Department of Energy
Washington, DC 20585

May 7, 2012

MEMORANDUM FOR DISTRIBUTION

FROM: ANDREW C. LAWRENCE
DIRECTOR
OFFICE OF ENVIRONMENTAL PROTECTION, SUSTAINABILITY SUPPORT AND CORPORATE SAFETY ANALYSIS
OFFICE OF HEALTH, SAFETY AND SECURITY

SUBJECT: Guidance for the Preparation of Department of Energy Annual Site Environmental Reports for Calendar Year 2011

This memorandum transmits guidance for the preparation of Department of Energy (DOE) Annual Site Environmental Reports (ASERs) for calendar year 2011, required by DOE Order (O) 231.1B, *Environment, Safety and Health Reporting.*

The ASER serves as the principal document for reporting annual site environmental performance information within DOE, and as a resource for communicating DOE environmental performance information to stakeholders and members of the public living near DOE sites.

As required by DOE O 231.1B, the ASERs for calendar year 2011 must be submitted to Mr. Glenn S. Podonsky, Chief Health, Safety and Security Officer, Office of Health, Safety and Security, and made available to the public by October 1, 2012. If you have questions regarding the attached guidance please contact Ross Natoli, at (202) 586-1336 or by e-mail at: Ross.Natoli@hq.doe.gov for more information. The attached guidance is available at http://www.hss.doe.gov/nuclearsafety/env/reports.

Attachment: Guidance for Preparation of the 2011 DOE Annual Site Environmental Reports

cc: Under Secretary for Nuclear Security, US
Director, Sustainability Performance Office, SPO

Distribution: Guidance for the Preparation of Department of Energy Annual Site Environmental Reports for Calendar Year 2011

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Guidance for Preparation of the 2011 Department of Energy Annual Site Environmental Reports

May 2012

Office of Health, Safety and Security

Guidance for Preparation of the 2011
Department of Energy Annual Site Environmental Reports

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Guidance for Preparation of the 2011
Department of Energy Annual Site Environmental Reports

1.0 BACKGROUND

This guidance provides recommendations for reporting that may be used to help supplement the requirements of the Department of Energy (DOE) Orders which were contractually applicable to DOE sites in 2011, including DOE Order 231.1A, Chg 1, *Environment, Safety and Health Reporting*, (6-3-04), DOE Manual 231.1-1A, Chg 2, *Environment, Safety and Health Reporting Manual,*(6-12-07), and DOE Order 5400.5, *Radiation Protection of the Public and the Environment (1-7-1993)*, or their subsequent replacement Orders.

In 2011, several environmental, radiological and sustainability reporting-related DOE Orders replaced and cancelled previous DOE Orders that were in effect in 2010. These include:

DOE Order 231.1B, *Environment, Safety and Health Reporting (6-27-2011)*, which replaced and cancelled DOE Order 231.1A, Chg 1, *Environment, Safety and Health Reporting*, (6-3-04) and DOE Manual 231.1-1A, Chg 2, *Environment, Safety and Health Reporting Manual,*(6-12-07) and DOE N 234.1, *Reporting of Radioactive Sealed Sources*, (2-27-08 extended to 5-6-11) ;

DOE Order 232.2, *Occurrence Reporting and Processing of Operations Information* (dated 8-30-11, whose requirements were not effective until January 1, 2012), which replaced and cancelled DOE M 231.1-2, *Occurrence Reporting and Processing of Operations Information*, dated 8-19-03 ;

DOE Order 436.1, *Departmental Sustainability* (5-2-11), which replaced and cancelled DOE Order 450.1A, *Environmental Protection Program* (6-4-08) and DOE Order 430.2B, *Departmental Energy, Renewable Energy and Transportation Management* (2-27-08); and

DOE Order 458.1, *Radiation Protection of the Public and the Environment* (2-11-2011), which replaced and cancelled DOE Order 5400.5, *Radiation Protection of the Public and the Environment* (1-7-1993). Full implementation of the requirements of DOE Order 458.1 must be completed within 18 months of its issuance (2-11-2011), unless a different implementation schedule is approved by a Cognizant Secretarial Officer.

Cancellation of any Directive (DOE Order) does not, by itself, modify or otherwise affect any contractual or regulatory obligation to comply with the Directive (DOE Order). Contractor Requirements Documents (CRDs) that have been incorporated into a contract remain in effect throughout the term of the contract unless and until the contract is modified to either eliminate requirements that are no longer applicable or substitute a new set of requirements. **The 2011 ASERs should be prepared considering the site's contractual applicability of those DOE Orders which were approved in 2011, or continue to be prepared pursuant to the predecessor Orders which contractually remained in effect during part or all of calendar year 2011 (e.g., DOE Order 458.1 or DOE Order 5400.5).**

As stated in DOE Order 231.1B, the DOE Annual Site Environmental Report (ASER) presents summary environmental data to:

- Characterize site environmental management performance including effluent releases, environmental monitoring, the types and quantities of radioactive materials emitted or discharged to the environment, the estimated or calculated total effective dose to a representative person or maximally exposed member(s) of the public from exposure to radiation sources identified under DOE O 458.1, and where it is of concern, releases of radon and its decay products from DOE sources and the

resultant individual and collective dose from these radionuclides, which need not be combined with dose estimates from other sources;

- Summarize environmental occurrences and responses reported during the calendar year;
- Confirm compliance with environmental standards and requirements;
- Highlight significant site programs and efforts including environmental performance indicators and/or performance measures that reflect the size and extent of programs at a particular site; and
- Describe property clearance activities, including a summary of approved authorized limits, results of radiological monitoring and surveys of cleared property, types and quantities of property cleared, and independent verification program results in accordance with DOE O 458.1,

The ASER is the principal document that demonstrates compliance with DOE Order 458.1 and DOE Order 5400.5 requirements and is a key component of the Department's effort to keep the public informed of environmental conditions at DOE sites. ASERs should contain the most accurate and complete radiological and non-radiological monitoring data and up-to-date compliance information for Calendar Year (CY) 2011. ASERs should also highlight new site programs and initiatives, compliance successes, noteworthy practices, site environmental performance measure and/or performance indicator programs; and, if applicable, site assessments that occurred during CY 2011. If deemed appropriate by the site, any additional significant environmental issues, events, or noteworthy practices that emerge between the end of CY 2011 and the actual public distribution of the 2011 ASERs may be summarized in the transmittal memorandum releasing the 2011 ASERs to the public, or as a separate attachment.

1.1 Public Information Source

Consistent with the Department's commitment to openness and public involvement in DOE operations, the ASERs should be prepared in a manner that addresses likely public concerns and solicits feedback from the public and other stakeholders on site environmental management performance and compliance. Some recent successful approaches illustrating this include the following:

(1) A summary pamphlet targeted for the general public or non-technical reader that accompanies the ASER. Some noteworthy examples include the 2010 ASER Summary Reports for Sandia National Laboratories, New Mexico; Argonne National Laboratory (ANL); Nevada Test Site; Oak Ridge Reservation; Los Alamos National Laboratory (LANL); Savannah River Site; and Hanford. Community involvement in preparing the summary pamphlet is encouraged. The Oak Ridge, ANL and LANL sites have effectively involved local high schools and college students in the preparation of these Summary Reports in recent years. (See **Attachment V**, p.33, *ASER Summary Reports*).

(2) An executive summary within the ASER that concisely highlights site operations, characterizes site environmental management performance and compliance, and describes significant environmental issues and programs.

(3) Site-specific electronic, Internet or Web-based approaches that facilitate public outreach to, and feedback from, stakeholders on ASERs. Sites should consider providing a user-friendly Internet link on their Home Page to allow easy, direct electronic access to ASERs.

1.2 Coordination and Production

Since most DOE Heads of Headquarters Elements (HOH)[1] have delegated authority to DOE Heads of Field Elements (HFE)[2] to prepare, approve, and release the ASERs, HFEs should determine the appropriate level of HOH involvement and coordinate the review and comment period, as necessary. We recommend that HOHs make commitments to HFEs regarding the timeframes for HOH review and comment. All significant comments should be forwarded by the HOHs directly to the appropriate HFEs within this comment period. The Office of Environmental Protection, Sustainability Support and Corporate Safety Analysis (HS-20) remains available to provide advice regarding the preparation of ASERs; however, HS-20 does not have a formal review and comment role.

The 2011 ASERs should be approved by the HFE or appropriate designee, submitted to Glenn S. Podonsky, Chief Health, Safety and Security Officer, for the Office of Health, Safety and Security (HSS) and released to the public and/or placed on the site Internet Home Page by October 1, 2012. The public release of the 2011 ASERs should also include a statement by the HFEs, or appropriate designee, ensuring DOE's commitment to environmental protection, compliance, sustainability and the site's efforts to ensure the validity and accuracy of the monitoring data.

1.3 Distribution

To support paper reduction and sustainability efforts at DOE sites to limit and optimize ASER hard copy production, ASERs can be distributed via the internet or using electronic media such as compact disks (CDs), or including a full ASER CD within an ASER Summary Report. HFEs should distribute ASERs to pertinent CSOs, the Office of Scientific and Technical Information, the Environmental Protection Agency (EPA), State agencies, and other relevant agencies, organizations, or individuals. An electronic file of the approved 2011 ASER should be submitted to Ross Natoli in the Office of Analysis (HS-24). The Office of Analysis will provide further distribution to the appropriate offices within HSS.

1.4 Goals and Content

A chief purpose of the ASERs is to document the radiological and non-radiological condition of a site's environs, the effluents and emissions released from DOE operations, and noteworthy trends with regard to these releases and environmental conditions. ASERs should accurately portray the radiological monitoring programs, non-radiological monitoring programs, and regulatory compliance information required by DOE Orders and other applicable Federal and State regulations and requirements. They should also describe the environmental impacts of DOE site operations. Where appropriate, the models and assumptions used to estimate releases and environmental conditions should be clearly documented.

ASERs are among the primary DOE reports that document compliance with the public radiation protection requirements of DOE Order 458.1 or DOE Order 5400.5. Therefore, a comprehensive description of each site's radiological environmental protection program and real or potential radiological environmental impacts should be included.

Although not required, DOE Field elements are encouraged to report additional non-radiological information in the ASER, such as the Superfund Amendments and Reauthorization Act (SARA) Title III

[1] Whenever the term Heads of Headquarters Elements is used, it includes the heads of all headquarters first-tier organizations, to include Secretarial Officers, Administrator for NNSA, Administrators for the Power Administrations, and Heads of Staff Offices.

[2] Whenever the term Heads of Field Elements is used, it includes Operations Offices, Field Offices, Site Offices, Service Centers, Project Offices, Regional Offices and Area Offices.

or Emergency Planning and Community Right-to-Know (EPCRA) information (see ENVIRONMENTAL NON-RADIOLOGICAL PROGRAM INFORMATION AND COMPLIANCE SUMMARY sections). DOE Field elements are also encouraged to report on progress made in achieving their environmental and sustainability goals, including performance indicators and/or performance measures programs and initiatives at their site, the measures used and the results of those measures. This could include the site's progress on meeting the measurable environmental and sustainability goals of Executive Orders, DOE Orders, and the objectives and targets identified in their Environmental Management System (EMS). These measures and accomplishments should be summarized in the EXECUTIVE SUMMARY and detailed in the ENVIRONMENTAL MANAGEMENT SYSTEM chapter of the ASER.

Finally, to allow for public involvement and feedback on the ASER, sites are encouraged to provide a website link to a questionnaire or reader comment form on the website where the ASER is electronically posted which solicits public input and feedback on the current and future ASERs. If sites are distributing hard copies of the ASER, this form should be placed inside the front cover of the ASER for maximum visibility and easy public access.

2.0 SUGGESTED FORMAT FOR ANNUAL SITE ENVIRONMENTAL REPORTS

The ASERs should, to the extent possible, follow the reporting format described herein.

- Executive Summary
- Introduction
- Compliance Summary
- Environmental Management System
- Environmental Radiological Protection Program and Dose Assessment
- Environmental Non-Radiological Program Information
- Groundwater Protection Program
- Quality Assurance

DOE sites may also elect to generally format some sections of their ASERs by media, or other alternate formats, rather than by radiological and non-radiological chapters as long as the applicable requirements of DOE Manual 231.1-1A (DOE Order 231.1B) and DOE Order 458.1 (DOE Order 5400.5) are met. These chapters may include the detailed monitoring data and results that support discussion of environmental laws and media generally included in the Compliance Summary chapter. Alternate formats could include chapters on: air monitoring, meteorological monitoring, water monitoring, drinking water, wastewater, surface water, environmental restoration and waste management, soil monitoring, natural and cultural resources management, historic preservation, terrestrial monitoring/surveillance, ecological monitoring, wildlife and agricultural products monitoring, and groundwater monitoring. (See **Attachment V**, p.32, *Alternate General ASER Formats*). ASERs should also include, as appropriate, a glossary of definitions and lists of acronyms, abbreviations, symbols, units of measure, tables, figures, appendices, and references.

2.1 Executive Summary

The EXECUTIVE SUMMARY should highlight: (1) the purpose of the ASER; (2) major site programs[3]; (3) other key initiatives, including environmental performance indicator and/or performance measure programs; and (4) a brief description of the site's Environmental Management System (EMS) and its function within the framework of DOE's Integrated Safety Management System (ISMS), as appropriate. Note: To streamline ASER reporting and avoid redundancy, it is not necessary for sites that currently prepare and publish an ASER Summary Report to include an Executive Summary in their full ASER.

This section should include a summary of radiological releases and doses to the public resulting from site operations as well as a summary of significant non-radiological releases. The dose to the representative person or to the maximally exposed individual (MEI) [the total effective dose (TED) in DOE Order 458.1 or the total effective dose equivalent (TEDE) in DOE Order 5400.5], collective (population) dose, as well as the estimated natural background radiation dose at the site should be mentioned here. If no radionuclides were released from the site, an affirmative/declarative statement should be included here. The EXECUTIVE SUMMARY should not simply repeat information found in the main body of the report and should be written in a manner that is understandable to the non-technical reader. This section should be concise, balanced, and targeted at an audience that may not read the entire report.

2.2 Introduction

The INTRODUCTION should include the following general information: (1) site location; (2) general environmental setting; (3) site mission; (4) primary operations and activities at the site; and (5) relevant demographic information.

2.3 Compliance Summary

The COMPLIANCE SUMMARY should be a separate chapter in the ASER. This chapter should summarize the site CY 2011 compliance status for the following: (1) major environmental statutes and regulations; (2) DOE internal environmental and radiation protection Orders, including DOE Orders 450.1A, *Environmental Protection Program;* DOE Order 430.2B, *Departmental Energy, Renewable Energy and Transportation Management*; DOE Order 458.1, *Radiation Protection of the Public and Environment* or predecessor Order 5400.5; DOE Order 231.1B, *Environment, Safety and Health Reporting* or predecessor Order 231.1A and Manual 231.1-1A; and DOE Order 435.1, *Radioactive Waste Management*; (3) the Atomic Energy Act of 1954 (42 USC 2011 et seq.); (4) compliance and/or cleanup agreements (both in place and currently under negotiation); (5) environmental violations cited by regulators (including any fines and penalties assessed); (6) Notices of Violation, Notices of Deficiency, Notices of Intent to Sue, and other types of enforcement actions issued to the site (as defined in DOE Manual 231.1-2, *Occurrence Reporting and Processing of Operations Information*); (7) any reportable environmental occurrences that require notification to an outside regulatory agency; (8) any major issues, instances of noncompliance and corrective actions; (9) the status and results of any ongoing self-assessments and/or environmental audits; and (10) existing permits. Although not required, sites may also choose to include their compliance status with sustainability Executive Orders (EOs) 13514 and 13423 and DOE Order 436.1*, Departmental Sustainability.* These items are discussed below.

[3] If the primary remaining site mission is decontamination/decommissioning (D&D) and environmental restoration (clean-up), a brief statement discussing site historical operations should be included here.

Before compiling and summarizing "environmental violations" for 2011, sites should consult EPA's Enforcement & Compliance History Online (ECHO) database at http://www.epa-echo.gov/echo/. This is EPA's official record of the current compliance status for a given DOE site or particular facilities within the site. To support DOE-wide environment, safety, and health performance measurement initiatives, the COMPLIANCE SUMMARY chapter should include a discussion of compliance and/or cleanup agreements in place at the site. This discussion should include the enforceable milestones completed versus the milestones that were scheduled for completion in CY 2011 pursuant to these agreements. Additionally, the COMPLIANCE SUMMARY should contain a summary table or brief narrative of applicable operating permits in effect at the site.

When possible, quantitative information should be provided. For example, if underground storage tanks have been removed from the facility, state the number of tanks that have been removed and the number of tanks that still remain onsite. The COMPLIANCE SUMMARY should not present the large volume of supporting data that are presented in other sections of the ASER, such as the ENVIRONMENTAL RADIOLOGICAL PROTECTION PROGRAM and DOSE ASSESSMENT and ENVIRONMENTAL NON-RADIOLOGICAL PROGRAM sections. Additionally, references should be made to other sections of the ASER, as appropriate, to minimize redundancy.

2.3.1 Compliance Status

The compliance status with respect to applicable major environmental statutes, DOE Directives, and Executive Orders should be discussed, including, but not limited to those noted below.

2.3.1.1 Environmental Restoration and Waste Management

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- Superfund Amendments and Reauthorization Act (SARA)
- Resource Conservation and Recovery Act (RCRA)
- Federal Facilities Compliance Act (FFCA)
- National Environmental Policy Act (NEPA)
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

2.3.1.2 Radiation Protection

- DOE Order 5400.5, *Radiation Protection of the Public and the Environment*
- DOE Order 458.1, *Radiation Protection of the Public and the Environment*
- DOE Order 435.1, *Radioactive Waste Management*

  This section should briefly summarize site progress in achieving compliance with DOE Order 435.1, *Radioactive Waste Management*. At a minimum, information on the wastes that are managed at the site (e.g., high level, low level, transuranic) and what type of waste management the site is performing (e.g., generation, treatment, storage, disposal) should be included. For those sites that are authorized to manage a low-level waste facility, there should be a table or a listing of the status of each phase of the low-level waste management process (e.g., performance assessment, composite analysis [PA/CA], closure plan, PA/CA maintenance program, disposal authorization statement) and a narrative description of the site low-level waste management program. Discussion of radioactive waste management activities can be included in the ENVIRONMENTAL RADIOLOGICAL PROTECTION PROGRAM and DOSE ASSESSMENT section.

Note: Management of 11e.(2) byproduct material as defined in the Atomic Energy Act, residual radioactive material as defined in the Uranium Mill Tailings Radiation Control Act, and naturally occurring radioactive material, is conducted under the provisions of DOE Order 458.1 (or DOE Order 5400.5) and should be discussed under either Order.

- Atomic Energy Act of 1954 (42 USC 2011 et seq.)

2.3.1.3 Air Quality and Protection

- Clean Air Act (CAA)

  This section should include a discussion of the compliance status of site air emissions, including criteria pollutants and hazardous air pollutants. This section should generally summarize air permit exceedances, Notices of Violation (NOV), other air quality noncompliances, and any CAA compliance agreements in place at the site. Any major events that occurred at the site in CY 2011 pertaining to CAA compliance should be specifically discussed. The section should also address whether a major source of air pollutants (as defined in 40 CFR Part 70.2) is present at the site and should include information on those operations for which emissions contribute most substantially to the major source. Conversely, if the site does not have a major source, then this should be explicitly stated.

- National Emission Standards for Hazardous Air Pollutants (NESHAPs) 40 CFR Part 61 Subpart H, (*National Emissions Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities*)

  The 2011 ASERs should summarize efforts to comply with the monitoring and other requirements for the Subpart H radionuclide NESHAPs. For example, NESHAPs compliance agreement negotiations and other discussions with regulatory agencies or applications for waivers should be noted. If sites are exempted from any requirements, the reasons for the exemptions should be stated.

  Detailed reporting and discussion of site radiological Subpart H air emissions and doses should be included in the ENVIRONMENTAL RADIOLOGICAL PROTECTION PROGRAM and DOSE ASSESSMENT section of the ASER (see Section 4.0 and Attachment I, "Suggested Formats for Radiological Dose and Release Reporting"). Issues concerning site compliance status with radionuclide NESHAPs and NESHAPs-specific radionuclide monitoring, should be discussed in the COMPLIANCE SUMMARY section or chapter.

  Information on Subpart H compliance for DOE sites is reported annually in the NESHAPs report for radionuclides required by the EPA. Guidance for this report, entitled *Guidance for Preparation of 1990 Air Emissions Annual Report Under Subpart H, 40 CFR 61.94*, was issued by the Office of Environmental Guidance in January 1991. The information provided in the 2011 ASERs should be consistent with the information reported in the 2011 site NESHAPs report for radionuclides to demonstrate compliance with the Subpart H requirements for 2011. This report may be referenced for more information and any significant differences between the ASER and Subpart H air emissions and estimated doses reported should be clearly explained.

2.3.1.4 Water Quality and Protection

- Clean Water Act (CWA)

  The Clean Water Act of 1972 created the National Pollutant Discharge Elimination System (NPDES) to protect surface waters by limiting releases of effluents into streams, reservoirs and wetlands. Sites

are encouraged to report NPDES and State Pollutant Discharge Elimination System (SPDES) data in the tabular form below, and should identify the permit type, number of regulated[4] outfalls in use at a facility, the total number of permit exceedances per outfall, the date corresponding to each exceedance, and monitoring parameters and/or constituents. Additionally, the number of samples taken, the number of compliant samples, and the facility's percent compliance for all measured samples should be provided. The exceedances, their causes, and the nature of the corrective actions should be described in summary form. Progress on implementing previous corrective actions should also be addressed.

- A summary of all CY 2011 NPDES/SPDES permit exceedances or noncompliances should be provided in the following format.

NPDES/SPDES NONCOMPLIANCES

Permit Type	Outfall	Parameter	# of Permit Exceedances	# of Samples Taken	# of Compliant Samples	Percent Compliance	Date(s) Exceeded	Description/ Solution

Using this tabular format will allow the information to be easily identified and collected from the ASERs in a consistent manner rather than having to make separate data requests annually to Field elements for site compliance history and for HSS development and compilation of DOE-wide environmental performance measures initiatives.

Any analyses or reviews to select Best Available Technology conducted to comply with DOE Order 458.1 (or DOE Order 5400.5) requirements may be discussed here if they are not summarized elsewhere in the radiation protection section of the ASER.

- Stormwater Management and the Energy Independence and Security Act of 2007 (EISA)

Although NPDES/SPDES permits regulate discharges of stormwater runoff at outfalls, stormwater management practices at DOE sites should also be considered for inclusion in the ASER. Under Section 438 of the Energy Independence and Security Act of 2007 (EISA), federal agencies have requirements to reduce stormwater runoff from federal development and redevelopment projects to protect water resources. Federal agencies can comply using a variety of stormwater management practices often referred to as "green infrastructure" or "low impact development" practices, including for example, reducing impervious surfaces, using vegetative practices, porous pavements, cisterns and green roofs. In 2009, EPA, in close coordination with other federal agencies, developed Technical Guidance to assist federal agencies in implementing EISA Section 438, which can be found at: www.epa.gov/owow/nps/lid/section438. In addition, Executive Order (EO) 13514, *Federal Leadership in Environmental, Energy and Economic Performance* sets a policy that federal agencies "conserve and protect water resources through efficiency, reuse, and stormwater management." As appropriate, sites should discuss their EISA and EO 13514 stormwater management practices in this section.

- Safe Drinking Water Act

[4] Note: Radionuclides regulated under the Atomic Energy Act (AEA) are not subject to CWA requirements. If the site has accepted or is using NPDES or SPDES permit values for radionuclides out of comity, the table in the text should include a footnote to indicate whether there is a formal agreement in place that establishes the basis for their use.

2.3.1.5 Other Environmental Statutes

This section may be used to report on activities related to other laws and regulations not addressed elsewhere, including those listed below.

- Endangered Species Act
- National Historic Preservation Act
- Migratory Bird Treaty Act

Include a statement on the number of migratory birds of each species intentionally taken during the conduct of any program, activity, or action; including, but not limited to, banding, marking, scientific collection, taxidermy, and depredation control.

2.3.1.6 DOE Order 436.1, *Departmental Sustainability* (May 2, 2011), DOE Order 450.1A, *Environmental Protection Program*, DOE Order 430.2B, *Departmental Energy, Renewable Energy and Transportation Management*, Executive Order 13423, *Strengthening Federal Environmental, Energy and Transportation Management* and Executive Order, 13514, *Federal Leadership in Environmental, Energy and Economic Performance*.

A significant portion of the energy and environmental sustainability information pursuant to these DOE Orders and Executive Orders is reported through the annual Site Sustainability Plan (SSP) and DOE's Pollution Prevention Tracking and Reporting System (PPTRS). Although not required, sites may also choose to include this information in their ASERs and are encouraged to summarize, directly reference or cut and paste from existing reporting documents or systems. Specific information on each of these DOE Orders and Executive Orders is described below.

- DOE Order 450.1A (June 4, 2008) and DOE Order 430.2B (February 27, 2008) have recently been cancelled and replaced by DOE Order 436.1, *Departmental Sustainability* (May 2, 2011). Information reported in the 2011 ASER should be responsive to the reporting requirements of DOE Orders 450.1A, 430.2B or DOE Order 436.1, as applicable.
- DOE Order 436.1 describes DOE's requirements and responsibilities for implementation of EO 13423 and EO 13514. This includes the development and implementation of an annual Site Sustainability Plan (SSP) that identifies a site's contribution toward meeting the Department's sustainability goals. In addition, DOE sites must use Environmental Management Systems (EMSs) as a platform for SSP implementation and programs with objectives and measurable targets that contribute to the Department meeting its sustainability goals.
- Pursuant to DOE Order 450.1A, sites should describe their progress in implementing an EMS at all appropriate facilities and integrating their EMS(s) with their ISMS, as appropriate. Under DOE Order 450.1A, DOE sites were required to demonstrate validation for full implementation of their EMSs by June 30, 2009. The DOE EMS Status Report for Fiscal Year (FY) 2011 will be provided to the EPA and the Council on Environmental Quality (CEQ) in April 2012. The EMS implementation information from the site submittal to DOE-HQ in December 2011 can be referenced and summarized in the 2011 ASER.
- Pursuant to DOE Order 430.2B, this section should include a summary of the site's energy, transportation and environmental sustainability performance. Sites should describe their progress in meeting the energy efficiency, water conservation, transportation fleet management, and sustainable design/high performance buildings goals in EO 13514. Under DOE Order 430.2B, each DOE site should have had an Executable Plan in place by December 31, 2008, that identified their respective contributions toward meeting these goals. A site's progress towards meeting these goals in 2011, as

identified in its SSP (which have taken the place of Executable Plans) can be referenced and summarized in the ASER.

- Executive Order (EO), 13514, *Federal Leadership in Environmental, Energy and Economic Performance* (October 5, 2009) requires Federal agencies to establish greenhouse gas (GHG) reduction targets and achieve sustainability goals to reach those targets. EO 13514 includes and expands upon EO 13423 goals and requirements by focusing attention on GHG reductions and establishing quantitative metrics for sustainability goals. DOE sites are required to report a percentage reduction target for Scope 1: direct GHG emissions owned or controlled by the site, Scope 2: direct GHG emissions from purchased utilities, and Scope 3 indirect GHG emissions by fiscal year (FY) 2020 relative to a FY 2008 baseline.

  A summary of site progress in meeting the *DOE Strategic Sustainability Performance Plan* (September 2011) goals during 2011 can be included in the ASER. In addition to GHG emission reduction goals, these goal areas pertain to sustainable practices for high-performance sustainable building design (HSPD), water use efficiency and management, pollution prevention and waste reduction, sustainable acquisition, and electronics stewardship. Summary highlights from your site's 2011 Site Sustainability Plan (SSP) could be included here. Although this SSP information for 2011 was not required to be reported pursuant to EO 13514 until early 2012, sites may summarize and discuss this in the 2011 ASER to the extent this information was available and finalized in 2011.

2.3.1.7 Emergency Planning and Community Right to Know Act (EPCRA) and Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986.

- EPCRA and Title III of SARA, require Federal facilities that use, produce, or store extremely hazardous substances in quantities that exceed specific release thresholds to report these inventories and planned or accidental environmental releases to Federal, State, and local emergency planning authorities. This information should include responses to emergency situations involving these hazardous materials. The ASER should include summary information on the site-specific chemical inventory and toxic release inventory and should reference the site submission to the EPA.

  DOE facilities should comply with EPCRA provisions (see below) once certain thresholds are met. Those EPCRA reporting requirements that were completed, or will be completed, for CY 2011 should be indicated and discussed. If the site reported under the provision, indicate "yes." If the site should have reported under the provision, but did not, indicate "no." If the site was not required to report under a provision (e.g., did not meet the threshold, did not have an extremely hazardous substance [EHS] release), indicate "not required." A short table is provided on page 10 to assist sites in presenting this information.

Status of EPCRA Reporting

EPCRA Section	***Description of Reporting***	***Status****
EPCRA Sec. 302-303	Planning Notification	
EPCRA Sec. 304	EHS Release Notification**	
EPCRA Sec. 311-312	MSDS/Chemical Inventory***	
EPCRA Sec. 313	TRI Reporting	

* An entry of "yes," "no," or "not required" is sufficient for "Status."
** Extremely Hazardous Substance
*** Material Safety Data Sheet

- EO 11988, *Floodplain Management*

- EO 11990, *Protection of Wetlands*

Any other major statutes or Executive Orders applicable to the site should also be included in the COMPLIANCE SUMMARY chapter. If a major statute is not applicable, it should be listed with the notation, "Not Applicable," along with a short explanation as to why it is not applicable.

2.3.2 Other Major Environmental Issues and Actions

This section should identify other significant issues and accomplishments for CY 2011. For example, issues such as lawsuits, NOVs, alleged violations, environmental occurrences, non-routine releases, unresolved compliance issues, and NEPA actions not previously presented should be addressed.

Summaries of DOE environmental audits, progress assessments, DOE program or contractor self-assessments or program appraisal findings and follow-up actions should be provided in this section. Publicly available documents that can be referenced for additional information should be cited.

2.3.3 Continuous Release Reporting

Continuous Release Reporting under CERCLA, Section 103, requires that a non-permitted hazardous substance released in a quantity that is equal to or greater than its reportable quantity be reported to the National Response Center (55 Federal Register [FR] 30166, July 24, 1990). CERCLA Section 103(f) allows for modified reporting of releases of hazardous substances that meet certain criteria. The EPA requires all facilities that release a hazardous substance meeting the above requirement to report annually to EPA. The regulations include a requirement for an annual evaluation of releases. Summaries of this evaluation should be included in the ASER. Continuous release reporting not characterized or discussed in the UNPLANNED RELEASES section should be reported separately in this section.

2.3.4 Unplanned Releases

Summary information on significant, non-routine releases of pollutants or hazardous substances, including causes and corrective actions taken to prevent their recurrence, should be discussed here, especially as they pertain to facility operations, waste handling programs, and emergency response programs. The 2011 ASERs should discuss unplanned radiological and non-radiological releases in effluent, such as spills and leaks, whether onsite or offsite. This discussion should include releases that are reportable occurrences under DOE M 231.1-2, *Occurrence Reporting and Processing of Operations Information*, dated 8-19-03 (or DOE Order 232.2, *Occurrence Reporting and Processing of Operations Information,* dated 8-30-11), and DOE Order 231.1A, *Environment, Safety and Health Reporting*, dated 6-3-04 (or DOE Order 231.1B, *Environment, Safety and Health Reporting,* dated 6-27-2011. Releases reported to the Headquarters Emergency Operations Center and releases reported to the Coast Guard National Response Center should be summarized. The protective action recommendations implemented (if applicable) to mitigate the effects of the occurrences should also be discussed.

Consistent with the section regarding UNPLANNED RADIOLOGICAL RELEASES (Section 4.4), this section of the ASER should also clearly state the bases for any estimates regarding the magnitude of potential impacts of releases, in terms that the non-technical reader can easily understand.

A table or discussion should also be provided that includes the date each release occurred, the amount of material released, an explanation of the release, and corrective actions taken.

Generalized statements such as "no significant offsite effects occurred" or "doses were small" should be avoided. If such statements are necessary, release information should be compared to known values; for example, small relative to applicable dose limits or to doses received from natural background at the site

(include the numerical value for this dose). This approach ensures that the ASER clearly states the bases for any scientific judgments regarding the magnitude of potential impacts of releases in terms that the non-technical reader can easily understand.

2.3.5 Summary of Permits

This section should provide a table of the numbers and types of environmental permits in effect for the operating facilities at the site.

3.0 ENVIRONMENTAL MANAGEMENT SYSTEM

According to the objectives of DOE Order 450.1A, DOE sites should implement sound stewardship practices that are protective of the air, water, land, and other natural and cultural resources potentially impacted by their operations. Through these practices, DOE cost-effectively meets or exceeds compliance with applicable environmental, public health, and resource-protection laws, regulations and DOE requirements. These objectives should be achieved by implementing an EMS at DOE sites that is integrated into the ISMS established by DOE Policy 450.4, *Safety Management System Policy* (10-15-96).

DOE Order 436.1 describes DOE's requirements and responsibilities for implementation of EO 13423 and EO 13514. This includes the development and implementation of an annual Site Sustainability Plan (SSP) that identifies a site's contribution toward meeting the Department's sustainability goals. In addition, DOE sites must use Environmental Management Systems (EMSs) as a platform for SSP implementation and programs with objectives and measurable targets that contribute to the Department meeting its sustainability goals.

Since EO 13423 and DOE Order 450.1A required DOE sites to have a fully implemented EMS by June 30, 2009, this section should include a pertinent discussion of the status and highlights of the EMS currently implemented at the site during 2011. Although several recognized EMS frameworks exist, most are based on the International Organization for Standardization (ISO) 14001 EMS standard. A brief description of significant site EMS elements should be included here. (See **Attachment V**, p.31, *Environmental Management System*, Brookhaven National Laboratory and Lawrence Livermore National Laboratory example formats).

DOE-HQ continues to collect, track and internally score EMS implementation at DOE sites. In addition, The Office of the Federal Environmental Executive (OFFE) tracks the progress of EMS implementation at Federal agencies using an annual Environmental Stewardship Scorecard that includes metrics to measure site-level progress in implementing them. These metrics are provided to allow agencies and facilities that are implementing an EMS to plan for effective reporting of EMS progress, performance, and successes. To support DOE's reporting requirements under EO 13423 and DOE Order 450.1A, DOE has adopted these metrics. This information will also assist DOE leadership in assessing the Department's progress in implementing EMSs at DOE facilities and achieving the goals, objectives and targets set forth in EO 13514, EO 13423, and DOE Order 436.1 (or DOE Order 450.1A and DOE Order 430.2B).

The 2011 ASERs should include a discussion which qualitatively describes the status of the site's EMS performance during calendar year 2011. Sites should list what they determined to be the significant environmental aspects of their operations in 2011 that have the potential to impact the environment. A summary of the site's 2011 EMS information submitted to the Federal Facilities Environmental Stewardship & Compliance Assistance Center (FedCenter) can be included here along with the red, yellow or green score received based on the EMS metrics listed below.

- Environmental aspects were identified or reevaluated using an established procedure and updated (added/deleted/modified) as appropriate.
- Measurable environmental goals, objectives and targets were identified, reviewed and updated as appropriate.
- Documented operational controls to address significant environmental aspects consistent with objectives and targets were fully implemented.
- Training procedures were established to ensure that training requirements for individual competence and responsibility were identified, carried out, monitored, tracked, recorded and refreshed as appropriate to maintain competence.
- EMS requirements were included in all appropriate contracts and contractors fulfilled defined roles and specified responsibilities.
- EMS audit/evaluation procedures were established, an audit was conducted, and nonconformities were addressed or corrected.
- Senior leadership review of the EMS was conducted and top management responded to recommendations for continual improvement.

Note: Any change to the score received in 2011 from the score received in 2010 should also be explained here, as appropriate.

In this discussion, sites should also mention the status or progress made toward meeting the requirements for fully implemented EMSs per DOE Order 450.1A, §4.d. (2) (i.e., site declaration of a fully implemented EMS). Sites should not only describe the progress made in implementing the EMS, but should also summarize how the EMS has been successfully integrated into the site ISMS pursuant to DOE Order 450.1A.

To the extent possible, sites should also describe the effectiveness of the EMS since its inception at the site. This should encompass the elements listed below.

- **The benefit of the EMS on the facility or organization**, including (1) reduced risk to facility/organizational mission; (2) improved fiscal efficiency and/or cost avoidance; (3) greater understanding and recognition of environmental issues at all levels of the organization; (4) empowerment of individuals to contribute to the betterment of the organization's environmental footprint; (5) integration of environment into organizational culture and operations; (6) integration of environment into real property asset management; (7) improved community relations; (8) improved effectiveness in overall mission; and (9) improved cooperative conservation with other groups.
- **The impact of the EMS on the environment and environmental issues**, including (1) improved overall compliance management; (2) personnel health and safety; (3) pollution prevention; (4) improved air and water quality; (5) improved hazardous material, hazardous waste, and solid waste management; (6) improved conservation of water, natural resources, energy in facilities, fuel in vehicles; and (7) reduced number of permits needed to operate.

For 2011 and future ASERs, sites should also discuss pertinent feedback from EMS implementation experiences. This should include the benefits and successes associated with EMS implementation at the site, EMS best practices and lessons learned, EMS challenges and identification of barriers to EMS implementation (including plans for resolution where appropriate), and how EMS implementation has enabled the site to operate more effectively in accomplishing its public missions. Other significant environmental protection programs associated with the EMS, such as site meteorology, monitoring and surveillance, groundwater protection and monitoring, environmental restoration and waste management, and effluent monitoring should also be described here. To further demonstrate adherence to the requirements of DOE Order 450.1A or DOE Order 436.1 and the reporting requirements in DOE Order

231.1A, DOE Manual 231.1-1A or DOE Order 231.1B, this section should briefly describe the major environmental programs ongoing at the site. For example, this section should include a discussion of site initiatives (e.g., efforts to improve water quality through collaborative approaches to watershed management) with States, Tribes, local governments, industry, other Federal agencies and interested stakeholders, as appropriate.

Special environmental studies conducted, or in progress, at a particular site should be discussed here. Redundancy with information presented in the COMPLIANCE SUMMARY and other sections of the ASER should be avoided. Additionally, pertinent information may be presented on other significant environmental activities at the site (e.g., environmental training programs) that are not adequately covered in other sections.

3.1 Environmental Performance Measurement

Environmental performance measurement is an integral component of an EMS. EO 13423, EO 13514, and DOE O 436.1, along with DOE O 450.1A and DOE 430.2B, include multi-year environmental, energy, transportation and greenhouse gas (GHG) reduction, goals, objectives and targets. This section should include the site's progress on meeting these goals via the measurable environmental goals, objectives and targets identified in their Environmental Management System (EMS) for 2011. Sustainable practices for enhancing environmental, energy and transportation management performance may be discussed here. This discussion may include specific goals, objectives and targets applicable to operations conducted at the site, the results in achieving those goals, objectives and targets, a comparison of recent years' performance, and measures or goals planned for the future.

Site pollution prevention, waste reduction and recycling highlights or significant accomplishments should be mentioned here, including life cycle assessment and return-on-investment programs that have been instrumental in advancing progress in meeting the *DOE Order 450.1A Sustainable Environmental Stewardship Goals*. A summary of waste reduction and recycling goals that were met or exceeded in the calendar year (e.g., avoided the generation of "x" pounds of waste which resulted in a savings of "y" dollars in treatment and disposal costs) should also be included in this section.

Progress on meeting EO 13423 requirements to achieve ozone depleting substances (ODS) reductions at sites should also be discussed in this section. This discussion may include how sites are maximizing the purchase and use of safe, cost-effective, and environmentally preferable alternatives to ODS; an evaluation of the present and future uses of ODS at the site; and any exemplary practices developed and used at the site. A description of the site's efforts to phase-out the procurement of Class I ODS[5] for all non-excepted uses by December 31, 2010, should also be discussed briefly in this section. In addition, a short description of site coordination efforts with the Department of Defense prior to offsite disposal or transfer of material containing ODS could be included here, if applicable.

3.2 Awards and Recognition

Sites should also highlight and discuss any DOE or other Federal pollution prevention, environmental stewardship, or sustainability recognition awards received in CY 2011(e.g., DOE Environmental Sustainability Star (*E*Star) Awards, DOE Management Awards, the President's GreenGov Awards), as well as any State or industry-sponsored environmental awards or recognition.

[5] Class I ODS are those chemicals listed in Appendix A to Subpart A of 40 CFR 82 that cause or contribute significantly to harmful effects of the stratospheric ozone layer. Section 602 of the Clean Air Act directs the EPA to add to the Class I list any chemical that EPA determines has ozone-depletion potential of 0.2 or greater.

4.0 ENVIRONMENTAL RADIOLOGICAL PROTECTION PROGRAM AND DOSE ASSESSMENT

This section should describe the radiological monitoring program at the site as well as all assessments for doses to the public and releases to the environment conducted during the year. This information should address details on the models and assumptions used in performing the dose calculations and any new monitoring data, as appropriate. Consistent data reporting facilitates efforts to compare data from facility to facility and meaningfully aggregate the information.

4.1 Radiological Discharges and Doses

The following data should be presented in tabular form in this section.

- Dose to the representative person or to the MEI (TED in DOE Order 458.1 or TEDE in DOE Order 5400.5) in units of millirem (mrem) and millisievert (mSv)[6], and collective (population) dose in units of person-rem (person-Sv)[7], total population within 50 miles (80 kilometers) [8] and estimated background dose.
- A comparison of the dose to the representative person or MEI with DOE, EPA or other standards and with the natural background at the site.
- Radionuclides released to air and water during the year in units of curies (Ci) and becquerels (Bq)[9].

Totals by radionuclide released and the half-life of each of the radionuclides reported should be given. Gaseous releases; liquid releases to surface waters and soils; and environmental measurements of air, surface water, soil, and foodstuff should be reported in appropriate units. Doses should be calculated following the requirements and effective standards cited in DOE Order 458.1 (DOE Order 5400.5)[10]. Where appropriate, the ASER should state that, because the doses are calculated rather than measured, they represent potential or estimated, rather than actual, doses[11]. Data should also be presented using scientific notation (e.g., 3.2×10^{-3} for 0.0032), where appropriate. The number of significant figures should also be appropriate to the quality of these data.

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[6] Per DOE Orders 458.1 and 5400.5, radiation doses should be expressed in units of mrem followed by the Standard International unit (mSv) in parentheses. The same is true for person-rem (person-Sv).

[7] Estimates of collective dose for DOE facilities are required by DOE Orders 458.1 and 5400.5. DOE has no de minimis level for these calculations.

[8] In certain instances, populations outside of the region of the 50 mi (80 km) radius may be affected by releases to that region. For example, in a predominately agricultural area, more foodstuffs may be grown that are assumed to be consumed by the resident population. In such cases, the difference should be assumed to be consumed outside the region, and the resulting collective (population) dose should be estimated and reported. Similarly, if a major drinking water system is located beyond the 50 mi (80 km) distance, but the input for that system receives the majority of liquid discharging from this site, it should be evaluated. In some situations, the population used to support the calculations should be described.

[9] Uranium releases should be reported in terms of both Ci (Bq) and grams.

[10] In particular, the total dose in terms of the dose from external exposures plus the 50-year committed effective dose from intakes of radioactive material should be calculated and reported. Where sites are using more recent dose factors than the ICRP 26/30-based factors, the report should clearly document the source of the dose factors (e.g., Federal Guidance Report No. 13 supplemental CD)

[11] To demonstrate compliance with standards when sources are extremely small, the dosimetry models and evaluations are sometimes selected to be very conservative and simplistic. When this is the case, it should be so stated, and where possible, a qualitative discussion should be included that describes the level of magnitude of conservatism.

Attachment I provides a suggested format for radiological dose and release reporting. This reporting should list all significant radionuclides present at a site and their actual releases. In the reporting of atmospheric and liquid effluent releases, some radionuclides may not be applicable to certain DOE sites. If this is the case, indicate "NA" in the tables in Attachment I. In addition, a statement should be made confirming that all known radionuclides released in significant quantities from the site are documented in the ASER. It is noted that the format suggested in Tables 2 and 3 of Attachment I is to simplify the preparation of composite summary reports and is not intended to replace site-specific-based presentations of data. Site-specific examples of suggested reporting formats from the 2010 West Valley Demonstration Project, Waste Isolation Pilot Plant (WIPP) and Idaho National Laboratory (INL) ASERs are referenced in **Attachment V**, p.31, *Radiological Doses and Releases*.

For compliance with the radiological emission standards in 40 CFR Part 61 Subpart H, the ASERs should report doses in terms of effective dose or effective dose equivalent, calculated using the CAP-88 or other EPA-approved air dispersion model, and compared to the 10 mrem per year air emission DOE standard under Subpart H. This section should specifically state the version of CAP-88 used to recognize the associated dose factors (i.e., Federal Guidance Reports 11 and 12 from ICRP 26/30 or Federal Guidance Report 13 based on Post-ICRP 60 factors). Compliance with DOE public dose limits should also be evaluated in terms of effective dose equivalent. Compliance with the emissions limits in subparts Q and T should be discussed for those facilities subject to the specific requirements in 40 CFR Part 61. If a facility uses another air dispersion model deemed to be more site-specific than CAP-88 to calculate potential dose for compliance with DOE requirements, that information should be included and distinguished from the NESHAPS compliance dose.

The representative person or the MEI should be selected based on the requirements of DOE Order 458.1, paragraph 4e or DOE Order 5400.5, Sec.II.6.(3). The annual dose calculation to the representative person or the MEI should be an estimate based on a scenario and parameters that approximate an actual situation. The estimate should be reasonable but not likely to underestimate the dose. Calculation of the dose to a person spending 100 percent of his or her time at the fence line is useful for comparison purposes, but it overestimates the dose to the representative person or the MEI and biases comparative analyses. The 2011 ASERs should contain estimates based on realistic situations and should clearly describe the location of critical receptors and the scenarios used to calculate the estimated doses.

For cases in which monitoring data are below minimum detectable levels, those levels should be specified and, as noted in the *Environmental Radiological Monitoring* section of this guidance, should be reported consistent with guidance specified in DOE/EH-0173T, *Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance* (January 1991) regarding the use of "Less-Than-Detectable-Values".

The text associated with the tables should address the primary contributors (the radionuclides and processes creating them) to the doses and should identify the models and any pertinent assumptions used in estimating the doses, for example: "The maximum TED (or TEDE) for a member of the public was estimated to be 5 mrem (0.05 mSv) from all pathways. This was principally from Cs-137 and Sr-90 airborne emissions from [facility/process] and was calculated using CAP-88." If more than one radionuclide is a major contributor to the dose, a pie chart representing the relative contributions would be useful. If the maximum dose through the waterborne pathway and the airborne pathway is for different individuals, the report should briefly explain why these doses are not additive.

DOE Order 458.1 requires that DOE-approved dose coefficients be used to evaluate doses resulting from DOE radiological activities, but does not require use of specific dose factors. DOE Order 5400.5 specifies the use of ICRP 26/30 dose factors (e.g., Federal Guidance Reports 11 or 12) but some sites operating under DOE Order 5400.5 have received approval to use newer dose factors (e.g., dose factors from the

Federal Guidance Report 13 supplemental CD) for estimating public doses. Whether under DOE Order 458.1 or DOE Order 5400.5 the ASER should identify the dose factors used under the current contract in effect at the DOE site.

DOE Order 458.1 and DOE Order 5400.5 require reporting of collective doses to the public around DOE sites as well as radiation doses to the representative person or the MEI. Estimates of doses to individuals should include multiple exposure pathways and releases from multiple sources (e.g., point and diffuse) if they contribute to the dose to the same individuals. The collective dose should be an integration of estimates of average or representative doses to the public, not maximum potential doses.

4.2 Clearance of Property Containing Residual Radioactive Material

DOE's radiation protection framework and 100 mrem/year dose limit are applicable to an "all sources and all pathways" policy. In addition to air and water discharges to the environment, the clearance of property (real or personal) containing residual radioactive material is another type of "release" to the environment and is a potential contributor to the estimated dose received by the public. Specific authorized limits are used to govern the radiological clearance of sites, structures, and materials; thus, a summary of authorized limits for clearance of property should be reported. It may be desirable to discuss real property (lands and structures), and personal property (equipment and soils), separately. The information regarding clearance under authorized limits should be summarized. This guidance is not intended to be prescriptive. These recommended reporting elements should be used in a way that best fits the format and style of the ASER for each site.

The ASER should contain a summary of property clearance activities for the site, including (1) the approved authorized limit used for clearance, the basis for its derivation (i.e., dose/As Low As Reasonably Achievable based or DOE-approved surface activity guidelines) and its date of approval or effective date; and (2) the type of material or property (i.e., open land, structures, material and equipment, or laboratory waste), the basis for its clearance, and its expected end-use scenario (i.e., disposal, recycle, reuse). If the clearance of property is for recycle or reuse purposes, any discussion of these activities in this section may also be referenced in the pollution prevention/waste minimization section of the ASER.

With regard to personal property clearance, and considering the guidance contained in the January 19, 2001, memorandum from the Secretary, *Managing the Release of Surplus and Scrap Materials*, it may be desirable to provide summary data to quantify property cleared under the authorized limits or subject to the authorized limits. Where practical, information should be provided on (1) the volume, radionuclide concentrations, and total activity of the material; (2) the maximum dose to an individual and collective dose estimates; and (3) the estimated cost savings and other benefits from the clearance or a qualitative discussion of the benefits of the clearance program. A brief discussion about any actions taken to implement the improvements to monitoring, documenting and coordinating clearance recommended in the memorandum should be included, as should the locations or methods by which interested parties could obtain more detailed data on clearance (e.g., reading rooms, records centers or other locations where certification and clearance data are publicly available).

Requirements for the development and approval of authorized limits are contained in DOE Order 458.1 (and DOE Order 5400.5). Guidance on the development and approval of authorized limits is provided in several supporting DOE radiation protection guidance documents which are available on line at: http://www.hss.energy.gov/nuclearsafety/env. At that page, select "Environmental Guidance" and scroll down to "Radiation Protection (Atomic Energy Act)."

4.3 Addressing Radiation Protection of Biota in ASERS

4.3.1 Dose Rate Limits for Protection of Biota and Methods for Demonstrating Compliance

As part of integrating EMSs into site ISMS, DOE elements must, as applicable, consider protection of biota. Both aquatic and terrestrial evaluations should be conducted. DOE Order 458.1 requires the protection of populations of aquatice animals, terrestrial plants, and terrestrial animals in local ecosystems from adverse effects due to radiation and radioactive material released from DOE operations. DOE Order 458.1 provides a graded (tiered) approach to evaluating doses to biota and demonstrating compliance with biota dose rate criteria. DOE Order 5400.5 requires that populations of aquatic organisms be protected to a dose rate criterion of 1 rad/day. Recommended dose rate criteria of 1 rad/day for terrestrial plants and 0.1 rad/day for terrestrial animals should be applied in the evaluation of terrestrial systems. The DOE Technical Standard, *A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota* (DOE-STD-1153-2002), is available for use in evaluating and reporting compliance with both aquatic and terrestrial biota dose criteria.

4.3.2 The RESRAD-BIOTA Code as a Tool for Evaluating Doses to Biota

The RESRAD-BIOTA Code provides a complete spectrum of biota dose evaluation capabilities, from general screening to comprehensive receptor-specific dose estimation. The Code was principally sponsored and developed by DOE, with support from the EPA and Nuclear Regulatory Commission (NRC). The Code was released in September 2003; a User's Guide was published in January 2004. The RESRAD-BIOTA Code was designed to be consistent with the DOE graded approach to biota and the method's Biota Concentration Guides. The RESRAD-BIOTA Code is recommended as the preferred companion software tool to the Technical Standard for demonstrating protection of biota in the ASER.

DOE Technical Standard DOE-STD-1153-2002, the RESRAD-BIOTA Code, and the RESRAD-BIOTA Code User's Guide (DOE/EH-0676; ISCORS Report 2004-02) are available from the DOE Biota Dose Assessment Committee (BDAC) website at: http://homer.ornl.gov/sesa/environment/bdac/biota/index.cfm. Refer to **Attachment II**, p.24 and **Attachment V**, p.31, for specific details and site-specific examples from the West Valley Demonstration Project (WVDP), Pantex and Idaho National Laboratory (INL) biota dose evaluation summaries for demonstrating and reporting compliance with dose limits for biota in the ASER.

4.4 Unplanned Radiological Releases

Doses associated with unplanned releases should be reported; if they are insignificant with respect to normal release-related doses (i.e., a few percent or less), they should be reported as such. If they exceed appropriate limits, this should also be noted.

4.5 Environmental Radiological Monitoring

Facilities are requested to provide information on the models and the assumptions used in estimating the data so that data can be consistently and usefully aggregated. The "background" radiation levels used for comparison with off-site monitoring results, and the locations at which the background levels were measured, should be clearly stated. Summaries or tables of measured concentrations or activity should follow the guidance in § 7.3.4 of DOE/EH-0173T, *Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance* (January 1991, page 7-5), regarding the use of "Less-Than-Detectable-Values" for statistical analysis and data reporting.

4.5.1 Future Radiological Monitoring

In response to the Japanese Fukashima Daiichi nuclear power plant incident in March 2011, DOE sites may wish to discuss any efforts being made to detect potentially elevated radionuclide levels proximate to their site and surrounding communities relative to previous radiological monitoring efforts and results. Any radiological monitoring modifications made to monitoring networks to enhance detection of radiological impacts as a result of this incident could be mentioned in the 2011 ASER noting that further discussion and analysis of this data will be included in future ASERs.

5.0 ENVIRONMENTAL NON-RADIOLOGICAL PROGRAM INFORMATION

This section discusses the inclusion and display of non-radiological monitoring information in ASERs. When reporting non-radiological monitoring data, detection limits should be specified, where appropriate.

Non-radiological monitoring data should be included to provide a comprehensive summary of the environmental impacts associated with DOE site operations and the environmental monitoring efforts underway at DOE sites. Examples of the types of information that should be included and discussed in this section, if the data are available, are described below.

Graphical displays of non-radioactive emissions, including any discharges to air, surface water, soils and groundwater, should be used in demonstrating compliance with applicable permit limits. For example, graphs can show that when a permit contains both daily and annual release limits exceeding the daily limit may not necessarily constitute a compliance problem with respect to the annual limit.

Monitoring data related to non-radiological gaseous or liquid emissions for which there are applicable standards or other meaningful bases for interpreting the results should also be included in this section.

The Federal and State regulatory limits applicable to site emissions should also be described. Where appropriate, interpretation should be made of how the environmental pollutant discharge levels (resulting from site operations) compare to relevant parameters such as background levels and applicable effluent or environmental standards.

6.0 GROUNDWATER PROTECTION PROGRAM

This section should provide a brief description of site hydrological conditions, including cross-sections of subsurface conditions at the site. Reference to additional technical documents detailing the hydrological conditions, including groundwater flow and potential receptors, should also be provided in this section.

Groundwater monitoring and public drinking water protection continue to receive emphasis at EPA and within DOE. This section should include data on facility up-gradient and down-gradient wells at RCRA hazardous waste units, DOE Radioactive Waste Management Units, RCRA or CERCLA remediation sites, and identified compliance points (i.e., points at which regulatory standards apply) to effectively track groundwater plume movement. Groundwater monitoring wells operated for other purposes should also be included. These monitoring wells would include subsurface or aquifer characterization wells (used for environmental surveillance), environmental radiological program monitoring wells, or wells operated for detection monitoring at non-RCRA and non-CERCLA facilities at the site.

To make the ASERs more meaningful, trends in the groundwater data over time should be included. Each site should prepare tables to indicate trends in groundwater plume movement over a 5-year period, at a minimum. Data for the current year and for the previous 5 years should be displayed graphically or presented as basic statistics (such as median values and ranges) for contaminants commonly detected at

the site. The real or potential impact of groundwater plume and contaminant movement on public drinking water supplies should be discussed here. The 2011 ASERs should characterize groundwater monitoring results for CY 2011 and for the 5 previous years if the data are available. In addition, the ASERs should highlight monitoring wells with significant changes in contamination indicator parameters above background levels. This type of information should be compiled and organized such that it is easy to locate and understand.

A summary description of site groundwater monitoring network should also be provided. This summary should state the various monitoring objectives (i.e., RCRA hazardous waste management unit detection monitoring, environmental surveillance monitoring, or DOE Order 435.1 monitoring) and should describe the network established to meet these objectives. A series of tables could be used to summarize the number of active wells by area of the site and by purpose. The tables should address the number of wells installed or abandoned during the current year and any unique or innovative techniques use in the site groundwater monitoring network. A suggested tabular format that provides summary information on a site groundwater monitoring network is depicted in Attachment III. Site-specific examples from the 2010 Hanford ASER are referenced in **Attachment V,** p.32, *Site-Wide Groundwater Monitoring Program Summary Tables*.

Aerial photographs and/or maps of the reporting facility are extremely useful in depicting groundwater monitoring points, and, if available, they should be included in the ASER and portrayed in a manner consistent with site security requirements. In particular, maps that show the extent of contamination and migration of groundwater contaminant plumes over time should be included to meet the needs of regulators and the interests of the public and site stakeholders. These maps should indicate the locations of the plumes with respect to site boundaries, lakes, rivers, aquifers, and relevant groundwater monitoring and drinking water wells. Foldout maps may be included, as appropriate.

7.0 QUALITY ASSURANCE

The ASER should describe the measures taken to ensure the quality of radiological and non-radiological data through the implementation of a quality system for the management of environmental data as required by DOE Order 414.1D, *Quality Assurance* (4-25-2011). This discussion should generally validate site data collection and analysis programs and should present summary information from participation in inter-laboratory cross-check programs, including site results and expected results. The general implications of the results of inter-laboratory comparisons should be discussed along with any actions taken or needed to improve data quality.

In addition, the ASER should discuss the extent to which the following were used:

1. The *Uniform Federal Policy (UFP) for Implementing Environmental Quality Systems* (March 2005)

2. EPA QA/G-4, *Guidance on Systematic Planning Using the Data Quality Objectives Process* (February 2006)

The UFP offers an implementation tool for meeting DOE Order 450.1A, *Environmental Protection Program*, Section 4.c.(6) requirements for: "Assurance that analytical work for environmental and effluent monitoring supports data quality objectives, using a documented approach for collecting, assessing, and reporting environmental data."

EPA QA/G-4 provides information on how to apply systematic planning to generate performance and acceptance criteria for collecting environmental data. This guidance also provides a standard working

tool for project managers to develop data quality objectives (DQO) for determining the type, quantity and quality of data needed to reach defensible decisions.

DOE field element sites that have contracted for analytical services with off-site environmental laboratories should utilize, when possible, the results of the Department's corporate Consolidated Audit Program (DOECAP) and the results of the Mixed Analyte Performance Evaluation Program (MAPEP) for proficiency testing to help assure field managers about the quality of environmental data for basing decisions. In addition, the tracking and accountability of DOE waste streams sent off-site to commercial waste vendor facilities should be used by field managers in evaluating their risks and liabiltiies for potential treatment and disposal concerns raised in the DOECAP Reports. Additional information on DOECAP is available at: https://doecap.oro.doe.gov. Further information on MAPEP is available at: http://www.inl.gov/resl/mapep.

The use of Visual Sample Planning (VSP) software toolkits should also be considered by field managers regarding environmental field sampling statistical strategies for collecting data that has a proven record for cost-efficiencies in meeting Data Quality Objectives and regulatory acceptance. Additional information on Visual Sample Planning is available at: http://vsp.pnl.gov.

The quality assurance section of the ASER should discuss the extent to which DOE site contractors conducting environmental monitoring and DOE-contracted laboratories performing environmental analysis participate in the DOECAP, MAPEP and VSP performance evaluation programs to ensure the quality of analytic data obtained. Any additional quality assurance protocols, guidelines, or relevant national or international consensus standards used should be discussed here, as well.

Attachment I

Suggested Formats for Radiological Dose and Release Reporting in ASERs

The tables in Attachment I provide examples of formats used by HS-24 to summarize ASER radiological dose and release data. It is highly recommended that DOE sites use these formats for reporting doses, atmospheric releases, and liquid effluent releases in ASERs. Preparing data in these, or similar formats, will simplify aggregation of data across DOE and enable DOE-wide site comparisons. However, these example formats should not be used solely to replace site-specific-based presentations that contain more detailed radionuclide-specific information that are relevant to describing site-specific operations. Noteworthy site-specific examples from the 2010 West Valley Demonstration Project (WVDP), Waste Isolation Pilot Plant (WIPP) and Idaho National Laboratory (INL) ASERs are referenced in **Attachment V**, p.30, *Radiological Doses and Releases*.

The ASER should confirm that all of the types of radionuclides released from the site have been reported. If this is true, a clear statement should be made indicating that there are no known significant discharges of radioactive constituents from the site other than those reported in the tables. Such a statement would be informative to public stakeholders.

In addition, based on extensive review of past ASERs, most non-routine radiological releases typically do not significantly contribute to the overall radiological doses when compared to the doses resulting from routine DOE operations. This should also be clearly communicated in the ASER, where applicable.

Example Table 1: Site X Radiological Dose Reporting Table for Calendar Year 2011

Pathway	**Dose to the Representative Person or the Maximally Exposed Individual (MEI)** (mrem) (mSv)	**% of DOE 100 mrem/yr Limit**	**Estimated Collective (Population) Dose** (person-rem) (person-Sv)	**Population within 80 km***	**Estimated Background Radiation Population Dose** (person-rem)(person-Sv)
Air			Average dose X population exposed	*	Pathway specific Background doses need not be estimated
Water			Average dose X population exposed	*	Pathway specific Background doses need not be estimated
Other Pathways			Average dose X population exposed	*	Pathway specific Background doses need not be estimated
All Pathways	{Note: This should be the total dose to the representative person or the MEI, but it should not be the sum of the individual pathway doses unless all the pathway-specific MEI doses are to the same receptor.**}		{Note: This should normally be the sum of the average pathway-specific Population Doses}		

* Pathway-specific populations should be specified only if they are significantly different from the total population.

** Some sites sum representative person or the MEI doses from various pathways to different receptors to bound MEI doses. In such cases, the conservative nature (overestimation of dose) should be discussed. Other unrealistic assumptions, such as assumed occupancy factors for exposures of 24 hours/day for 365 days, should be explained if they are used in establishing bounding dose estimates. Although reported doses should not underestimate likely doses, DOE prefers dose estimates to be as realistic as possible.

Attachment I

Example Table 2: Site X Radiological Atmospheric Releases for Calendar Year 2011 (in Curies) ***

Tritium	^{85}Kr	Noble Gases ($T_{1/2}$ <40 days)	Short-Lived Fission and Activation Products ($T_{1/2}$ <3 hr)	Fission and Activation Products ($T_{1/2}$ >3 hr)	Total Radio-iodine	Total Radio-strontium	Total Uranium	Plutonium	Other Actinides	Other

Example Table 3: Site X Liquid Effluent Releases of Radioactive Material for Calendar Year 2011 (in Curies)***

Tritium	Fission and Activation Products ($T_{1/2}$>3hr)	Total Radio-iodine	Total Radio-strontium	Total Uranium	Total Plutonium	Other Actinides

*** These example tables are to assist in DOE-wide comparisons. If used, they should be presented along with more detailed site-specific-based tables. They should not replace or deter more informative site-specific reporting formats.

Please contact Ross Natoli of HS-24 at (202) 586-1336 or by e-mail at Ross.Natoli@hq.doe.gov for additional information or guidance.

Attachment II

Addressing Radiation Protection of Biota in ASERs

Guidance for Demonstrating and Reporting Compliance with Dose Limits for Biota

Dose Rate Criteria for Protection of Biota

DOE Order 458.1 requires the protection of populations of aquatice animals, terrestrial plants, and terrestrial animals in local ecosystems from adverse effects due to radiation and radioactive material released from DOE operations. DOE Order 458.1 provides a graded (tiered) approach to evaluating doses to biota and demonstrating compliance with biota dose rate criteria. DOE Order 5400.5, requires that populations of aquatic organisms be protected using a dose rate criteria of 1 rad/day. While there are no formal DOE dose limits for terrestrial biota, it is strongly recommended that ASERs demonstrate that DOE site activities are also meeting the dose rate criteria recommended in the Technical Standard, *A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota* (DOE-STD-1153-2002) for terrestrial biota.

DOE activities should demonstrate and document the following in the ASER, as appropriate to each site:

(1) The absorbed dose to aquatic animals will not exceed 1 rad/day (10 mGy/day) from exposure to radiation or radioactive material.

(2) The absorbed dose to terrestrial plants will not exceed 1 rad/day (10 mGy/day) from exposure to radiation or radioactive material.

(3) The absorbed dose to terrestrial animals will not exceed 0.1 rad/day (1 mGy/day) from exposure to radiation or radioactive material.

The screening and analysis methods described below provide a means of demonstrating that the above dose rate criteria for aquatic and terrestrial biota are being achieved.

A Graded Approach for Demonstration of Protection

DOE-STD-1153-2002 provides practical screening and analysis methods for demonstrating compliance with the requirements for protection of biota. The Technical Standard provides a graded approach for demonstrating compliance with the biota dose limits and for conducting ecological assessments of radiological impact. The Technical Standard was developed by DOE through the Department's Biota Dose Assessment Committee (BDAC).

The graded approach consists of a three-step process that guides the user from an initial, prudently conservative set of screening values to (if needed) a more rigorous analysis using site-specific information. This process includes *data assembly*, a *general screening phase*, and an *analysis phase*. In *data assembly*, the site area to be evaluated is defined, and measured maximum or mean radionuclide concentration data are assembled for subsequent screening. In the *general screening phase*, measured radionuclide concentrations in environmental media are compared with the Biota Concentration Guides (BCG). Each radionuclide-specific BCG represents the limiting radionuclide concentration in environmental media that would not cause the biota dose limits to be exceeded. The *analysis phase* consists of three increasingly more detailed steps of analysis: a site-specific screening, using site-representative parameters instead of default parameters; a site-specific analysis, employing a kinetic

modeling tool; and, if necessary, a site-specific biota dose assessment involving the collection and analysis of biota employing ecological risk assessment protocols. This three-phase scheme helps to ensure that the evaluation effort is commensurate with the likelihood and severity of potential environmental impacts. Implementation experience at DOE sites to date suggests that the majority of sites will likely be able to demonstrate compliance with biota dose limits using the general screening phase.

The RESRAD-BIOTA Code as a Tool for Evaluating Doses to Biota

The RESRAD-BIOTA Code (released in September 2003; User's Guide in January 2004) is the preferred companion software tool for implementing the methods contained in DOE-STD-1153-2002 and for demonstrating protection of biota in ASERs. The code provides a complete spectrum of analysis capabilities, from methods for general screening to comprehensive receptor-specific dose estimation. The code contains many advanced features, such as sensitivity analysis for studying parameter sensitivity; text reports and graphing capabilities for easy interpretation of data; an advanced "Organism Wizard" for configuring user-defined organisms; and capabilities to save and retrieve evaluation data and user-defined organisms.

DOE-STD-1153-2002, the RESRAD-BIOTA Code, and the RESRAD-BIOTA User's Guide (DOE/EH-0676; ISCORS Report 2004-02) can be downloaded from the BDAC web site at http://homer.ornl.gov/sesa/environment/bdac/biota/index.cfm. BDAC members are also available to provide technical assistance in the application of DOE-STD-1153-2002 or for consultation in conducting site-specific biota dose assessments where needed. DOE-STD-1153-2002 and the RESRAD-BIOTA Code are the preferred tools for estimating and evaluating doses to biota, unless there are site-specific requirements that necessitate the use of an alternative method or model, or it is determined that such alternate approaches will provide better results.

Specific Guidance and Sample Reporting Format for ASERs

Compliance with biota dose rate criteria should be reported in the *Environmental Surveillance* section of the ASER under *Aquatic and Terrestrial Wildlife*, or comparable section. The recommended approach is to prepare a text summary section and incorporate a supporting summary table for the evaluations conducted. To demonstrate compliance with DOE biota protection requirements, the following elements should be included when reporting evaluations and conclusions: (1) reference the biota dose rate criteria being met (e.g., 1 rad/day for aquatic organisms); (2) identify the method used to demonstrate compliance with these dose rate criteria and briefly describe the process used (e.g., screening methods using DOE-STD-1153-2002 and the RESRAD-BIOTA Code, or other site-selected method); (3) describe the site areas evaluated and supporting data used in the evaluation (i.e., sources of exposure to biota for the site area evaluated, specific organism types or receptors used, media type and radionuclide concentration data used); (4) summarize the results (e.g., concentrations of radionuclides in environmental media are less than screening values, doses calculated are less than biota dose rate criteria); and (5) provide a conclusion (e.g., populations of biota are protected at recommended dose rates and no impacts from ionizing radiation to populations of biota are indicated).

Additionally, the following areas should be highlighted as appropriate and beneficial: (1) any significant site outreach efforts or initiatives with stakeholders and local regulators; (2) integration of biota dose evaluation within your environmental surveillance program; and (3) site recognition of biota protection as a good business practice and as an important element of environmental stewardship. Refer to Module 1,

Section 8, *Documenting Your Biota Dose Evaluation Results*, in DOE-STD-1153-2002 for additional guidance.

Examples of Biota Dose Evaluation Reporting Cited from Actual ASERS

Most sites have done a good job in communicating their biota dose evaluation results in their ASERs. The West Valley Demonstration Project (WVDP), Pantex and Idaho National Laboratory (INL) biota dose evaluation summaries, as presented in their CY2010 ASERs, are referenced in **Attachment V**, p.31, *Biota Dose Evaluations*, as noteworthy examples of how to present and summarize this information in your ASER.

Please contact Katharine McLellan, HS-22, at 202-586-0183 or by e-mail at Katharine.Mclellan@hq.doe.gov; for additional information or guidance.

Attachment III

Suggested Reporting Format for DOE Site -Wide Groundwater Monitoring Program

Summary of DOE Site-Wide Groundwater Monitoring Program

The Summary Table on the following page provides an example of a highly recommended format that sites should use to give an accounting of all active groundwater monitoring wells at the site. Active wells are those that are currently being used (i.e., samples are taken during the current calendar year). This summary table includes only monitoring wells; it does not include injection wells, production wells, extraction wells (e.g., for remediation), piezometers, drainage wells, and so forth, unless a sample is withdrawn for chemical, physical, radiological, or other analysis.

The summary table is structured according to the primary purpose (or driver) for sampling the well and includes the following broad categories.

1. Restoration – Wells that are associated with a groundwater remediation project, including subsurface investigation monitoring, and evaluation of the progress of the remediation.
2. Waste Management – Wells that are sampled to determine the impact, if any, of a waste management unit (e.g., RCRA hazardous waste, DOE low-level radioactive waste, other RCRA waste, CERCLA remediation waste) on the groundwater.
3. Surveillance – Wells that are sampled to detect possible impact of any other site operations (non-waste management units) on the groundwater and would include both radiological and non-radiological sampling data.
4. Other – Wells that are sampled for any other purpose.

This example summary table accounts for numbers of samples taken during the calendar year at wells included in each of the four categories above (e.g., wells used for remediation, wells used for waste management). The table also accounts for analyses performed during the calendar year for all samples taken at each group of wells, corresponding to the same four categories. In addition, the table includes the percentage of all analyses performed for which the results were below the levels of detection. The final section of the table includes information on the ranges of concentrations for the most commonly detected contaminants. Site-specific examples from the 2010 Hanford ASER are referenced in **Attachment** V, p.31, *Site-Wide Groundwater Monitoring Program Summary Tables*.

Please contact Ross Natoli of HS-24 at 202-586-1336 or by e-mail at Ross.Natoli@hq.doe.gov; for additional information or guidance.

Attachment III

SUMMARY OF CY 2011 DOE SITE -WIDE GROUNDWATER MONITORING PROGRAM*

	PURPOSES FOR WHICH MONITORING WAS PERFORMED			
	Remediation	**Waste Management**	**Environmental Surveillance**	**Other Drivers**
Number of Active Wells Monitored On-Site				
Number of Active Wells Monitored Off-Site				
Number of Samples Taken				
Number of Analyses Performed				
% of Analyses that are Non-Detects				
% of Analyses within an Acceptable Range				

Ranges of Results for Positive Detections				
Tritium				
Krypton-85				
TCE				
Heavy Metals				
VOCs				
Other Contaminants (list separately)				

* Where appropriate, a second table could be included in this section to characterize off-site groundwater monitoring.

Attachment IV

ASER Reporting and Closure Sites

This section is intended to provide suggestions and guidance to DOE sites whose primary mission is environmental restoration with a goal of closure in the near future and to sites managed by the DOE Office of Legacy Management (LM). The unique nature and diversity of many LM-managed sites makes them suitable candidates for alternate forms of ASERs. Some alternatives to preparing the traditional ASER may be available to these sites given their mission, current operation status, and desire to streamline DOE internal reporting requirements and avoid redundancy in reporting. These alternatives may include either preparing a scaled-down version of the ASER or submitting equivalent documentation to DOE-HQ along with a self-declaration from the site that this documentation satisfies DOE internal reporting requirements.

The purpose of the ASER is to characterize site environmental management performance, summarize environmental occurrences and responses reported during the calendar year, confirm compliance with environmental standards and requirements, highlight significant site programs and efforts, and describe property clearance activities, as appropriate and relevant to the site. ASERs can also serve as a vehicle to document site progress in implementing EMS within the framework of the Department's ISMS. DOE Order 450.1A, *Environmental Protection Program*, required DOE sites to have an EMS in place by December 31, 2005, and declare full implementation by June 30, 2009. An audit by a 3rd party outside the scope and realm of the EMS is required every three years once full implementation is declared. The next verification audit is required to be conducted by June 30, 2012. The status of a site's EMS implementation and performance should be reported in the ASER (or equivalent document).

DOE Order 450.1A (June 4, 2008) and DOE Order 430.2B (February 27, 2008) have recently been cancelled and replaced by DOE Order 436.1, *Departmental Sustainability* (May 2, 2011). Information reported in the 2011 ASER (or equivalent document), should be responsive to the reporting requirements of DOE Orders 450.1A, 430.2B or 436.1, as applicable.

A significant portion of the energy and environmental sustainability information pursuant to these DOE Orders and relevant Executive Orders is reported through the annual Site Sustainability Plan (SSP) and DOE's Pollution Prevention Tracking and Reporting System (PPTRS). Although not required, sites may also choose to include this information in their ASERs and are encouraged to summarize, directly reference or cut and paste from existing reporting documents or systems. Specific information on each of these DOE Orders and Executive Orders is described below.

DOE Order 436.1 describes DOE's requirements and responsibilities for implementation of EO 13423 and EO 13514. This includes the development and implementation of an annual Site Sustainability Plan (SSP) that identifies a site's contribution toward meeting the Department's sustainability goals. In addition, DOE sites must use Environmental Management Systems (EMSs) as a platform for SSP implementation and programs with objectives and measurable targets that contribute to the Department meeting its sustainability goals. A site's progress towards meeting these goals in 2011, as identified in its SSP, can be referenced and summarized in the ASER (or equivalent document).

ASERs provide information that is essential to DOE-HQ for assessing field environmental program performance and confirming compliance with regulatory environmental standards and requirements. DOE-HQ often uses ASERs to gather site-specific environmental program performance information, to report DOE's environmental performance to Congress and the Environmental Protection Agency, and to respond to external inquiries. ASERs are also the means by which DOE demonstrates compliance with

DOE internal standards and requirements, such as the radiation protection requirements of DOE Orders 458.1 and 5400.5. In addition, ASERs are an important means of conveying DOE's environmental performance to members of the public living near DOE sites and to other stakeholders.

Some DOE sites may consider preparing a scaled-down, streamlined version of the ASER that reflects the current nature and extent of site operations and monitoring programs. Sites nearing closure may be in a relatively static operational condition. The scaled-down ASER may summarize any relevant new information for the current year and appropriately reference the previous year's ASER for a description of unchanged or static conditions at the site. DOE Order 231.1B, *Environment, Safety and Health Reporting (6-27-2011)*, which replaced and cancelled DOE Order 231.1A, Chg 1, *Environment, Safety and Health Reporting*, (6-3-04) and DOE Manual 231.1-1A, Chg 2, *Environment, Safety and Health Reporting Manual,*(6-12-07) and annual ASER guidance allow for sites to use a graded approach and to tailor their ASERs considering the site mission, breadth of operations, active monitoring conducted (including the level of activity of remedial action systems), and the potential impact site activities may have on the public and environment proximate to the site.

A second option is to submit the relevant and equivalent regulatory environmental compliance and radiological protection documentation to DOE-HQ in lieu of preparing the traditional ASER. For example, National Emission Standards for Hazardous Air Pollutants, National Pollutant Discharge Elimination System, and other regulatory environmental reporting that may be required and appropriate to the site, may be submitted. This documentation should characterize site environmental monitoring program and results, site activities, regulatory compliance status, and compliance with DOE Order 458.1 (or DOE Order 5400.5). This equivalent documentation and rationale should be submitted to Glenn S. Podonsky, Chief Health, Safety and Security Officer, Office of Health, Safety and Security, via a transmittal memorandum from the Site Manager, Field Office Manager, or appropriate designee, by October 1 of each calendar year. This memorandum should state that the site is self-declaring compliance with the radiation protection requirements of DOE Order 458.1 (or DOE Order 5400.5) and that the associated documentation and rationale that is forwarded with the memorandum supports this self-declaration. This alternate approach should demonstrate compliance with the spirit of the environmental protection reporting requirements of DOE Order 231.1B and the annual guidance issued to Field elements regarding the preparation of ASERs.

Regardless of the option certain sites may choose to pursue, appropriate measures should be taken to effectively communicate site environmental status to DOE-HQ and the public in the future. Specifically, sites should identify the future mechanisms that will be used to keep regulators and the public informed of site activities, closure progress, environmental activities, and monitoring results. At the appropriate juncture in the future, when environmental restoration activities are concluded at the site, the final submittal of appropriate documentation to DOE-HQ should describe the closeout condition of the site, including such information as the nature and extent of final activities at the site, the status of present and future monitoring and surveillance programs, and any pertinent institutional controls that may be implemented at the site.

Please contact Ross Natoli of HS-24 at 202-586-1336 or by e-mail at Ross.Natoli@hq.doe.gov; for additional information or guidance.

Attachment V

Site -Specific Examples of Suggested ASER Reporting Formats

Attachment V provides examples of model reporting formats referenced from 2009 or 2010 ASERs. These examples provide suggested reporting options for sites to consider for incorporation into their respective ASERs, as appropriate. They include reporting formats for the Executive Summary, Radiological Doses and Releases, Biota Dose Evaluations, Environmental Management Systems and ISMS/EMS Integration, DOE Order 450.1A, EO 13514/EO13423, Site-Wide Groundwater Monitoring Program Summary Tables, EPCRA, Environmental Performance Measures, NPDES Exceedances, the ASER Public/Reader Comment Form, Alternate General ASER Formats and ASER Summary Reports.

Please contact Ross Natoli of HS-24 at 202-586-1336 or by e-mail at Ross.Natoli@hq.doe.gov; for additional information or guidance.

Internet addresses are provided below to access the ASERs directly:

1. **Executive Summary:**
   Nevada Test Site – http://www.nv.doe.gov/library/publications/NTSER/DOENV_25946_1305SUM.pdf
   Hanford – http://msa.hanford.gov/msa/FileDisplay.cfm?FileID=1467&confirm=true
   Brookhaven National Laboratory – http://www.bnl.gov/esd/SER.asp
   Los Alamos - http://www.lanl.gov/environment/all/esr.shtml

2. **Radiological Doses and Releases:**
   West Valley Demonstration Project – http://www.wv.doe.gov/Documents/2010_ASER.pdf
   Waste Isolation Pilot Plant – http://www.wipp.energy.gov/library/ser/11-2225_ASER.pdf
   Idaho National Laboratory – http://www.gsseser.com/Annuals/2010/index.htm

3. **Biota Dose Evaluations:**
   West Valley Demonstration Project – http://www.wv.doe.gov/Documents/2010_ASER.pdf
   Pantex –
   http://www.pantex.com/ucm/groups/exweb/@exweb/@regcomp/documents/web_content/105944.pdf
   Idaho National Laboratory – http://www.gsseser.com/Annuals/2010/index.htm

4. **Environmental Management System and ISMS/EMS Integration:**
   Brookhaven National Laboratory – http://www.bnl.gov/ewms/ser/
   Lawrence Livermore National Laboratory – https://saer.llnl.gov/
   Argonne National Laboratory –
   http://www.anl.gov/Community_and_Environment/Environmental_Reports/ser2010.pdf
   Nevada Test Site – http://www.nv.doe.gov/library/publications/NTSER/DOENV_25946_1305SUM.pdf
   Savannah River Site - http://www.srs.gov/general/pubs/ERsum/er10/index.html
   Sandia National Laboratory-Albuquerque -
   http://www.sandia.gov/news/publications/environmental/CY10_SNL_NM_ASER.pdf

5. **DOE Order 450.1A:**
   Los Alamos National Laboratory – http://www.lanl.gov/environment/all/esr.shtml
   Oak Ridge Reservation - http://www.ornl.gov/sci/env_rpt/aser2010/index.shtml

Attachment V

Site -Specific Examples of Suggested ASER Reporting Formats (cont.)

6. **EO 13514 and EO 13423 Reporting:**
   Jefferson Lab – http://www.jlab.org/div_dept/doe/2010SER.pdf
   Lawrence Berkeley National Laboratory - http://www.lbl.gov/ehs/esg/Reports/assets/SER2010Vol1.pdf
   Waste Isolation Pilot Plant – http://www.wipp.energy.gov/library/ser/11-2225_ASER.pdf
   National Energy Technology Laboratory –
   http://www.netl.doe.gov/publications/others/env-rpts/aser2009.pdf

7. **Site-Wide Groundwater Monitoring Program Summary Tables:**
   Hanford – http://msa.hanford.gov/msa/FileDisplay.cfm?FileID=1467&confirm=true

8. **EPCRA Reporting:**
   Lawrence Livermore National Laboratory – https://saer.llnl.gov/
   Hanford - http://msa.hanford.gov/msa/FileDisplay.cfm?FileID=1467&confirm=true
   Sandia National Laboratory-Albuquerque -
   http://www.sandia.gov/news/publications/environmental/CY10_SNL_NM_ASER.pdf

9. **Environmental Performance Measures:**
   Argonne National Laboratory –
   http://www.anl.gov/Community_and_Environment/Environmental_Reports/ser2010.pdf
   West Valley Demonstration Project - http://www.wv.doe.gov/Documents/2010_ASER.pdf

10. **NPDES Exceedances:**
    Oak Ridge Reservation – http://www.ornl.gov/sci/env_rpt/aser2010/index.shtml
    Savannah River Site – http://www.srs.gov/general/pubs/ERsum/er10/index.html
    Nevada Test Site – http://www.nv.doe.gov/library/publications/NTSER/DOENV_25946_1305SUM.pdf

11. **ASER Public/Reader Comment Form:**
    Savannah River Site – http://www.srs.gov/general/pubs/ERsum/er10/index.html
    Pantex –
    http://www.pantex.com/ucm/groups/exweb/@exweb/@regcomp/documents/web_content/105944.pdf
    Energy Technology Engineering Center –
    http://www.etec.energy.gov/Environmental_and_Health/Documents/ASERS/ASER_2009.pdf
    Lawrence Livermore National Laboratory – https://saer.llnl.gov/

12. **Alternate General ASER Formats:**
    Idaho National Laboratory - http://www.gsseser.com/Annuals/2010/index.htm
    Brookhaven National Laboratory – http://www.bnl.gov/esd/SER.asp
    Hanford - http://msa.hanford.gov/msa/FileDisplay.cfm?FileID=1467&confirm=true
    Nevada Test Site -
    http://www.nv.doe.gov/library/publications/NTSER/DOENV_25946_1305SUM.pdf
    Lawrence Livermore National Laboratory – https://saer.llnl.gov/
    Sandia National Laboratory-Albuquerque -
    http://www.sandia.gov/news/publications/environmental/CY10_SNL_NM_ASER.pdf
    Los Alamos National Laboratory –
    http://www.lanl.gov/environment/all/esr.shtml

Attachment V

Site -Specific Examples of Suggested ASER Reporting Formats (cont.)

Pantex –
http://www.pantex.com/ucm/groups/exweb/@exweb/@regcomp/documents/web_content/105944.pdf
Savannah River Site – http://www.srs.gov/general/pubs/ERsum/er10/index.html
Oak Ridge Reservation - http://www.ornl.gov/sci/env_rpt/aser2010/index.shtml
Argonne National Laboratory –
http://www.anl.gov/Community_and_Environment/Environmental_Reports/ser2010.pdf

13. **ASER Summary Reports:**
Sandia National Laboratories, New Mexico –
http://www.sandia.gov/news/publications/environmental/CY09_SNL_ASER_Sum_Pam_20105146P.pdf
Argonne National Laboratory –
http://www.anl.gov/Community_and_Environment/Environmental_Reports/sser2009.pdf
Nevada Test Site –
http://www.nv.doe.gov/library/publications/NTSER/DOENV_25946_1305SUM.pdf
Oak Ridge Reservation –
http://www.ornl.gov/sci/env_rpt/aser2009/2009_Summary.pdf
Los Alamos National Laboratory –
http://www.lanl.gov/environment/all/docs/reports/2009ESR-Summary_LA-14431-ENV.pdf
Savannah River Site- http://www.srs.gov/general/pubs/ERsum/er10/er10_summary.pdf
Hanford - http://hanford-site.pnnl.gov/envreport/2009/summary/pnnl-19455-sum.pdf