOE contractor in the past. Listed below are the sites by name and our conclusions as to the status of the site regarding closure.

1. Ames Old Waste Water Treatment Facility (WWTF): Met criteria for unrestricted use per Department letters to the city of Ames dated June 16, 1994 and February 17, 1995.
2. Grand Avenue Under Pass: Based on the data provided by DOE, ISU and data collected by this Department this area meets the criteria for unrestricted use. In fact, there is information which indicates that this area never was subjected to the spreading of contaminated sludge from the WWTF.
3. Ames Municipal Cemetery: Based on the data provided by DOE, ISU and data collected by this Department this area meets the criteria for unrestricted use. In fact, there is information which indicates that this area never was subjected to the spreading of contaminated sludge from the WWTF.
4. Applied Science Center: Based on the data provided by DOE, ISU and data collected by this Department, this area meets the criteria for unrestricted use.
5. Block House Area : Based on the data provided by DOE, ISU and data collected by this Department, this area meets the criteria for unrestricted use.
6. Little Ankeny Debris Site: Based on the data provided by DOE, ISU and data collected by this Department, this area meets the criteria for unrestricted use.
7. Annex I: Based on the data provided by DOE, ISU and data collected by this Department, this area can be used as it is now, in perpetuity, without public health concerns. However, if the site is developed for any other purpose additional surveys or sampling will be necessary to confirm that if residual radioactive material exists it is not in amounts which could be of public health concern during the developmental process.
8. Annex II: : Based on the data provided by DOE, ISU and data collected by this Department, this area can be used as it is now, in perpetuity, without public health concerns. However, if the site is developed for any other purpose additional surveys or sampling will be necessary to confirm that if residual radioactive material exists it is not in amounts which could be of public health concern during the developmental process.

LUCAS STATE OFFICE BUILDING / DES MOINES, IOWA 50319-0075 / 515-281-5787  
FAX # (515) 281-4958 / TDD-DEAF SERVICES #(515) 242-6156

Page 2  
Madden, Warren R.  
January 11, 1996

9. Ames Municipal Airport: Based on the data provided by DOE, ISU and data collected by this Department, this area can be used as it is now, in perpetuity, without public health concerns. However, if the site is developed for any other purpose additional surveys or sampling will be necessary to confirm that if residual radioactive material exists it is not in amounts which could be of public health concern during the developmental process.

Based on the above, it is my opinion that we concur with the University's decision to bring the nine sites to closure with the special provisions placed on Annex I, II and the Airport. I would like to take this opportunity to thank you, the ISU Staff and the Ames Laboratory Staff who have assisted in working through the long laborious process of reading the conclusions. We certainly look forward to working with all of you in the future. If you have question regarding the above, please do not hesitate to contact me.

Sincerely,



Donald A. Flater, Chief  
Bureau of Radiological Health  
(515) 281-3478

cc: E. Sobottka, ISU  
Tom Newman, City of Ames  
Dr. Tom Barton, Ames Laboratory

j:\rad-admin\madden.doc



TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF PUBLIC HEALTH  
CHRISTOPHER G. ATCHISON, DIRECTOR

October 15, 1998

Emery Sobotka  
Iowa State University  
118 Agronomy Laboratory  
Ames, Iowa 50011-3200

Dear Mr. Sobotka:

This correspondence refers to the "Characterization Report for the Ames Laboratory Chemical Disposal Site—Iowa State University." You submitted that report to us under cover of your letter dated September 30, 1998.

We have read and reviewed the report and analyzed the data. We agree with your conclusions and recommendations.

The site, known as the Ames Laboratory Chemical Disposal Site, meets the standards for unrestricted use. Additionally, we concur with your recommendation that the groundwater sampling frequency be reduced to annual. This sampling will continue until 2002.

If you have any questions or comments, please call Dan McGhee or me at (515)281-7007.

Sincerely,

Donald A. Fiater, Chief  
Bureau of Radiological Health

J:\aram\chemdisp\final report resp.doc

LUCAS STATE OFFICE BUILDING / 321 E. 12TH ST. / DES MOINES, IOWA 50319-0075  
DEAF RELAY (HEARING OR SPEECH IMPAIRED) 1-800-735-2942 / INTERNET: [HTTP://IDPH.STATE.IA.US/](http://idph.state.ia.us/)

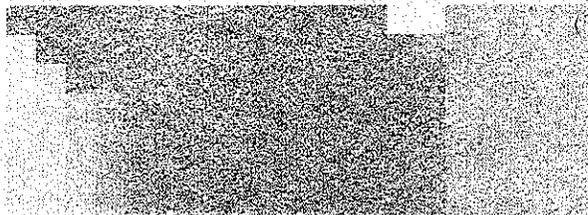
FAMILY & COMM. HEALTH

HEALTH PROTECTION  
515-281-5223

PLANNING & ADMINISTRATION  
515-281-5787

SUBSTANCE ABUSE & HEALTH PROMOTION  
515-281-3641

DIRECTOR'S OFFICE  
515-281-5604





# STATE OF IOWA

THOMAS J. VILSACK  
GOVERNOR

SALLY J. PEDERSON  
LT. GOVERNOR

DEPARTMENT OF PUBLIC HEALTH  
STEPHEN C. GLEASON, D.O., DIRECTOR

September 17, 2001

David Inyang, Ph.D., RSO  
Iowa State University  
118 Agronomy Lab.  
Ames, Iowa 50011

Dear Dr. Inyang:

This correspondence refers to your letter to me dated August 22, 2001. In that letter you enclosed a report entitled, "Review and Assessment of the Former Iowa State College Dump Site." This report detailed the actions taken to assess the radiological hazard at that site. Your letter requested that we review and comment on the report.

The report references and analyzes the results of soil sampling at the former dumpsite. We have reviewed this data and your conclusions. We agree that the data does show that the former Iowa State College Dump Site meets the standards for unrestricted use.

We wish to remind you that our conclusions speak only to radiological standards and do not address heavy metals or organic compounds.

If you have any questions, please contact Dan McGhee at 515-725-0305 or me.

Sincerely,

Donald A. Flater, Chief  
Bureau of Radiological Health  
(515) 281-3478

401 SW 7<sup>th</sup> STREET, SUITE D / DES MOINES, IOWA 50309-4611  
DEAF RELAY (HEARING OR SPEECH IMPAIRED) 1-800-735-2942 / INTERNET: [HTTP://IDPH.STATE.IA.US/](http://idph.state.ia.us/)

DIRECTOR'S OFFICE 515-281-5605 FAX/515-281-4958	EXECUTIVE STAFF 515-281-5604 FAX/515-281-4958	DIV. OF ADMINISTRATION & REGULATORY AFFAIRS 515-281-5784 FAX/515-281-4958	DIV. OF ENVIRONMENTAL HEALTH 515-281-5784 FAX/515-281-4958
DIV. OF FAMILY & COMMUNITY HEALTH	DIV. OF HEALTH PROMOTION, PREVENTION & ADDICTIVE BEHAVIORS 515-281-3641	DIV. OF TOBACCO USE PREVENTION & CONTROL 515-281-6225	

DES MOINES  
NUCE IDPH Correspond



STATE OF IOWA

THOMAS J VILSACK  
GOVERNOR

DEPARTMENT OF PUBLIC HEALTH-  
STEPHEN C GLEASON D.O. DIRECTOR

SALLY J PEDERSON  
LT GOVERNOR

February 26, 2002

David Inyang, Ph D  
Director, Environmental Health and Safety  
Iowa State University  
118 Agronomy Lab  
Ames, Iowa 50011-3200

RE Release of site for unrestricted use

Dear Dr Inyang

This correspondence refers to your letter, dated February 20, 2002, to me. In that letter you transmitted the "Final Status Survey Report for Fire Service Institute Training Area Iowa State University." You also requested "the site be released for unrestricted use."

We have reviewed the report and agree with your conclusion that the site meets the standards for unrestricted use. You may refer to these standards in the Iowa Administrative Code 641-40 29(136C). We cannot, however, "release" this site because it was never restricted. We reiterate, though, that the data demonstrates compliance with unrestricted use.

If you have any questions, please contact Dan McGhee at 515-725-0305 or me

Sincerely,

Donald A. Flater, Chief  
Bureau of Radiological Health  
515-281-3478  
515-725-0318 - FAX  
[dflater@idph.state.ia.us](mailto:dflater@idph.state.ia.us)

DAF/rk

LUCAS STATE OFFICE BUILDING / 321 E 12TH ST / DES MOINES IOWA 50319-0075  
DEAF RELAY (HEARING OR SPEECH IMPAIRED) 1 800-735 2942 / INTERNET [HTTP://WWW.IDPH.STATE.IA.US/](http://www.idph.state.ia.us/)

DIRECTOR'S OFFICE  
515-281-5605  
FAX/515-281-4958

DIV. OF ADMINISTRATION  
515-281-5604  
FAX/515-281-4958

DIV. OF COMMUNITY HEALTH  
515-281-8535  
FAX/515-242-6384

DIV. OF HEALTH PROTECTION & ENVIRONMENTAL HEALTH  
515-281-7725  
FAX/515-281-4529

DIV. OF HEALTH PROMOTION, PREVENTION & ADDICTIVE BEHAVIORS  
515-281-3841  
FAX/515-281-4535

DIV. OF TOBACCO USE PREVENTION & CONTROL  
515-281-8225  
FAX/515-281-8475

Bureau of Radiological Health 401 SW 7th Street, Suite D, Des Moines, IA 50309 Internet Address [idph.state.ia.us/dph/rh/](http://www.idph.state.ia.us/dph/rh/)

**APPENIX C**  
**EPA and DOE Correspondences**

- 1. DOE-AMSO memorandum approving Laboratory's EMS, June 28, 2009**
- 2. EPA letter (RCRA Inspection), April 27, 2006**



## Department of Energy

Ames Site Office  
9800 South Cass Avenue  
Argonne, Illinois 60439

December 9, 2015

### MEMORANDUM FOR AMES SITE OFFICE

FROM:

CYNTHIA K. BAEBLER  
MANAGER

A handwritten signature in cursive script that reads "Cynthia K. Baebler".

SUBJECT:

DECLARATION THAT AMES LABORATORY ENVIRONMENTAL  
MANAGEMENT SYSTEM CONFORMS TO THE ISO 14001 STANDARD

This memorandum documents that the Environmental Management System (EMS) for Ames Laboratory conforms to the International Organization for Standardization's (ISO) 14001:2004 standard as required by DOE Order 436.1.

A formal assessment of the EMS was conducted February 9-11, 2015 by a qualified party outside the control or scope of the Laboratory's EMS per the ISO standard.

There were no major nonconformities. The two minor nonconformities that have been addressed through the Ames Laboratory EMS Corrective Action Plan (CAP) and three of the four Opportunities for Improvement (OFI) have also been addressed as outlined in the CAP, with the final OFI targeted for completion by January 15, 2016.

The senior Ames contractor manager accountable for implementation of the EMS has declared conformance of the EMS to the ISO 14001:2004 standard.

On the basis of this declaration, and my oversight of the contractor's EMS at this site, I declare that this EMS conforms to ISO standard as required by DOE O 436.1, Section 4, Paragraph c.

cc:

Sat Goel, SC-31, GTN, HQ

Teralyn Murray, SC-CH

Adam Schwartz, Director, Ames Laboratory

Sean Whalen, Manager, ESH&A, Ames Laboratory



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII  
901 NORTH 5TH STREET  
KANSAS CITY, KANSAS 66101

Tom Barton  
Director  
Ames Laboratory #3, DOE  
G40 TASF Iowa State University  
Ames, Iowa 50011

19 JUN 2006

Dear Mr. Barton:

RE: Ames Laboratory #3, DOE  
Ames, Iowa  
RCRA ID No. IA6890008950

On April 27, 2006, a representative of the U. S. Environmental Protection Agency (EPA) inspected your facility. The inspection was conducted under the authority of Section 3007 of the Resource Conservation and Recovery Act (RCRA). A copy of that inspection report is enclosed.

I have reviewed the inspection report and determined that no violations of RCRA were documented. Therefore, no further action concerning this matter is necessary at this time. Please note that EPA reserves its enforcement authorities, including assessment of penalties, for violations that occur at any time.

I would like to remind you that your facility is responsible for maintaining compliance with all applicable hazardous waste regulations. If there are any questions regarding this matter, please contact James Terry working under a grant at EPA at (913) 551-7958.

Sincerely,

A handwritten signature in purple ink, appearing to read "Edwin G. Buckner".

Edwin G. Buckner, P.E.  
Compliance Officer  
RCRA Enforcement and State Programs Branch

Enclosure

cc: Cal Lundberg  
IDNR