



# **Guidance for Preparation of the 2014 Department of Energy Annual Site Environmental Reports**

**June 2015**



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Department of Energy Annual Site Environmental Reports**

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# **Guidance for Preparation of the 2014 Department of Energy Annual Site Environmental Reports**

## **1.0 BACKGROUND**

Department of Energy (DOE) field elements are responsible for the development and design of Annual Site Environmental Reports (ASERs) appropriate to their site-specific considerations while complying with DOE reporting requirements. This guidance provides recommendations for reporting that may be used to help supplement the requirements of DOE Orders which were contractually applicable to DOE sites in 2014, including DOE Order (O) 231.1B, *Environment, Safety and Health Reporting* (6-27-2011), and DOE O 458.1, *Radiation Protection of the Public and the Environment* (2-11-2011), Chg. 3. It is based on lessons learned and best practices as well as recognition of DOE corporate reporting requirements and stakeholder input. This guidance, while not mandatory, promotes consistency and uniformity in the reporting of environmental information within ASERs. Past use of this guidance has resulted in ASERs that present environmental information in a common format and that are readily understandable and usable by DOE organizations, stakeholders, and the general public. In 2011, several environmental, radiological and sustainability reporting-related DOE Orders replaced and cancelled DOE Orders that were previously in effect. These Orders that were fully or partially in effect in 2014 include:

DOE O 231.1B, *Environment, Safety and Health Reporting* (6-27-2011), which replaced and cancelled DOE O 231.1A, Chg. 1, *Environment, Safety and Health Reporting*, (6-03-04), DOE Manual (M) 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 5-06-11);

DOE O 232.2, *Occurrence Reporting and Processing of Operations Information* (8-30-11), [requirements effective as of January 1, 2013], which replaced and cancelled DOE M 231.1-2, *Occurrence Reporting and Processing of Operations Information*, (8-19-03);

DOE O 436.1, *Departmental Sustainability* (5-2-11), which replaced and cancelled DOE O 450.1A, *Environmental Protection Program* (6-04-08) and DOE O 430.2B, *Departmental Energy, Renewable Energy and Transportation Management* (2-27-08); and

DOE O 458.1, *Radiation Protection of the Public and the Environment* (2-11-2011), which replaced and cancelled DOE O 5400.5, *Radiation Protection of the Public and the Environment* (1-07-1993). Full implementation of the requirements of DOE O 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 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 2014 ASERs should be prepared considering the site's contractual applicability to the most recent 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 2014.**

As stated in DOE O 231.1B, the DOE Annual Site Environmental Report 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 and the calculated collective dose to members 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 O 458.1 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) 2014. ASERs should also highlight new site programs and initiatives, compliance successes, noteworthy practices, site environmental operating experience or environmental performance measures programs; and, if applicable, site assessments that occurred during CY 2014. If deemed appropriate by the site, any additional significant environmental issues, events, or noteworthy practices that emerge between the end of CY 2014 and the actual public distribution of the 2014 ASERs may be summarized in the transmittal memorandum releasing the 2014 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 2009, 2010, or 2011 ASER Summary Reports for Argonne National Laboratory (ANL), Sandia National Laboratories, Albuquerque (SNL-AL), Oak Ridge Reservation (ORR), Los Alamos National Laboratory (LANL), Hanford, Savannah River Site (SRS), Brookhaven National Laboratory (BNL) and Nevada National Security Site (NNSS); the 2012 ASER Summary Reports for ANL, LANL, SRS, BNL and NNSS; and 2013 ASER Summary Reports for LANL, SRS, BNL, NNSS and SNL-AL. Community involvement in preparing the summary pamphlet is encouraged. The ORR, 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.34, *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 achievements, 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 and navigation to both current year and previous years' ASERs. Noteworthy examples of effective ASER Web-Page organization and format for 2013 ASERs include Lawrence Livermore National Laboratory (LLNL), Idaho National

Laboratory (INL) and the SRS. (See **Attachment V**, p. 35, *ASER Web-Page Model Formats*).

## **1.2 Coordination and Production**

Because most DOE Heads of Headquarters Elements (HOH)<sup>1</sup> have delegated authority to DOE Heads of Field Elements (HFE)<sup>2</sup> 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 Analysis, within the Office of Environmental Protection, Sustainability Support and Corporate Safety Analysis, remains available to provide advice regarding the preparation of ASERs; however, the Office of Analysis does not have a formal review and comment role.

The 2014 ASERs should be approved by the HFE or appropriate designee and released to the public and/or placed on the site Internet Home Page by October 1, 2015. The public release of the 2014 ASERs should also include a statement of DOE's commitment to environmental protection, compliance, sustainability and the site's best efforts to ensure the validity and accuracy of the monitoring data. The copy required by DOE O 231.1B for the former Chief of Health, Safety and Security should be submitted to Mr. Andrew C. Lawrence, Director, Office of Environmental Protection, Sustainability Support and Corporate Safety Analysis, Office of Environment, Health, Safety, and Security.

## **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 HOHs, 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 2014 ASER should be submitted to Mr. Ross Natoli in the Office of Analysis, along with one hard copy, if available. The Office of Analysis will provide further distribution to the appropriate DOE-HQ offices and within the Office of Environment, Health, Safety and Security.

## **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 O 458.1. Therefore, a comprehensive description of each site's

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<sup>1</sup> 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.

<sup>2</sup> 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.

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 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 environmental operating experience 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 EMS 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. If sites choose to distribute compact disk (CD) versions of the ASER, a reader survey or comment form should be included in the CD mailer.

## **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 O 231.1B and DOE O 458.1 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.34, *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<sup>3</sup>; (3) other key initiatives, including environmental operating experience and performance measure programs; and (4) a brief description of the site's EMS, 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 O 458.1], 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 2014 compliance status for the following: (1) major environmental statutes and regulations; (2) DOE internal environmental, sustainability and radiation protection Orders, including DOE O 436.1, *Departmental Sustainability*; DOE O 458.1, *Radiation Protection of the Public and Environment*; DOE O 231.1B, *Environment, Safety and Health Reporting*; and DOE O 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 (NOVs), Notices of Deficiency, Notices of Intent to Sue, and other types of enforcement actions issued to the site as defined in DOE O 232.2, *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 O 436.1. These items are discussed below.

Before compiling and summarizing “environmental violations” for 2014, sites should consult EPA’s Enforcement & Compliance History Online (ECHO) database at: <http://echo.epa.gov/>. This is EPA’s

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<sup>3</sup> 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.



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 operating experience and 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 2014 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.

A summary table indicating the regulator and regulation requirement, a brief description of the regulatory program, the site's compliance status and the ASER chapter or sections that provide further discussion could be included here [See **Attachment V**, p.32, *Compliance Summary Table* example for Brookhaven National Laboratory, (BNL)].

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

This section should briefly summarize site progress in achieving compliance with DOE O 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 O 458.1.

- 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, NOVs, other air quality non-compliances, and any CAA compliance agreements in place at the site. Any major events that occurred at the site in CY 2014 pertaining to CAA compliance should be specifically discussed. The section should also address whether a major source of air pollutants (as defined in 40 Code of Federal Regulations (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 2014 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 2014 ASERs should be consistent with the information reported in the 2014 site NESHAPs report for radionuclides to demonstrate compliance with the Subpart H requirements for 2014. 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 CWA 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<sup>4</sup> 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 2014 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 to Field elements for site compliance history for the Office of Analysis's initiatives on the development of DOE-wide environmental performance measures and operating experience analyses.

Any analyses or reviews to select Best Available Technology conducted to comply with DOE O 458.1 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: <http://water.epa.gov/polwaste/nps/section438.cfm>. In addition, 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

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<sup>4</sup> 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 the following:

- Endangered Species Act

The Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531–1544) protects federally-listed threatened and endangered species and their habitats from take and ensures that federal actions do not jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.<sup>5</sup> If any aspect of an agency action may affect a listed species or designated critical habitat, consultation with the USFWS is required, usually resulting in a Biological Opinion (BO). This section should include a description or discussion of activities conducted at the site to comply with this law and the site's BO, and to protect endangered or threatened species and their critical habitat. Include a statement of the maximum take allowed for each threatened or endangered species, and the take for each species that occurred during the year. Include discussions of monitoring or other research done on threatened or endangered species at the site.

- National Historic Preservation Act

- Migratory Bird Treaty Act

DOE's 2013 updated Memorandum of Understanding on Migratory Birds with the U.S. Fish and Wildlife at: <http://energy.gov/sites/prod/files/2013/10/f3/Final%20DOE-FWS%20Migratory%20Bird%20MOU.pdf> and Executive Order (EO) 13186, *Responsibilities of Federal Agencies To Protect Migratory Birds*, direct Federal agencies to take certain actions to further implement the Migratory Bird Treaty Act (MBTA). This section should include a description or discussion of activities conducted at the site to comply with this law and protect migratory birds, especially of public outreach efforts conducted to involve the community. Sites that report through the Council for the Conservation of Migratory Birds' Bi-Annual Survey can include accomplishments in the following five categories: policy and planning; conservation measures; partnerships; bird conservation training; and international conservation. 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 O 436.1, *Departmental Sustainability* (May 2, 2011), Executive Order (EO) 13423, *Strengthening Federal Environmental, Energy and Transportation Management* (January 24, 2007) and EO 13514, *Federal Leadership in Environmental, Energy and Economic Performance* (October 9, 2009).

A significant portion of the energy and environmental sustainability information pursuant to these DOE Orders, EOs and the *DOE Strategic Sustainability Performance Plan* at: [http://energy.gov/sites/prod/files/2014/11/f19/doe\\_sspp\\_2014.pdf](http://energy.gov/sites/prod/files/2014/11/f19/doe_sspp_2014.pdf) is reported through the annual Site Sustainability Plan (SSP). Although not required, DOE sites should consider discussing their 2014 SSP goals and accomplishments in their 2014 ASER at a summary level. DOE sites may also choose to summarize, directly reference, or include information from the SSP or other existing reporting documents

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<sup>5</sup> Take is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting. Critical habitat is the specific areas within the geographical area occupied by the species on which are found those physical or biological features essential to the conservation of the species.

or systems, into their ASERs. Specific information on each of these DOE Orders and EOs is described below.

- DOE O 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 SSP that identifies a site's contribution toward meeting the Department's sustainability goals. In addition, DOE sites must use EMS as a platform for SSP implementation and programs with objectives and measurable targets that contribute to the Department meeting its sustainability goals.
- EO 13514 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 2014) goals during 2014 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 2014 SSP could be included here. Although this SSP information for 2014 was not required to be reported pursuant to EO 13514 until early 2015, DOE sites may summarize and discuss this in the 2014 ASER to the extent this information was available and finalized in 2014.

#### 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 (EHS), hazardous substances (HS), hazardous chemicals, and/or toxic chemicals in quantities that exceed specific 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 materials. The ASER should include summary information on the site-specific chemical inventory (EPCRA Tier II reporting) and toxic release inventory (TRI) and should reference the site submission to the EPA. Sites should report on activities that result in the reduction in the acquisition, use or release and reporting of toxic chemicals pursuant to EO 13514 and DOE's Strategic Sustainability Performance Plan (SSPP).

- Those EPCRA reporting requirements that were completed, or will be completed, for CY 2014 should be indicated and discussed in this section. 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 thresholds for any materials, did not have an extremely hazardous substance [EHS] release), indicate "not required." A short table is provided below to assist sites in presenting this information.

### Status of EPCRA Reporting

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

\* An entry of “yes,” “no,” or “not required” is sufficient for “Status.”

\*\* Extremely Hazardous Substance or 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 2014. 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. Recent DOE environmental initiatives that merit reporting or discussion in the ASER include:

#### Green and Sustainable Remediation (GSR)

GSR is the practice of using sustainable methods to reduce environmental and social impacts of remedial cleanup and closure activities in a cost effective way. GSR also offers opportunities to meet compliance obligations at lower overall cost and environmental impact.

GSR practices support the requirements of [Executive Order 13514, \*Federal Leadership in Environmental, Energy, and Economic Performance\*](#), and comply with the Department of Energy’s commitment outlined in its [2014 Strategic Sustainability Performance Plan](#) to incorporate green and sustainable remediation practices into its environmental cleanup programs.

If your facility is incorporating GSR practices during any aspect of remedial cleanup or closure activities under RCRA or CERCLA, then include a discussion of the activity in this section of the ASER. If possible, also include the positive impact of incorporating those GSR practices (i.e. reduced greenhouse gases by 500 lbs). To find out more about GSR go to:

[https://powerpedia.energy.gov/w/index.php?title=Sustainable\\_remediation&redirect=no](https://powerpedia.energy.gov/w/index.php?title=Sustainable_remediation&redirect=no)

#### Adapting to Climate Change

While working to reduce GHG emissions, the Federal government must address the impacts of climate change. This priority has recently been reaffirmed in Executive Order 13653, *Preparing the United States for the Impacts of Climate Change*, (November 2013) at:

[http://energy.gov/sites/prod/files/2013/11/f4/2013climatechange.eo\\_rel.pdf](http://energy.gov/sites/prod/files/2013/11/f4/2013climatechange.eo_rel.pdf) and the *Presidential*

*Climate Action Plan*, (June 2013) at:

<http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>. The planning framework for reporting on climate change adaptation was established in EO 13514. Climate change will have potential long-term impacts on DOE facilities and operations and DOE's *Climate Change Adaptation Plan*, (June 2014) at: [http://energy.gov/sites/prod/files/2014/10/f18/doe\\_ccap\\_2014.pdf](http://energy.gov/sites/prod/files/2014/10/f18/doe_ccap_2014.pdf) describes actions to be taken and lists specific goals and objectives. These goals and objectives have been added to DOE's SSPP and sites will report relevant information pursuant to DOE's *Climate Change Adaptation Plan* in their SSPs each year. DOE sites should discuss their 2014 climate change adaptation activities in this section of the ASER consistent with information included in their SSP.

### **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 2014 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 O 232.2, *Occurrence Reporting and Processing of Operations Information* and DOE O 231.1B, *Environment, Safety and Health Reporting*. 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, 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

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* (10-15-1996).

DOE O 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 SSP that identifies a site's contribution toward meeting the Department's sustainability goals. In addition, DOE sites must use EMSs as a platform for SSP implementation and programs with objectives and measurable targets that contribute to the Department meeting its sustainability goals. A summary table indicating the EMS goals, objectives and sustainability goals along with the status of the site's progress toward meeting these goals can be included here. (See **Attachment V**, p.33, *Environmental Management Systems and EMS Summary Table* examples for SRS, BNL, LLNL, ANL, NNS, SNL-Albuquerque, and SNL-California).

Because EO 13423 required DOE sites to have a fully implemented EMS in place by June 30, 2009 and verified again in June 2012, this section should include a pertinent discussion of the status and highlights of the EMS currently implemented at the site during 2014. 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.33, *Environmental Management Systems and EMS Summary Table* examples for SRS, BNL, LLNL, ANL, NNS, SNL-Albuquerque, and SNL-California).

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 O 436.1, 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 O 436.1.

The 2014 ASERs should include a discussion which qualitatively describes the status of the site's EMS performance during calendar year 2014. Sites should list what they determined to be the significant environmental aspects of their operations in 2014 that have the potential to impact the environment. A summary of the site's 2014 EMS information submitted to the Federal Facilities Environmental Stewardship & Compliance Assistance Center (FedCenter) <http://www.fedcenter.gov> 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.

In this discussion, sites should also mention the status or progress made toward meeting the requirements for fully implemented EMSs (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.

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 2014 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 O 436.1 and the reporting requirements in DOE O 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 Operating Experience and Performance Measurement**

Environmental operating experience and performance measurement is an integral component of an EMS. Environmental operating experience and sharing of related best practices and lessons learned are also consistent with the purpose and objectives of DOE O 210.2A, *DOE Corporate Operating Experience Program* (4-08-2011). EO 13423, EO 13514, and DOE O 436.1 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 EMS for 2014. 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.

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<sup>6</sup> for all non-excepted uses 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 2014 (e.g., DOE Environmental Sustainability Awards, DOE Management Awards, the President's GreenGov Awards), as well as any State or industry-sponsored environmental awards or recognition.

## **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.

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<sup>6</sup> 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.

## 4.1 Radiological Discharges and Doses

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

- Total Effective Dose (TED) to the representative person or to the Maximally Exposed Individual (MEI) in units of millirem (mrem) and millisievert (mSv)<sup>7</sup>, and collective (population) dose in units of person-rem (person-Sv)<sup>8</sup>, total population within 50 miles (80 kilometers)<sup>9</sup> 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)<sup>10</sup>.
- 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.
- 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 O 458.1<sup>11</sup>. Where appropriate, the ASER should state that, because the doses are calculated rather than measured, they represent potential or estimated, rather than actual, doses<sup>12</sup>. Data should also be presented using scientific notation (e.g.,  $3.2 \times 10^{-3}$  for 0.0032), where appropriate. The number of significant figures should also be appropriate to the quality of these data.

**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

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<sup>7</sup> Per DOE Orders 458.1, 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).

<sup>8</sup> Estimates of collective dose for DOE facilities are required by DOE Orders 458.1. DOE has no de minimis level for these calculations.

<sup>9</sup> 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 such situations, the population used to support the calculations should be described.

<sup>10</sup> As appropriate, Ci and GBq may be used. Uranium releases should be reported in terms of both Ci (Bq, or GBq, as appropriate) and grams.

<sup>11</sup> 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 and DOE-STD-1196-2011, *Derived Concentration Technical Standard*).

<sup>12</sup> 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.

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 2013 West Valley Demonstration Project (WVDP), Waste Isolation Pilot Plant (WIPP) and Idaho National Laboratory (INL), LANL, SRS, ORR, Hanford and NNSA ASERs are referenced in **Attachment V**, p.32, *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 TED. 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 O 458.1, paragraph 4e. 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 2014 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-HDBK-1216-2015, *Environmental Radiological Effluent Monitoring and Environmental Surveillance*, regarding the use of “Less-Than-Detectable-Values” for statistical analysis and data reporting. The Handbook, DOE-HDBK-1216-2015 published March 19, 2015, can be used by all DOE elements, including the National Nuclear Security Administration (NNSA), and their contractors to support implementation of DOE O 458.1 and is available at: <http://www.energy.gov/ehss/downloads/doe-hdbk-1216-2015>.

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 O 458.1 requires that DOE-approved dose coefficients be used to evaluate doses resulting from DOE radiological activities. The DOE approved dose coefficients can be found within DOE Standard DOE-STD-1196-2011, *Derived Concentration Technical Standard* (DCS), Appendix A (2011). The

DCS standard supports the implementation of DOE O 458.1 and was developed taking into consideration the most recent biokinetic and dosimetric information presented by the International Commission on Radiological Protection (ICRP). DOE sites should use the dose coefficients for the Reference Person found in Appendix A of DOE-STD-1196-2011 as the approved dose coefficients for estimating radiological doses to the public in their ASERs.

DOE O 458.1 requires 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 is the sum of the TED to all persons in a specified population received in a specified period of time. It can also be expressed as the product of the average dose to a specified population and the number of exposed persons within that population. Maximum potential doses should never be used to calculate the collective dose.

## **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). It is also recommended that DOE property clearance information be made available at surplus property sales locations and on surplus property websites.

Requirements for the development and approval of authorized limits are contained in DOE O 458.1 (and DOE O 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://energy.gov/ehss/services/environment/radiation-protection-public-and-environment>. At that page, go to: [Policies, Standards and Guidance Related to Radiation Protection of the Public and the Environment](#) then go to: [Surface Contamination Guidelines/Radiological Clearance of Property](#).

### **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 O 458.1 requires the protection of populations of aquatic animals, terrestrial plants, and terrestrial animals in local ecosystems from adverse effects due to radiation and radioactive material released from DOE operations. DOE O 458.1 also provides a graded (tiered) approach to evaluating doses to biota and demonstrating compliance with biota dose rate criteria. In addition, DOE O 458.1 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 (STD), *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 DOE-STD-1153-2002 for demonstrating protection of biota in the ASER.

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/>. Refer to **Attachment II**, p.25 and **Attachment V**, p.32, for specific details and site-specific examples from the WVDP, Pantex and 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 §8.5.2 of DOE-HDBK-1216-2015, *Environmental Radiological Effluent*

*Monitoring and Environmental Surveillance* (March 2015, pages 143-145), 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 Fukushima 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 2014 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 2014 ASERs should characterize groundwater monitoring results for CY 2014 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 O 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 2013 Hanford, BNL and INL ASERs are referenced in **Attachment V**, p.33, *Site-Wide Groundwater Monitoring Program Summary Tables and Trending*.

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 O 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 the environmental data quality and reporting objectives of DOE O 231.1B, DOE O 458.1 and DOE O 436.1.



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.

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 Department's corporate Consolidated Audit Program (DOECAP), the Mixed Analyte Performance Evaluation Program (MAPEP) and the Visual Sample Planning (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. These programs are discussed below.

1. DOE field element sites that have contracted for analytical services with off-site environmental laboratories should utilize, when possible, the results of DOECAP and the results of 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 liabilities for potential treatment and disposal concerns raised in the DOECAP Reports. Additional information on DOECAP is available at: <http://www.oro.doe.gov/DOECAP/>. Further information on MAPEP is available at: <http://www.inl.gov/resl/mapep>.
2. The use of 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 VSP is available at: <http://vsp.pnl.gov>.

## Attachment I

### Suggested Formats for Radiological Dose and Release Reporting in ASERs

The tables in **Attachment I** provide examples of formats used by the Office of Analysis 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 2013 WVDP, WIPP, INL, LANL, SRS, ORR, Hanford, and NNSS ASERs are referenced in **Attachment V**, p.32, *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 2014**

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 2014  
(in Curies, Bq or GBq, as appropriate) \*\*\***

Tritium	<sup>85</sup> Kr	Noble Gases (T <sub>1/2</sub> <40 days)	Short-Lived Fission and Activation Products (T <sub>1/2</sub> <3 hr)	Fission and Activation Products (T <sub>1/2</sub> >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 2014  
(in Curies, Bq or GBq, as appropriate)\*\*\***

Tritium	Fission and Activation Products (T <sub>1/2</sub> >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, AU-23, at 202-586-1336 or by e-mail at [Ross.Natoli@hq.doe.gov](mailto: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 O 458.1 requires the protection of populations of aquatic animals, terrestrial plants, and terrestrial animals in local ecosystems from adverse effects due to radiation and radioactive material released from DOE operations. DOE O 458.1 also provides a graded (tiered) approach to evaluating doses to biota and demonstrating compliance with biota dose rate criteria. In addition, DOE O 458.1 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 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

## Attachment II

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 RESRAD-BIOTA Version 1.21 computer model developed in 2004 and the RESRAD-BIOTA for Windows developed in 2009 have also been available to evaluate compliance with biota protection requirements and implementing DOE-STD-1153-2002. 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>. 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,

## Attachment II

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 WVDP, Pantex and INL biota dose evaluation summaries, as presented in their 2013 ASERs, are referenced in **Attachment V**, p.32, *Biota Dose Evaluations*, as noteworthy examples of how to present and summarize this information in your ASER.

Please contact Katharine McLellan, AU-22, at 202-586-0183 or by e-mail at [Katharine.McLellan@hq.doe.gov](mailto: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 2013 Hanford, BNL and INL ASERs are referenced in **Attachment V**, p.33, *Site-Wide Groundwater Monitoring Program Summary Tables and Trending*.

Please contact Ross Natoli, AU-23, at 202-586-1336 or by e-mail at [Ross.Natoli@hq.doe.gov](mailto:Ross.Natoli@hq.doe.gov); for additional information or guidance.

Attachment III

**SUMMARY OF CY 2014 DOE SITE -WIDE GROUNDWATER MONITORING PROGRAM\***

	<b>PURPOSES FOR WHICH MONITORING WAS PERFORMED</b>			
	<b>Remediation</b>	<b>Waste Management</b>	<b>Environmental Surveillance</b>	<b>Other Drivers</b>
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				

<b>Ranges of Results for Positive Detections</b>				
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 sites were required to have an EMS in place by December 31, 2005, and declare full implementation by June 30, 2009. An audit by a 3<sup>rd</sup> party outside the scope and realm of the EMS is required every three years once full implementation is declared. The most recent verification audit was 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). Information reported in the 2014 ASER (or equivalent document), should also be responsive to the reporting requirements of DOE O 436.1 and DOE O 458.1, as applicable.

A significant portion of the energy and environmental sustainability information pursuant to these DOE Orders and relevant Executive Orders are reported through the annual SSP. Although not required, DOE sites should consider discussing their 2014 SSP goals and accomplishments in their 2014 ASER at a summary level. DOE sites may also choose to summarize, directly reference, or include information from the SSP or other existing reporting documents or systems, into their ASERs. Specific information on each of these DOE Orders and Executive Orders is described below.

DOE O 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 SSP that identifies a site's contribution toward meeting the Department's sustainability goals. In addition, DOE sites must use their 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 2014, 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 EPA, 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 O 458.1. In addition, ASERs are an

## Attachment IV

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 O 231.1B and annual ASER guidance allow for sites to use a graded approach 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 O 458.1. This equivalent documentation and rationale required by DOE O 231.1B for the former Chief of Health, Safety and Security should be submitted to Mr. Andrew C. Lawrence, Director, Office of Environmental Protection, Sustainability Support and Corporate Safety Analysis, Office of Environment, 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 O 458.1 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 O 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, AU-23, at 202-586-1336 or by e-mail at [Ross.Natoli@hq.doe.gov](mailto: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 recent ASERs, including 2013 ASER publications. 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, Compliance Summary Table, Radiological Doses and Releases, Biota Dose Evaluations, Environmental Management Systems and EMS Summary Tables, DOE O 436.1, EO 13514/EO13423, Site-Wide Groundwater Monitoring Program Summary Tables and Trending, EPCRA, Environmental Operating Experience and Performance Measures, NPDES Exceedances, the ASER Public/Reader Comment Form, Alternate General ASER Formats, ASER Summary Reports and ASER Web-Page Model Formats examples.

Please contact Ross Natoli of AU-23 at 202-586-1336 or by e-mail at [Ross.Natoli@hq.doe.gov](mailto:Ross.Natoli@hq.doe.gov); for additional information or guidance.

Internet addresses are provided below to access these ASERs directly:

#### 1. **Executive Summary:**

Nevada National Security Site – <http://www.nv.doe.gov/library/publications/aser.aspx>

Hanford – <http://msa.hanford.gov/page.cfm/EnvironmentalReports2001-latest>

Brookhaven National Laboratory – <http://www.bnl.gov/ewms/ser/>

Los Alamos National Laboratory –

<http://www.lanl.gov/community-environment/environmental-stewardship/environmental-report.php>

National Renewable Energy Laboratory –

<http://energy.gov/eere/downloads/nrel-annual-environmental-performance-reports-annual-site-environmental-reports>

#### 2. **Compliance Summary Table:**

Brookhaven National Laboratory – <http://www.bnl.gov/ewms/ser/>

#### 3. **Radiological Doses and Releases:**

West Valley Demonstration Project – <http://www.wv.doe.gov/>

Waste Isolation Pilot Plant – [http://www.wipp.energy.gov/library/ser/DOE\\_WIPP-14-3532\\_ASER.pdf](http://www.wipp.energy.gov/library/ser/DOE_WIPP-14-3532_ASER.pdf)

Idaho National Laboratory – <http://www.gsseser.com/Annuals/2013/index.htm>

Los Alamos National Laboratory –

<http://www.lanl.gov/community-environment/environmental-stewardship/environmental-report.php>

Savannah River Site - <http://www.srs.gov/general/pubs/ERsum/index.html>

Oak Ridge Reservation - [http://www.ornl.gov/sci/env\\_rpt/](http://www.ornl.gov/sci/env_rpt/)

Hanford – <http://msa.hanford.gov/page.cfm/EnvironmentalReports2001-latest>

Nevada National Security Site – <http://www.nv.doe.gov/library/publications/aser.aspx>

#### 4. **Biota Dose Evaluations:**

West Valley Demonstration Project – <http://www.wv.doe.gov/>

Pantex –

<http://www.pantex.com/mission/Documents/Site%20Environmental%20Reports/Final%202013%20Pantex%20ASER%20Report.pdf>

Idaho National Laboratory – <http://www.gsseser.com/Annuals/2013/index.htm>

## Attachment V

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

5. **Environmental Management Systems and EMS Summary Tables:**
  - Savannah River Site - <http://www.srs.gov/general/pubs/ERsum/index.html>
  - Brookhaven National Laboratory – <http://www.bnl.gov/ewms/ser/>
  - Lawrence Livermore National Laboratory – <https://saer.llnl.gov/>
  - Argonne National Laboratory – <http://www.anl.gov/downloads/argonne-site-environmental-reports>
  - Nevada National Security Site – <http://www.nv.doe.gov/library/publications/aser.aspx>
  - Sandia National Laboratory-Albuquerque-  
[http://www.sandia.gov/news/publications/environmental\\_reports/](http://www.sandia.gov/news/publications/environmental_reports/)
  - Sandia National Laboratory-California-  
[http://www.sandia.gov/news/publications/environmental\\_reports/assets/documents/2013\\_ASER.pdf](http://www.sandia.gov/news/publications/environmental_reports/assets/documents/2013_ASER.pdf)
6. **DOE O 436.1:**
  - Los Alamos National Laboratory –  
<http://www.lanl.gov/community-environment/environmental-stewardship/environmental-report.php>
  - Oak Ridge Reservation - [http://www.ornl.gov/sci/env\\_rpt/](http://www.ornl.gov/sci/env_rpt/)
  - Brookhaven National Laboratory – <http://www.bnl.gov/ewms/ser/>
  - Argonne National Laboratory – <http://www.anl.gov/downloads/argonne-site-environmental-reports>
7. **EO 13514 and EO 13423 Reporting:**
  - Jefferson Lab – <https://www.jlab.org/ehs/ser/>
  - Lawrence Berkeley National Laboratory - <http://www.lbl.gov/ehs/esg/Reports/tableforreports.shtml>
  - Waste Isolation Pilot Plant – [http://www.wipp.energy.gov/library/ser/DOE\\_WIPP-14-3532\\_ASER.pdf](http://www.wipp.energy.gov/library/ser/DOE_WIPP-14-3532_ASER.pdf)
  - National Energy Technology Laboratory –  
<http://www.netl.doe.gov/File%20Library/About/ASE-2013.pdf>
8. **Site-Wide Groundwater Monitoring Program Summary Tables and Trending:**
  - Hanford – <http://msa.hanford.gov/page.cfm/EnvironmentalReports2001-latest>
  - Brookhaven National Laboratory – <http://www.bnl.gov/ewms/ser/>
  - Idaho National Laboratory – <http://www.gsseser.com/Annuals/2013/index.htm>
9. **EPCRA Reporting:**
  - Lawrence Livermore National Laboratory – <https://saer.llnl.gov/>
  - Hanford - <http://msa.hanford.gov/page.cfm/EnvironmentalReports2001-latest>
  - Sandia National Laboratory-Albuquerque -  
[http://www.sandia.gov/news/publications/environmental\\_reports/](http://www.sandia.gov/news/publications/environmental_reports/)
10. **Environmental Operating Experience and Performance Measures:**
  - Argonne National Laboratory – <http://www.anl.gov/downloads/argonne-site-environmental-reports>
  - West Valley Demonstration Project - <http://www.wv.doe.gov/>
  - National Renewable Energy Laboratory –  
<http://energy.gov/eere/downloads/nrel-annual-environmental-performance-reports-annual-site-environmental-reports>
  - Sandia National Laboratory-California-  
[http://www.sandia.gov/news/publications/environmental\\_reports/assets/documents/2013\\_ASER.pdf](http://www.sandia.gov/news/publications/environmental_reports/assets/documents/2013_ASER.pdf)

## Attachment V

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

11. **NPDES Exceedances:**

Oak Ridge Reservation – [http://web.ornl.gov/sci/env\\_rpt/](http://web.ornl.gov/sci/env_rpt/)  
Savannah River Site – <http://www.srs.gov/general/pubs/ERsum/index.html>  
Nevada National Security Site – <http://www.nv.doe.gov/library/publications/aser.aspx>

12. **ASER Public/Reader Comment Form:**

Savannah River Site – <http://www.srs.gov/general/pubs/ERsum/index.html>  
Pantex –  
<http://www.pantex.com/mission/Documents/Site%20Environmental%20Reports/Final%202013%20Pantex%20ASER%20Report.pdf>  
Energy Technology Engineering Center –  
[http://etec.energy.gov/Environmental\\_and\\_Health/ASER.html](http://etec.energy.gov/Environmental_and_Health/ASER.html)  
Lawrence Livermore National Laboratory – <https://saer.llnl.gov/>  
Sandia National Laboratory-Albuquerque -  
[http://www.sandia.gov/news/publications/environmental\\_reports/](http://www.sandia.gov/news/publications/environmental_reports/)  
Waste Isolation Pilot Plant – [http://www.wipp.energy.gov/library/ser/DOE\\_WIPP-14-3532\\_ASER.pdf](http://www.wipp.energy.gov/library/ser/DOE_WIPP-14-3532_ASER.pdf)

13. **Alternate General ASER Formats:**

Idaho National Laboratory - <http://www.gsseser.com/Annuals/2013/index.htm>  
Brookhaven National Laboratory – <http://www.bnl.gov/ewms/ser/>  
Hanford - <http://msa.hanford.gov/page.cfm/EnvironmentalReports2001-latest>  
Nevada National Security Site – <http://www.nv.doe.gov/library/publications/aser.aspx>  
Lawrence Livermore National Laboratory – <https://saer.llnl.gov/>  
Sandia National Laboratory-Albuquerque -  
[http://www.sandia.gov/news/publications/environmental\\_reports/](http://www.sandia.gov/news/publications/environmental_reports/)  
Los Alamos National Laboratory –  
<http://www.lanl.gov/community-environment/environmental-stewardship/environmental-report.php>  
Pantex –  
<http://www.pantex.com/mission/Documents/Site%20Environmental%20Reports/Final%20ASER%202012.pdf>  
Savannah River Site – <http://www.srs.gov/general/pubs/ERsum/index.html>  
Oak Ridge Reservation - [http://www.ornl.gov/sci/env\\_rpt/](http://www.ornl.gov/sci/env_rpt/)  
Argonne National Laboratory – <http://www.anl.gov/downloads/argonne-site-environmental-reports>

14. **ASER Summary Reports:**

Sandia National Laboratories, Albuquerque-  
[http://www.sandia.gov/news/publications/environmental\\_reports/](http://www.sandia.gov/news/publications/environmental_reports/)  
Oak Ridge Reservation - [http://web.ornl.gov/sci/env\\_rpt/](http://web.ornl.gov/sci/env_rpt/)  
Los Alamos National Laboratory –  
<http://www.lanl.gov/community-environment/environmental-stewardship/environmental-report.php>  
Hanford - <http://msa.hanford.gov/page.cfm/EnvironmentalReports2001-latest>  
Argonne National Laboratory – <http://www.anl.gov/downloads/argonne-site-environmental-reports>  
Savannah River Site- <http://www.srs.gov/general/pubs/ERsum/index.html>  
Nevada National Security Site - <http://www.nv.doe.gov/library/publications/aser.aspx>

Attachment V

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

15. **ASER Web-Page Model Formats:**

Lawrence Livermore National Laboratory – <https://saer.llnl.gov/>

Idaho National Laboratory – <http://www.gsaser.com/Annuals/2013/index.htm>

Savannah River Site – <http://www.srs.gov/general/pubs/ERsum/index.html>