



## Department of Energy

Fermi Site Office  
Post Office Box 2000  
Batavia, Illinois 60510

February 1, 2018

Ms. Martha E. Michels  
Chief Safety Officer  
Fermilab  
P.O. Box 500  
Batavia, IL 60510

Dear Ms. Michels:

**SUBJECT: FINAL ENVIRONMENTAL MANAGEMENT SYSTEM AUDIT REPORT**

As part of our Operational Oversight Program and Integrated Assessment Schedule, the Department of Energy (DOE), Fermi Site Office (FSO), initiated an audit of Fermilab's Environmental Management System (EMS). The audit was performed by Teralyn Murray and Rick Hersemann on November 15-16, 2017.

On December 19, 2017, FSO provided a draft copy of the audit report to Fermilab staff for a factual accuracy check. Fermilab provided one comment to FSO on the draft report which was incorporated into the final audit report. Enclosed is the final audit report.

The DOE assessment protocols identify three levels of findings, one level of strength, and one level of noteworthy practice which have been applied in this audit:

- **Level 1 Findings** – A finding that constitutes a Major Non-conformance. These findings are issues of major significance that warrant a high level of attention on the part of line management. Typically these reflect a gap in addressing requirements or a systemic problem with implementing requirements. This level of finding requires development, implementation, and effectiveness evaluation of a corrective action plan to address the nonconformance prior to declaring that the EMS conforms to the ISO 14001:2015 standard. If left uncorrected, this level of finding could negatively impact the adequacy of operations and/or accomplishment of the DOE Science mission.
- **Level 2 Findings** – A finding that constitutes a Minor Non-conformance. These are issues that represent a deviation during implementation of a requirement. Multiple issues at this level, when of a similar nature, may be combined into one or more Level 1 Findings. This level of finding does not prohibit declaration of conformance to the ISO standard, however, a corrective action plan to address the nonconformance must first be developed (i.e., corrective action implementation and evaluation do not have to be completed prior to declaration).
- **Level 3 Findings** – These are issues resulting from the recognition of improvements that can be gained in process, performance, or efficiency. This level of finding is an opportunity for improvement and does not constitute an EMS nonconformance.
- **Strength** – A mature process or activity that has consistently demonstrated the ability to meet expectations, or a process or activity that efficiently and effectively facilitates and integrates processes, activities, and resources.

- Noteworthy Practice – A positive observation, based on objective assessment data, of a particular practice, procedure, process, or system considered so unique or innovative enough that the entire Department might find it beneficial.

The DOE audit resulted in zero (0) Major Nonconformities (Level 1 Findings), three (3) Minor Nonconformities (Level 2 Findings), six (6) Opportunities for Improvement (Level 3 Findings), and five (5) Strengths related to Fermilab's EMS. The findings and strengths are listed below.

#### Level 2 Findings

1. EMS/2-1: Objective evidence was not observed that satisfies the following requirements of ISO 14001:2015 Clause 6.1.2, Environmental Aspects: the criteria used to determine Significant Environmental Aspects must be documented.
2. EMS/2-2: Objective evidence was not observed that satisfies the following requirements of ISO 14001:2015 Clause 7.3, Awareness: persons doing work under the organization's control must be aware of the environmental policy, significant aspects, their contribution to EMS effectiveness, and implications of their failure to conform to EMS requirements.
3. EMS/2-3: Objective evidence was not observed that satisfies the following requirements of ISO 14001:2015 Clause 9.3, Management Review: specific management review outputs outlined in the standard must be documented.

#### Level 3 Findings

1. EMS/3-1: There is an opportunity to perform a more comprehensive examination of the external context of the EMS.
2. EMS/3-2: There is an opportunity to help ensure that the requirements set forth in Clause 9.3 are met by establishing a Management Review procedure to clarify which meetings constitute the management review, issues to be considered during the management review, and outputs to be documented.
3. EMS/3-3: There is an opportunity to improve emergency preparedness by injecting environmental situations (e.g., spills) into routine emergency drills and producing after action reports to share lessons learned.
4. EMS/3-4: There is an opportunity to more actively manage two open corrective actions related to the Fermilab air emissions inventory which were opened following a 2015 air emissions program assessment.
5. EMS/3-5: There is an opportunity to improve external communication by adding language to Fermilab's Communication Policy to describe the process for receiving, documenting, and responding to comments or complaints from the public or other interested parties.
6. EMS/3-6: There is an opportunity to improve promotion of continual improvement of environmental performance.

Strengths

1. EMS/S-1: Robust resources have been dedicated to ESH&Q in the form of dedicated environmental staff, routine support from the Quality Assurance Group and availability of IT systems (such as iTrack).
2. EMS/S-2: Establishment of Chief Safety Officer as the EMS owner supports consistent EMS implementation across the lab, including the authority to make decisions about addressing environmental needs.
3. EMS/S-3: Effectiveness of internal communication and continuity of the messaging across divisions and sections is evident through the myriad meetings and establishment of various committees and subcommittees.
4. EMS/S-4: Various assessments including Tripartite Assessments, Self-Assessments and External Assessments are routinely conducted and the results are tracked within iTrack to identify trends of systematic deficiencies and opportunities for improvement.
5. EMS/S-5: Use of the Individual Training Needs Assessment (ITNA) process to identify the required training based upon hazards an individual may be exposed to in their work environment is a good practice to ensure worker competency.

Per DOE guidance for EMS implementation, Fermilab must develop a corrective action plan to address the Level 2 Findings prior to a self-declaration of conformance with the ISO 14001:2015 standard. Upon completion, the FSO Manager can adopt the corrective action plan and complete a memorandum of conformance to the ISO 14001:2015 standard and satisfy the requirements of DOE Order 436.1. The corrective action plan should be completed and adopted by the FSO Manager prior to the June 30, 2018 deadline for EMS conformance.

If you have any questions or comments concerning the enclosed audit report, please contact Rick Hersemann, of my staff, at extension 4122.

Sincerely,



Michael J. Weis  
Site Manager

Enclosure:  
As Stated

cc: N. Lockyer, w/o encl.  
J. Lykken, w/o encl.  
T. Meyer, w/o encl.

**Report Date: January 24, 2018**

**FERMI NATIONAL ACCELERATOR LABORATORY  
ENVIRONMENTAL MANAGEMENT SYSTEM**

**Audit Report**

**Audit Dates: November 15-16, 2017**

Prepared for:

**DOE, Office of Science  
Fermi Site Office**

Prepared by:

**Teralyn R. Murray, PE  
DOE, Office of Science, ISC-CH**

*For Internal Use Only*

## 1. EXECUTIVE SUMMARY

The Fermi National Accelerator Laboratory (Fermilab) Environmental Management System (EMS) Audit was conducted November 15-16, 2017 to gauge the conformance of Fermilab's EMS to the ISO 14001:2015 standard. This audit also examined Fermilab's conformance with internal policies and procedures related to the EMS. The results of the audit will support Fermilab's self-declaration of conformance to the ISO 14001:2015 standard, in accordance with DOE Order 436.1.

The audit team performed an extensive document review prior to the site visit. Interviews were held with key personnel and various facilities on the Fermilab campus were toured. The audit resulted in zero (0) Major Nonconformities (Level 1 Findings), three (3) Minor Nonconformities (Level 2 Findings), six (6) Opportunities For Improvement (Level 3 Findings), and five (5) Strengths.

## 2.0 PURPOSE AND METHODOLOGY

The Fermi National Accelerator Laboratory (Fermilab) Environmental Management System (EMS) Audit was performed to gauge the implementation and effectiveness of Fermilab's EMS against the ISO 14001:2015 standard. This audit also examined Fermilab's compliance with their internal policies and procedures related to the EMS. The results of the audit will be used to support a self-declaration of conformance in accordance with DOE Order 436.1. The audit was conducted from November 15 – 16, 2017. The original audit plan is presented in **Appendix A**.

### 2.1 Audit Team

Teralyn Murray, ISC-CH – Lead Auditor

Rick Hersemann, FSO – Audit Team Member

### 2.2 Criteria

The audit criteria included Fermilab's EMS-related policies and procedures and the following clauses (including sub-clauses) of the ISO 14001:2015 standard:

- Context of the Organization (Clause 4.0)
- Understanding the organization and its context (Clause 4.1)
- Understanding the needs and expectations of interested parties (Clause 4.2)
- Determining the scope of the environmental management system (Clause 4.3)
- Environmental Management System (Clause 4.4)
- Leadership (Clause 5.0)
- Leadership and commitment (Clause 5.1)
- Environmental Policy (Clause 5.2)
- Organizational roles, responsibilities and authorities (Clause 5.3)
- Planning (Clause 6.0)
- Actions to address risks and opportunities (Clause 6.1)
- Environmental objectives and planning to achieve them (Clause 6.2)
- Support (Clause 7.0)
- Resources (Clause 7.1)
- Competence (Clause 7.2)

- Awareness (Clause 7.3)
- Communication (Clause 7.4)
- Documentation information (Clause 7.5)
- Operation (Clause 8.0)
- Operational planning and control (Clause 8.1)
- Emergency Planning (Clause 8.2)
- Performance Evaluation (Clause 9.0)
- Monitoring, measurement, analysis, and evaluation (Clause 9.1)
- Internal audit (Clause 9.2)
- Management review (Clause 9.3)
- Improvement (Clause 10.0)
- General (Clause 10.1)
- Nonconformity and corrective action (Clause 10.2)
- Continual improvement (Clause 10.3)

### **2.3 Approach**

The basis of this EMS conformance determination includes a document review, interviews, and facility tours. Prior to the site visit, a detailed review of documents related to Fermilab's EMS was performed to identify evidence of conformance to each clause within the ISO 14001:2015 standard. EMS elements for which objective evidence was not provided were adjudicated during the interview process. A summary of documents reviewed is presented in **Appendix B**. Lines of inquiry used during interviews were drawn from ISO 14001:2015 and are presented in **Appendix C**. Interviews were conducted with the following management, ESH&Q, and other key Fermilab staff:

- Tim Meyer, Chief Operating Officer
- Martha Michels, Chief Safety Officer
- Amber Kenney, Deputy Safety Officer
- Bridget Iverson, Environmental Protection Manager
- Jemila Adetunji, Quality Assurance/Training Manager
- Dave Esterquest, Emergency Management/Fire Protection Manager
- Karen Kosky Facilities Engineering and Support Services Deputy Head
- Eric Mieland, Environmental Protection Group
- Eric Korzeniowski, Environmental Protection Group
- Katie Swanson, Environmental Protection Group
- Kathy Vuletich, Quality Assurance Group
- Ryan Campbell, Ecologist
- Katie Yurkewicz, Public Affairs Office
- Meka Francis, Radiation Analysis Facility

### **2.4 Characterization of Findings**

The assessment findings have been prioritized as major or minor according to the level of nonconformance with the ISO standard. The findings have also been characterized in accordance with criteria contained in the SCMS Quality Assurance & Oversight Management System. Per SCMS, findings

are prioritized as Levels 1, 2, or 3. This is necessary to identify the degree of management formality and rigor required for the correction, tracking to closure and trending of findings. Positive attributes in the procedures or implementation cited during the assessment will also be reported. They will be categorized as "Strengths" or "Noteworthy Practices."

*Level 1:* A finding that constitutes a Major Non-conformance. These findings are issues of major significance that warrant a high level of attention on the part of line management. Typically, these reflect a gap in addressing requirements or a systemic problem with implementing the requirements. This level of finding requires development, implementation and effectiveness evaluation of a corrective action plan to address the nonconformance prior to declaring that the EMS conforms to the ISO 14001 standard. If left uncorrected, this level of finding could negatively impact the adequacy of operations and/or accomplishment of the SC mission.

*Level 2:* A finding that constitutes a Minor Non-conformance. These findings are issues that represent a deviation during implementation of a requirement. Multiple issues at this level, when of a similar nature, may be combined into one or more Level 1 Findings. This level of finding does not prohibit declaration of conformance to the ISO standard, however, a corrective action plan to address the nonconformance must first be developed (i.e. corrective action implementation and evaluation do not have to be completed prior to declaration).

*Level 3:* These are issues resulting from the recognition of improvements that can be gained in process, performance, or efficiency. This level of finding is an opportunity for improvement and does not constitute an EMS nonconformance.

*Strength:* A mature process or activity that has consistently demonstrated the ability to meet expectations, or a process or activity that efficiently and effectively facilitates and integrates processes, activities and resources.

*Noteworthy Practice:* A positive observation, based on objective assessment data, of a particular practice, procedure, process, or system considered so unique or innovative enough that the entire Department might find it beneficial.

## **2.5 Declaration of Conformance to ISO 14001:2015**

Per DOE Guidance for EMS Implementation (**Appendix D**), a corrective action plan must be developed to address the nonconformities identified prior to a declaration of conformance. Upon completion, the Field Office Manager should adopt the corrective action plan and complete a memorandum of conformance to the ISO 14001:2015 standard. A template memorandum is presented in **Appendix D**.

## **3.0 AUDIT RESULTS**

### **3.1 Summary of Results.**

Following is a brief summary of audit findings. Section 3.2 provides a summary of each ISO clause and a detailed explanation of each finding.

**Major Nonconformities:**

- No findings.

**Minor Nonconformities:**

- Objective evidence was not observed that satisfies the following requirements of ISO 14001:2015 Clause 6.1.2, Environmental Aspects: the criteria used to determine Significant Environmental Aspects must be documented.
- Objective evidence was not observed that satisfies the following requirements of ISO 14001:2015 Clause 7.3, Awareness: persons doing work under the organization's control must be aware of the environmental policy, significant aspects, their contribution to EMS effectiveness, and implications of their failure to conform to EMS requirements.
- Objective evidence was not observed that satisfies the following requirement of ISO 14001:2015 Clause 9.3, Management review: specific management review outputs outlined in the standard must be documented.

**Opportunities For Improvement:**

- There is an opportunity perform a more comprehensive examination of the external context of the EMS.
- There is an opportunity to help ensure that the requirements set forth in Clause 9.3 are met by establishing a Management Review procedure to clarify which meetings constitute the management review, issues to be considered during the management review, and outputs to be documented.
- There is an opportunity to improve emergency preparedness by injecting environmental situations (e.g. spills) into routine emergency drills and producing after action reports to share lessons learned.
- There is an opportunity to more actively manage two open corrective actions related to the Fermilab air emissions inventory which were opened following a 2015 air emissions program assessment.
- There is an opportunity to improve external communication by adding language to Fermilab's Communication Policy to describe the process for receiving, documenting, and responding to comments or complaints from the public or other interested parties.
- There is an opportunity to improve promotion of continual improvement of environmental performance.

**Strengths:**

- Robust resources have been dedicated to ESH&Q in the form of dedicated environmental staff, routine support from the Quality Assurance Group and availability of IT systems (such as iTrack).
- Establishment of Chief Safety Officer as the EMS owner supports consistent EMS implementation across the lab, including the authority to make decisions about addressing environmental needs.
- Effectiveness of internal communication and continuity of the messaging across divisions and sections is evident through the myriad meetings and establishment of various committees and subcommittees.



- Various assessments including Tripartite Assessments, Self-Assessments and External Assessments are routinely conducted and the results are tracked within iTrack to identify trends of systematic deficiencies and opportunities for improvement.
- Use of the Individual Training Needs Assessment (ITNA) process to identify the required training based upon hazards an individual may be exposed to in their work environment is a good practice to ensure worker competency.

### 3.2 Results by ISO 14001:2015 Clause

The following table lists each clause of the ISO 14001:2015 standard and details any findings identified during the audit.

#### ISO §4.1 — Understanding the organization and its context

<b>ISO Requirement:</b>	The organization shall determine external and internal issues that are relevant to its purpose and that affect its ability to achieve the intended outcomes of its environmental management system. Such issues shall include environmental conditions being affected by or capable of affecting the organization.
<b>Comments / Findings:</b>	
<p><b>OFI</b> - There is an opportunity perform a more comprehensive examination of the external context of the EMS. One way to accomplish this is to analyze external issues that can affect Fermilab's ability to achieve its EMS objectives. This will help to ensure that issues arising from the external environment are appropriately taken into consideration when making decisions about the EMS. The recommended way to fully analyze external context is to analyze the following (on an international, national, regional or local scale as applicable):</p> <ul style="list-style-type: none"> <li>• Legal requirements</li> <li>• Economic environment</li> <li>• Political environment</li> <li>• Cultural environment</li> <li>• Technological environment</li> </ul> <p>Fully understanding Fermilab's context will facilitate continual improvement by identifying issues that may pose obstacles to accomplishing EMS goals. Once identified, contextual issues may result in risks and opportunities that need to be addressed by taking appropriate action(s).</p>	

#### ISO §4.2 — Understanding the needs and expectation of interested parties

<b>ISO Requirement:</b>	The organization shall determine: <ol style="list-style-type: none"> <li>a) the interested parties that are relevant to the environmental management system;</li> <li>b) the relevant needs and expectations (i.e. requirements) of these interested parties;</li> <li>c) which of these needs and expectations become its compliance obligations.</li> </ol>
<b>Comments / Findings:</b>	
No findings.	

**ISO §4.3 – Determining the scope of the environmental management system**

<b>ISO Requirement:</b>	<p>The organization shall determine the boundaries and applicability of the environmental management system to establish its scope.</p> <p>When determining this scope, the organization shall consider:</p> <ul style="list-style-type: none"> <li>a) the external and internal issues referred to in 4.1;</li> <li>b) the compliance obligations referred to in 4.2;</li> <li>c) its organizational units, functions and physical boundaries;</li> <li>d) its activities, products and services;</li> <li>e) its authority and ability to exercise control and influence.</li> </ul> <p>Once the scope is defined, all activities, products and services of the organization within that scope need to be included in the environmental management system.</p> <p>The scope shall be maintained as documented information and be available to interested parties.</p>
<b>Comments / Findings:</b>	
No findings.	

**ISO §4.4 Environmental management system**

<b>ISO Requirement:</b>	<p>To achieve the intended outcomes, including enhancing its environmental performance, the organization shall establish, implement, maintain and continually improve an environmental management system, including the processes needed and their interactions, in accordance with the requirements of this International Standard.</p> <p>The organization shall consider the knowledge gained in 4.1 and 4.2 when establishing and maintaining the environmental management system.</p>
<b>Comments / Findings:</b>	
No findings.	

**ISO §5.1 Leadership and commitment**

<b>ISO Requirement:</b>	<p>Top management shall demonstrate leadership and commitment with respect to the environmental management system by:</p> <ul style="list-style-type: none"> <li>a) taking accountability for the effectiveness of the environmental management system;</li> <li>b) ensuring that the environmental policy and environmental objectives are established and are compatible with the strategic direction and the context of the organization;</li> <li>c) ensuring the integration of the environmental management system requirements into the organization's business processes;</li> <li>d) ensuring that the resources needed for the environmental management system are available;</li> <li>e) communicating the importance of effective environmental management and of conforming to the environmental management system requirements;</li> </ul>
-------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>f) ensuring that the environmental management system achieves its intended outcomes;</p> <p>g) directing and supporting persons to contribute to the effectiveness of the environmental management system;</p> <p>h) promoting continual improvement;</p> <p>i) supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.</p>
<b>Comments / Findings:</b>	
<b>No findings.</b>	

**ISO §5.2 — Environmental Policy**

<b>ISO Requirement:</b>	<p>Top management shall establish, implement and maintain an environmental policy that, within the defined scope of its environmental management system:</p> <p>a) is appropriate to the purpose and context of the organization, including the nature, scale and environmental impacts of its activities, products and services;</p> <p>b) provides a framework for setting environmental objectives;</p> <p>c) includes a commitment to the protection of the environment, including prevention of pollution and other specific commitment(s) relevant to the context of the organization;</p> <p>d) includes a commitment to fulfil its compliance obligations;</p> <p>e) includes a commitment to continual improvement of the environmental management system to enhance environmental performance.</p> <p>The environmental policy shall:</p> <ul style="list-style-type: none"> <li>— be maintained as documented information;</li> <li>— be communicated within the organization;</li> <li>— be available to interested parties.</li> </ul>
<b>Comments / Findings:</b>	
<b>No findings.</b>	

**ISO §5.3 – Organizational roles, responsibilities and authorities**

<b>ISO Requirement:</b>	<p>Top management shall ensure that the responsibilities and authorities for relevant roles are assigned and communicated within the organization.</p> <p>Top management shall assign the responsibility and authority for:</p> <p>a) ensuring that the environmental management system conforms to the requirements of this International Standard;</p> <p>b) reporting on the performance of the environmental management system, including environmental performance, to top management.</p>
<b>Comments / Findings:</b>	
<b>Strength</b> - Establishment of Chief Safety Officer as the EMS owner supports consistent EMS implementation across the lab, including the authority to make decisions about addressing environmental needs.	

**ISO §6.1.1 - Actions to address risks and opportunities (General)**

<b>ISO Requirement:</b>	<p>The organization shall establish, implement and maintain the process(es) needed to meet the requirements in 6.1.1 to 6.1.4.</p> <p>When planning for the environmental management system, the organization shall consider:</p> <ul style="list-style-type: none"> <li>a) the issues referred to in 4.1;</li> <li>b) the requirements referred to in 4.2;</li> <li>c) the scope of its environmental management system;</li> </ul> <p>and determine the risks and opportunities, related to its environmental aspects (see 6.1.2), compliance obligations (see 6.1.3) and other issues and requirements, identified in 4.1 and 4.2, that need to be addressed to:</p> <ul style="list-style-type: none"> <li>— give assurance that the environmental management system can achieve its intended outcomes;</li> <li>— prevent or reduce undesired effects, including the potential for external environmental conditions to affect the organization;</li> <li>— achieve continual improvement.</li> </ul> <p>Within the scope of the environmental management system, the organization shall determine potential emergency situations, including those that can have an environmental impact.</p> <p>The organization shall maintain documented information of its:</p> <ul style="list-style-type: none"> <li>— risks and opportunities that need to be addressed;</li> <li>— process(es) needed in 6.1.1 to 6.1.4, to the extent necessary to have confidence they are carried out as planned.</li> </ul>
<b>Comments / Findings:</b>	
No findings.	

**ISO §6.1.2 — Environmental Aspects**

<b>ISO Requirement:</b>	<p>Within the defined scope of the environmental management system, the organization shall determine the environmental aspects of its activities, products and services that it can control and those that it can influence, and their associated environmental impacts, considering a life cycle perspective.</p> <p>When determining environmental aspects, the organization shall take into account:</p> <ul style="list-style-type: none"> <li>a) change, including planned or new developments, and new or modified activities, products and services;</li> <li>b) abnormal conditions and reasonably foreseeable emergency situations.</li> </ul> <p>The organization shall determine those aspects that have or can have a significant environmental impact, i.e. significant environmental aspects, by using established criteria.</p>
-------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>The organization shall communicate its significant environmental aspects among the various levels and functions of the organization, as appropriate.</p> <p>The organization shall maintain documented information of its:</p> <ul style="list-style-type: none"> <li>— environmental aspects and associated environmental impacts;</li> <li>— criteria used to determine its significant environmental aspects;</li> <li>— significant environmental aspects.</li> </ul>
<b>Comments / Findings:</b>	
<p><b>Minor Nonconformity</b> – Objective evidence was not observed that satisfies the following requirement of ISO 14001:2015 Clause 6.1.2, Environmental Aspects: the criteria used to determine Significant Environmental Aspects must be documented.</p>	

**ISO §6.1.3 – Compliance obligations**

<b>ISO Requirement:</b>	<p>The organization shall:</p> <ul style="list-style-type: none"> <li>a) determine and have access to the compliance obligations related to its environmental aspects;</li> <li>b) determine how these compliance obligations apply to the organization;</li> <li>c) take these compliance obligations into account when establishing, implementing, maintaining and continually improving its environmental management system.</li> </ul> <p>The organization shall maintain documented information of its compliance obligations.</p>
<b>Comments / Findings:</b>	
<p><b>No findings.</b></p>	

**ISO §6.1.4 – Planning action**

<b>ISO Requirement:</b>	<p>The organization shall plan:</p> <ul style="list-style-type: none"> <li>a) to take actions to address its:           <ul style="list-style-type: none"> <li>1) significant environmental aspects;</li> <li>2) compliance obligations;</li> <li>3) risks and opportunities identified in 6.1.1;</li> </ul> </li> <li>b) how to:           <ul style="list-style-type: none"> <li>1) integrate and implement the actions into its environmental management system processes or other business processes;</li> <li>2) evaluate the effectiveness of these actions.</li> </ul> </li> </ul> <p>When planning these actions, the organization shall consider its technological options and its financial, operational and business requirements.</p>
<b>Comments / Findings:</b>	
<p><b>No findings.</b></p>	

**ISO §6.2.1 Environmental objectives**

<b>ISO Requirement:</b>	<p>The organization shall establish environmental objectives at relevant functions and levels, taking into account the organization’s significant</p>
-------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>environmental aspects and associated compliance obligations, and considering its risks and opportunities.</p> <p>The environmental objectives shall be:</p> <ul style="list-style-type: none"> <li>a) consistent with the environmental policy;</li> <li>b) measurable (if practicable);</li> <li>c) monitored;</li> <li>d) communicated;</li> <li>e) updated as appropriate.</li> </ul> <p>The organization shall maintain documented information on the environmental objectives.</p>
<b>Comments / Findings:</b>	
<b>No findings.</b>	

**ISO §6.2.2 — Planning actions to achieve environmental objectives**

<p><b>ISO Requirement:</b></p>	<p>When planning how to achieve its environmental objectives, the organization shall determine:</p> <ul style="list-style-type: none"> <li>a) what will be done;</li> <li>b) what resources will be required;</li> <li>c) who will be responsible;</li> <li>d) when it will be completed;</li> <li>e) how the results will be evaluated, including indicators for monitoring progress toward achievement of its measurable environmental objectives.</li> </ul> <p>The organization shall consider how actions to achieve its environmental objectives can be integrated into the organization’s business processes.</p>
<b>Comments / Findings:</b>	
<b>No findings.</b>	

**ISO §7.1 - Resources**

<p><b>ISO Requirement:</b></p>	<p>The organization shall determine and provide the resources needed for the establishment, implementation, maintenance and continual improvement of the environmental management system.</p>
<b>Comments/Findings</b>	
<p><b>System</b> - Robust resources in the form of dedicated environmental staff, regular support from the Quality Assurance Group and availability of IT systems (such as iTrack) have been dedicated to ESH&amp;Q. This demonstrates the commitment of top leadership to meet environmental objectives and to promote continual improvement as stipulated in Clause 5.1.</p>	

### ISO §7.2 - Competence

<b>ISO Requirement:</b>	<p>The organization shall:</p> <ul style="list-style-type: none"> <li>a) determine the necessary competence of person(s) doing work under its control that affects its environmental performance and its ability to fulfil its compliance obligations;</li> <li>b) ensure that these persons are competent on the basis of appropriate education, training or experience;</li> <li>c) determine training needs associated with its environmental aspects and its environmental management system;</li> <li>d) where applicable, take actions to acquire the necessary competence, and evaluate the effectiveness of the actions taken.</li> </ul>
<b>Comments / Findings:</b>	
<p><b>System</b> – Use of the Individual Training Needs Assessment (ITNA) process to identify the required training based upon hazards an individual may be exposed to in their work environment is a good practice to ensure worker competency. ITNA is a web-based form and may be accessed on the ESH&amp;Q Training webpage.</p>	

### ISO §7.3 Awareness

<b>ISO Requirement:</b>	<p>The organization shall ensure that persons doing work under the organization's control are aware of:</p> <ul style="list-style-type: none"> <li>a) the environmental policy;</li> <li>b) the significant environmental aspects and related actual or potential environmental impacts associated with their work;</li> <li>c) their contribution to the effectiveness of the environmental management system, including the benefits of enhanced environmental performance;</li> <li>d) the implications of not conforming with the environmental management system requirements, including not fulfilling the organization's compliance obligations.</li> </ul>
<b>Comments / Findings:</b>	
<p><b>Minor Nonconformity</b> – Objective evidence was not observed that satisfies the following requirements of ISO 14001:2015 Clause 7.3, Awareness: persons doing work under the organization's control must be aware of the environmental policy, significant aspects, their contribution to EMS effectiveness, and implications of their failure to conform to EMS requirements. Over half of the personnel questioned (non-management level workers) were not aware of Fermilab's Environmental Policy and how significant aspects related to their work.</p>	

### ISO §7.4 - Communication (General)

<b>ISO Requirement:</b>	<p>The organization shall establish, implement and maintain the process(es) needed for internal and external communications relevant to the environmental management system, including:</p> <ul style="list-style-type: none"> <li>a) on what it will communicate;</li> <li>b) when to communicate;</li> <li>c) with whom to communicate;</li> <li>d) how to communicate.</li> </ul> <p>When establishing its communication process(es), the organization shall:</p> <ul style="list-style-type: none"> <li>— take into account its compliance obligations;</li> </ul>
-------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>— ensure that environmental information communicated is consistent with information generated within the environmental management system, and is reliable.          The organization shall respond to relevant communications on its environmental management system.</p> <p>The organization shall retain documented information as evidence of its communications, as appropriate.</p>
<b>Comments / Findings:</b>	
<b>No findings.</b>	

**ISO §7.4.2 — Internal communication**

<b>ISO Requirement:</b>	<p>The organization shall:</p> <p>a) internally communicate information relevant to the environmental management system among the various levels and functions of the organization, including changes to the environmental management system, as appropriate;</p> <p>b) ensure its communication process(es) enable(s) persons doing work under the organization’s control to contribute to continual improvement.</p>
<b>Comments / Findings:</b>	
<p><b>System</b> - Effectiveness of internal communication and continuity of the messaging across divisions and sections is evident through the myriad meetings and establishment of various committees and subcommittees. The result is an EMS that is well implemented throughout various departments within the organization.</p>	

**ISO §7.4.3 — External communication**

<b>ISO Requirement:</b>	<p>The organization shall externally communicate information relevant to the environmental management system, as established by the organization’s communication process(es) and as required by its compliance obligations.</p>
<b>Comments / Findings:</b>	
<p><b>OFI</b> – There is an opportunity to improve external communication by adding language to Fermilab’s Communication Policy to describe the process for receiving, documenting, and responding to comments or complaints from the public or other interested parties. ISO 14001:2015 Clause 9.3 requires that top management consider “relevant communication(s) from interested parties, including complaints.” Subsequent analysis of complaints can provide valuable information for detecting improvement opportunities for the environmental management system.</p>	

**ISO §7.5.1 – Documented information (General)**

<b>ISO Requirement:</b>	<p>The organization’s environmental management system shall include:</p> <p>a) documented information required by this International Standard;</p> <p>b) documented information determined by the organization as being necessary for the effectiveness of the environmental management system.</p>
<b>Comments / Findings:</b>	
<b>No findings.</b> (Documentation deficiencies already noted under clause 6.1.2 and 9.3.)	



**ISO §7.5.2 – Documented information (Creating and updating)**

<b>ISO Requirement:</b>	When creating and updating documented information, the organization shall ensure appropriate: a) identification and description (e.g. a title, date, author, or reference number); b) format (e.g. language, software version, graphics) and media (e.g. paper, electronic); c) review and approval for suitability and adequacy.
<b>Comments / Findings:</b>	
No findings.	

**ISO §7.5.3 – Control of documented information**

<b>ISO Requirement:</b>	Documented information required by the environmental management system and by this International Standard shall be controlled to ensure: a) it is available and suitable for use, where and when it is needed; b) it is adequately protected (e.g. from loss of confidentiality, improper use, or loss of integrity).  For the control of documented information, the organization shall address the following activities as applicable: — distribution, access, retrieval and use; storage and preservation, including preservation of legibility; — control of changes (e.g. version control); — retention and disposition.  Documented information of external origin determined by the organization to be necessary for the planning and operation of the environmental management system shall be identified, as appropriate, and controlled.
<b>Comments / Findings:</b>	
No findings.	

**ISO §8.1 – Operational planning and control**

<b>ISO Requirement:</b>	The organization shall establish, implement, control and maintain the processes needed to meet environmental management system requirements, and to implement the actions identified in 6.1 and 6.2, by: — establishing operating criteria for the process(es); — implementing control of the process(es), in accordance with the operating criteria.  The organization shall control planned changes and review the consequences of unintended changes, taking action to mitigate any adverse effects, as necessary.  The organization shall ensure that outsourced processes are controlled or influenced. The type and extent of control or influence to be applied to the process(es) shall be defined within the environmental management system.
-------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>Consistent with a life cycle perspective, the organization shall:</p> <ul style="list-style-type: none"> <li>a) establish controls, as appropriate, to ensure that its environmental requirement(s) is (are) addressed in the design and development process for the product or service, considering each life cycle stage;</li> <li>b) determine its environmental requirement(s) for the procurement of products and services, as appropriate;</li> <li>c) communicate its relevant environmental requirement(s) to external providers, including contractors;</li> <li>d) consider the need to provide information about potential significant environmental impacts associated with the transportation or delivery, use, end-of-life treatment and final disposal of its products and services.</li> </ul> <p>The organization shall maintain documented information to the extent necessary to have confidence that the processes have been carried out as planned.</p>
<b>Comments / Findings:</b>	
No findings.	

**ISO §8.2 – Emergency preparedness and response**

<p><b>ISO Requirement:</b></p>	<p>The organization shall establish, implement and maintain the process(es) needed to prepare for and respond to potential emergency situations identified in 6.1.1.</p> <p>The organization shall:</p> <ul style="list-style-type: none"> <li>a) prepare to respond by planning actions to prevent or mitigate adverse environmental impacts from emergency situations; respond to actual emergency situations;</li> <li>c) take action to prevent or mitigate the consequences of emergency situations, appropriate to the magnitude of the emergency and the potential environmental impact;</li> <li>d) periodically test the planned response actions, where practicable;</li> <li>e) periodically review and revise the process(es) and planned response actions, in particular after the occurrence of emergency situations or tests;</li> <li>f) provide relevant information and training related to emergency preparedness and response, as appropriate, to relevant interested parties, including persons working under its control.</li> </ul> <p>The organization shall maintain documented information to the extent necessary to have confidence that the process(es) is (are) carried out as planned.</p>
<b>Comments / Findings:</b>	
<p><b>OFI</b> – There is an opportunity to improve emergency preparedness by injecting environmental situations (e.g. spills) into routine emergency drills and producing after action reports to share lessons learned.</p>	

**ISO §9.1.1 – Monitoring, measurement, analysis and evaluation (General)**

<b>ISO Requirement:</b>	<p>The organization shall monitor, measure, analyze and evaluate its environmental performance.</p> <p>The organization shall determine:</p> <ul style="list-style-type: none"> <li>a) what needs to be monitored and measured;</li> <li>b) the methods for monitoring, measurement, analysis and evaluation, as applicable, to ensure valid results;</li> <li>c) the criteria against which the organization will evaluate its environmental performance, and appropriate indicators;</li> <li>d) when the monitoring and measuring shall be performed;</li> <li>e) when the results from monitoring and measurement shall be analyzed and evaluated.</li> </ul> <p>The organization shall ensure that calibrated or verified monitoring and measurement equipment is used and maintained, as appropriate.</p> <p>The organization shall evaluate its environmental performance and the effectiveness of the environmental management system.</p> <p>The organization shall communicate relevant environmental performance information both internally and externally, as identified in its communication process(es) and as required by its compliance obligations.</p> <p>The organization shall retain appropriate documented information as evidence of the monitoring, measurement, analysis and evaluation results.</p>
<b>Comments / Findings:</b>	
<b>No findings.</b>	

**ISO §9.1.2 – Evaluation of compliance**

<b>ISO Requirement:</b>	<p>The organization shall establish, implement and maintain the process(es) needed to evaluate fulfilment of its compliance obligations.</p> <p>The organization shall:</p> <ul style="list-style-type: none"> <li>a) determine the frequency that compliance will be evaluated;</li> <li>b) evaluate compliance and take action if needed;</li> <li>c) maintain knowledge and understanding of its compliance status.</li> </ul> <p>The organization shall retain documented information as evidence of the compliance evaluation result(s).</p>
<b>Comments / Findings:</b>	
<b>No findings.</b>	

**ISO §9.2.1 – Internal audit (General)**

<b>ISO Requirement:</b>	<p>The organization shall conduct internal audits at planned intervals to provide information on whether the environmental management system:</p> <ul style="list-style-type: none"> <li>a) conforms to:</li> </ul>
-------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	1) the organization's own requirements for its environmental management system; 2) the requirements of this International Standard; b) is effectively implemented and maintained.
<b>Comments / Findings:</b>	
<b>No findings.</b>	

**ISO §9.2.2 – Internal audit program**

<b>ISO Requirement:</b>	<p>The organization shall establish, implement and maintain (an) internal audit program(s), including the frequency, methods, responsibilities, planning requirements and reporting of its internal audits.</p> <p>When establishing the internal audit program, the organization shall take into consideration the environmental importance of the processes concerned, changes affecting the organization and the results of previous audits.</p> <p>The organization shall:</p> <ul style="list-style-type: none"> <li>a) define the audit criteria and scope for each audit;</li> <li>b) select auditors and conduct audits to ensure objectivity and the impartiality of the audit process;</li> <li>c) ensure that the results of the audits are reported to relevant management.</li> </ul> <p>The organization shall retain documented information as evidence of the implementation of the audit program and the audit results.</p>
<b>Comments / Findings:</b>	
<p><b>System</b> - Various assessments including Tripartite Assessments, Self-Assessments and External Assessments are routinely conducted and the results are tracked within iTrack to identify trends of systematic deficiencies and opportunities for improvement.</p>	

**ISO §9.3 – Management review**

<b>ISO Requirement:</b>	<p>Top management shall review the organization's environmental management system, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness.</p> <p>The management review shall include consideration of:</p> <ul style="list-style-type: none"> <li>a) the status of actions from previous management reviews;</li> <li>b) changes in:             <ul style="list-style-type: none"> <li>1) external and internal issues that are relevant to the environmental management system;</li> <li>2) the needs and expectations of interested parties, including compliance obligations;</li> <li>3) its significant environmental aspects;</li> <li>4) risks and opportunities;</li> </ul> </li> <li>c) the extent to which environmental objectives have been achieved;</li> <li>d) information on the organization's environmental performance, including trends in:             <ul style="list-style-type: none"> <li>1) nonconformities and corrective actions;</li> </ul> </li> </ul>
-------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>2) monitoring and measurement results;          3) fulfilment of its compliance obligations;          4) audit results;          e) adequacy of resources;          f) relevant communication(s) from interested parties, including complaints;          g) opportunities for continual improvement.</p> <p>The outputs of the management review shall include:          — conclusions on the continuing suitability, adequacy and effectiveness of the environmental management system;          — decisions related to continual improvement opportunities;          — decisions related to any need for changes to the environmental management system, including resources;          — actions, if needed, when environmental objectives have not been achieved;          — opportunities to improve integration of the environmental management system with other business processes, if needed;          — any implications for the strategic direction of the organization.</p> <p>The organization shall retain documented information as evidence of the results of management reviews.</p>
--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Comments / Findings:**

**Minor Nonconformity** - Objective evidence was not observed that satisfies the following requirement of ISO 14001:2015 Clause 9.3, Management review: specific management review outputs outlined in the standard must be documented.

The Fermilab management review process consists of various meetings conducted at varying periodicity with varying levels of documentation. While it is evident from interviews and presentation slides that management reviews are occurring, it is not evident that all requirements of ISO 14001:2015 are consistently included and documented. The standard requires that Fermilab “retain documented information as evidence of the results of management reviews.”

**OFI** - There is an opportunity to help ensure that the requirements set forth in Clause 9.3 are met by establishing a Management Review procedure to clarify which meetings constitute the management review, issues to be considered during the management review, and outputs to be documented. The Fermilab management review process consists of various meetings conducted at varying periodicity with varying levels of documentation. While it is evident from interviews and presentation slides that management reviews are occurring, it is not evident that all requirements of ISO 14001:2015 are consistently included and documented.

**ISO §10.1 – Improvement (General)**

<b>ISO Requirement:</b>	The organization shall determine opportunities for improvement (see 9.1, 9.2 and 9.3) and implement necessary actions to achieve the intended outcomes of its environmental management system.
-------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Comments / Findings:**

**OFI** – There is an opportunity to improve promotion of continual improvement of environmental performance. Currently, the annual Earth Day is cited as the preeminent venue for receiving suggestions related to improving environmental performance. Consider supplementing this annual

information exchange through use of existing channels, such as the website maintained by public affairs, to more frequently elicit ideas and recommendations. Alternatively, Fermilab may wish to explore a sustainability awards program to recognize great work on the campus and to encourage staff to find ways to protect the environment while saving money.

**ISO §10.2 – Nonconformity and corrective action**

<b>ISO Requirement:</b>	<p>When a nonconformity occurs, the organization shall:</p> <ul style="list-style-type: none"> <li>a) react to the nonconformity and, as applicable:           <ul style="list-style-type: none"> <li>1) take action to control and correct it;</li> <li>2) deal with the consequences, including mitigating adverse environmental impacts;</li> </ul> </li> <li>b) evaluate the need for action to eliminate the causes of the nonconformity, in order that it does not recur or occur elsewhere, by:           <ul style="list-style-type: none"> <li>1) reviewing the nonconformity;</li> <li>2) determining the causes of the nonconformity;</li> <li>3) determining if similar nonconformities exist, or could potentially occur;</li> </ul> </li> <li>c) implement any action needed;</li> <li>d) review the effectiveness of any corrective action taken;</li> <li>e) make changes to the environmental management system, if necessary.</li> </ul> <p>Corrective actions shall be appropriate to the significance of the effects of the nonconformities encountered, including the environmental impact(s).</p> <p>The organization shall retain documented information as evidence of:</p> <ul style="list-style-type: none"> <li>— the nature of the nonconformities and any subsequent actions taken;</li> <li>— the results of any corrective action.</li> </ul>
-------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Comments / Findings:**

**OFI** – There is an opportunity to more actively manage two open corrective actions related to the Fermilab air emissions inventory which were opened following a 2015 air emissions program assessment. Implementation of the corrective actions was initially delayed to allow time to obtain summer labor to complete the task. The new deadline has passed and no new justification has been provided to outline next steps. Also, there were no decisions for resolving the corrective actions documented in FESHCom, Assurance Council, or Sustainability meeting documents, so it does not appear that the corrective actions are progressing towards resolution. QAM 12040 states that “Upon acceptance of the CAPA, the responsible person implements the necessary actions.” The actions should be actively managed to resolution and/or closed.

**ISO §10.3 – Continual improvement**

<b>ISO Requirement:</b>	The organization shall continually improve the suitability, adequacy and effectiveness of the environmental management system to enhance environmental performance.
-------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Comments / Findings:**

**No findings.**

**APPENDIX A:**

**Audit Plan**



**Department of Energy**

Fermi Site Office  
Post Office Box 2000  
Batavia, Illinois 60510

October 20, 2017

Ms. Martha Michels  
Chief Safety Officer  
Fermilab  
P.O. Box 500  
Batavia, IL 60510

Dear Ms. Michels:

**SUBJECT: FERMILAB SITE OFFICE ASSESSMENT PLAN REVIEW OF THE FERMILAB NATIONAL ACCELERATOR LABORATORY ENVIRONMENTAL MANAGEMENT SYSTEM**

**Reference: Assessment Plan for Environmental Management System Review**

Under our Department of Energy (DOE) Fermi Site Office (FSO) Oversight Program, we prepared an Assessment Plan that identified assessments we intend to conduct in Fiscal Year 2018 at Fermi National Accelerator Laboratory (Fermilab). In accordance with the plan, FSO scheduled a review of Fermilab's Environmental Management System (EMS) for 1<sup>st</sup> Quarter and have been interacting with the Environment, Safety, Health and Quality (ESHQ) Section regarding the scope and timing of this review. The assessment will evaluate Fermilab's self-declaration that Fermilab's EMS complies with the updated ISO 14001:2015 standards. The assessment will be conducted by Teralyn Murray and Rick Hersemann on November 15-16, 2017.

The assessment will consist of review of Fermilab EMS documents and interviews of Fermilab staff that implement the EMS, followed by a closeout meeting. The objective, scope, and schedule for various planned activities are enclosed. FSO is coordinating the assessment with Bridget Iverson, Eric Mieland, and Kathy Zappia of the ESHQ Section. Please distribute this information, as needed.

As always, we appreciate your cooperation in affording DOE access to the appropriate documents, individuals, and field activities needed to complete this review. If you have any questions, please contact Rick Hersemann, of my staff, at extension 4122.

Sincerely,

Michael J. Weis  
Site Manager

Enclosure:  
As Stated

cc: N. Lockyer, w/encl.  
T. Meyer, w/encl.



**ASSESSMENT PLAN**  
**FERMI NATIONAL LABORATORY**  
**ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMANCE AUDIT**

**Objective:** Determine the conformance of Fermi National Laboratory's (Fermi) Environmental Management System (EMS) to the International Organization of Standards (ISO) 14001:2015 standard.

**Scope:** The scope of this audit will align with the scope of the organizational EMS, which includes all activities and processes carried out by Fermi.

**Criteria:**  
-Fermi policies and procedures  
-ISO 14001:2015 standard

**Audit Team:**  
-Teralyn Murray (Team Lead), DOE Field Office  
-Rick Hersemann, Fermi Site Office

**Audit Schedule:**

Notification letter and assessment plan submission	October 20, 2017
Opening conference	November 15, 2017
On-site interviews, document reviews, observation	November 15-16, 2017
Closing conference and discussion of initial results	November 16, 2017
Draft assessment report issued and factual accuracy review completed	December 15, 2017
Final, signed assessment report issued	January 12, 2018

**Approach:** During the opening conference, the audit team will meet with appropriate staff to review the schedule and logistics of audit activities and ask clarifying questions. Where possible, relevant site-related documents including policies, plans and procedures, reports, monitoring data and training records will have been reviewed prior to arrival. Processes will be observed and key staff interviewed to better understand the nature of facility operations and to validate information gleaned from reviewing documents and observing site activities.

Following the assessment, the audit team will conduct a debriefing with key Fermi staff to discuss preliminary findings and address outstanding issues. In the event that a nonconformity is deemed to pose an imminent environmental, safety, or health hazard, the coordinator for environmental, safety, or health issues and the program manager will be notified immediately.

A draft assessment report will be submitted for review and comment by appropriate staff within thirty days of assessment completion. The final report will include an assessment summary, audit

results and appropriate approval signatures.

**Lines of Inquiry:** Pertinent lines of inquiry will be drawn from the ISO 14001:2015 standard as well as Fermi policies and procedures.

**Prioritization of Assessment Results:** The results of the assessment will be documented as strengths and weaknesses. The weaknesses will be compiled into statements of inadequacies (i.e. findings) relative to the assessment criteria. The assessment findings will be prioritized as major or minor according to the level of nonconformance with the ISO standard. The findings will be further prioritized in accordance with criteria contained in the SCMS Quality Assurance & Oversight Management System. Per SCMS, findings are prioritized as Levels 1, 2, or 3. This is necessary to identify the degree of management formality and rigor required for the correction, tracking to closure and trending of findings. Positive attributes in the procedures or implementation cited during the assessment will also be reported. They will be categorized as "Strengths" or "Noteworthy Practices."

**Level 1:** A finding that constitutes a major EMS non-conformance. These findings are issues of major significance that warrant a high level of attention on the part of line management. Typically these reflect a gap in addressing requirements or a systemic problem with implementing the requirements. This level of finding requires development, implementation and effectiveness evaluation of a corrective action plan to address the nonconformance prior to declaring that the EMS conforms to the ISO 14001 standard. If left uncorrected, this level of finding could negatively impact the adequacy of operations and/or accomplishment of the SC mission.

**Level 2:** A finding that constitutes a minor non-conformance. These findings are issues that represent a deviation during implementation of a requirement. Multiple issues at this level, when of a similar nature, may be combined into one or more Level 1 Findings. This level of finding does not prohibit declaration of conformance to the ISO standard, however, a corrective action plan to address the nonconformance must first be developed (i.e. corrective action implementation and evaluation do not have to be completed prior to declaration).

**Level 3:** These are issues resulting from the recognition of improvements that can be gained in process, performance, or efficiency. This level of finding is an opportunity for improvement and does not constitute an EMS nonconformance.

**Strength:** A mature process or activity that has consistently demonstrated the ability to meet expectations, or a process or activity that efficiently and effectively facilitates and integrates processes, activities and resources.

**Noteworthy Practice:** A positive observation, based on objective assessment data, of a particular practice, procedure, process, or system considered so unique or innovative enough that the entire Department might find it beneficial.



## **APPENDIX B**

### **Documents Reviewed**

### List of Documents Reviewed

- 2017 Fermilab Site Sustainability Plan
- 2017-2020 Fermilab Ecological Land Management Plan
- 2017 Aspects List
- FESHM 1070 Smart Set (September 2017)
- FESHM 1051 Control of Environment, Safety, Health, and Quality Documents (September 2017)
- FESHM 2070 ESHQ Training Program Procedure (August 2017)
- FESHM 8010 Environmental Management System (July 2017)
- FESHM 8025 Wastewater Discharge to Sanitary Sewers (November 2014)
- ESHS Procedure 205: NPDES Sampling Procedure (November 2017)
- QAM 12040 Corrective and Preventative Actions Procedure (August 2014)
- QAM 12080 Fermilab ESH&Q Self-assessment and Inspection Program (January 2016)
- Risk Registry
- NPDES Monthly Sampling Data
- Training records for Fermilab Environmental Manager and Environmental Specialist
- Sustainability Fermilab Senior Management Overview presentation (April 2017)
- FESHCom Meeting presentations (May 2016, October 2016, April 2017, September 2017)
- Assurance Council Meeting Agendas and Minutes (October 2016, January 2017, March 2017, July 2017)
- 2016 Environmental Report to the Director
- 2017 SPCC Self-assessment Report and Corrective and Preventative Action Plan
- 2015 Air Emissions Program Self-assessment Report and Corrective and Preventative Action Plan
- 2017 FSO Low-level Waste Transportation Program Assessment Report and Corrective and Preventative Action Plan
- 2017 EMS Internal Audit Report and Corrective and Preventative Action Plan
- 2017 Refrigerant Management Program Self-assessment Report and Corrective and Preventative Action Plan
- 2017 ISO 14001 Compliance Cross-walk Assessment Report
- 2016 Construction Site Fugitive Dust Emissions Self-assessment Report
- 2017 Tritium Management External Review Report
- Environmental Evaluation Notification Form for Eastern Prairie Fringed Orchid
- Environmental Evaluation Notification Form for Integrated Engineering Research Center
- Environmental Evaluation Notification Form for Short Baseline Neutrino Project
- Twenty-one (21) Hazard Analysis Forms
- Twenty (20) Work Permit and Notification Forms
- Twenty (20) Refrigerant Service Order Forms
- Muon Accelerator Readiness Review
- 2000, 2007 TRI Reports
- 2010, 2011, 2013 Form Rs

**APPENDIX C:**  
**Lines of Inquiry**

**Lines of Inquiry**

4.1 [Understanding of the organization and its context]	<p><b>1. Describe the external and internal conditions that have been identified as potentially affecting (positively or negatively) Fermilab's ability to achieve the outcome of its EMS.</b></p> <p><b>2. Describe how Fermi's environmental policy and environmental objectives compatible with the context (i.e. conditions identified) and strategic direction.</b></p>
4.2 [Understanding the needs and expectations of interested parties]	<p><b>1. Which entities has Fermilab identified as interested parties within the context of the EMS?</b></p> <p><b>2. Will these interested parties (or their requirements) have an effect on the Fermilab's ability to achieve the intended outcomes of the EMS?</b></p>
5.1 [Leadership and commitment]	<p><b>1. How does top management demonstrate leadership and commitment with respect to the environmental management system?</b></p> <p><b>2. What is your role in developing strategic direction for Fermilab, such as the Annual Lab Plan or Strategic Plan and the Campus Master Plan or other business policies?</b></p> <p><b>3. What is your role in setting Environmental Objectives and what actions do you take when environmental objectives are not met?</b></p> <p><b>4. How do you integrate EMS objectives and requirements into business plans/objectives – including deployment and evaluation?</b></p> <p><b>5. What meetings facilitate these roles, how often are they held, and are minutes available?</b></p>
5.2 [Environmental policy]	<p><b>Are you familiar with the Environmental Policy?</b></p>
6.1.1 [Actions to address risks and opportunities]	<p><b>1. Describe documented or informal processes that have been developed to identify risks and opportunities.</b></p>
6.1.2 [Environmental aspects]	<p><b>1. Describe how Fermilab considers a life cycle perspective when identifying environmental aspects and impacts? For example, if a particular material must be mined in order to provide a product or service, in addition to the use phase the raw materials acquisition phase of the life cycle could be examined for associated impacts such as increased solid waste generation from the overburden material and surface water pollution from acid mine tailings.</b></p> <p><b>2. What criteria are used to identify significant environmental aspects? Where is this criteria documented?</b></p>
6.2.1 [Environmental objectives]	<p><b>1. How does Fermilab ensure that environmental objectives are established at relevant functions and levels? For example, an organization can choose to set a strategic objective that applies to the entire organization, or tactical and operational objectives that apply to specific departments and functions.</b></p> <p><b>2. Describe how the environmental objectives take into account Fermilab's significant environmental aspects, environmental policy, compliance obligations, and other risks and opportunities?</b></p>
7.2 [Competence]	<p><b>How does Fermilab ensure that persons doing the job are competent?</b></p>
7.3 [Awareness]	<p><b>What processes have been established to make people working under Fermilab's control aware of the organization's environmental policy, any objectives that are relevant to them, and how they are contributing to the effectiveness of the EMS?</b></p>
7.4.2 [Internal communication]	<p><b>1. Is there any process to communicate EMS related information (including updates and changes) to all functions and various levels of the organization?</b></p>

	<b>2. How does the communication process enable employees and other interested parties to contribute to continual improvement?</b>
7.4.3 [External communication]	<b>Has the organization established a process to externally communicate information relevant to the EMS?</b>
8.1 [Operational planning and control]	<p><b>1. What operational controls does Fermilab use to identify and regulate the effects of planned (e.g. setting new environmental objectives) and unplanned (e.g. release of new Executive Order) changes in order to take action to mitigate any adverse effects?</b></p> <p><b>2. How does Fermilab ensure that providers of products and services (i.e. subcontractors) are influenced by any controls that were established, to ensure that environmental requirements are addressed throughout the lifecycle of the process?</b></p> <p><b>3. Has Fermilab considered the need to provide information about potential significant environmental impacts associated with the transportation or delivery, use, end-of-life treatment and final disposal of its products and services?</b></p>
8.2 [Emergency preparedness and response]	<p><b>1. Describe Fermilab's process for how to prepare for and respond to emergency situations to prevent/mitigate impacts from emergency situations?</b></p> <p><b>2. Are planned response actions tested, reviewed and revised when necessary?</b></p> <p><b>3. How does Fermilab provide relevant info regarding emergency preparedness and response to relevant interested parties?</b></p>
9.1.1 [General (Monitoring, measurement, analysis and evaluation)]	<b>How does Fermilab evaluate environmental performance and effectiveness of the EMS?</b>
9.1.2 [Evaluation of Compliance]	<b>Does Fermilab implement any processes to evaluate fulfillment of its compliance obligations?</b>
9.3 [Management review]	<b>What are some typical agenda items for management review meetings? (Is information on Fermilab's environmental performance considered? Is the status of actions from previous management reviews considered? Is the extent to which objectives have been met considered?)</b>
10.1 [Nonconformity and Corrective Action]	<b>Describe Fermilab's process for correcting nonconformities and evaluating the effectiveness of corrective actions.</b>
10.3 [Continual Improvement]	<b>Describe Fermilab's process for identification and implementation of opportunities for improvement.</b>



**APPENDIX D:**  
**DOE EMS Implementation Guidance**

**DEPARTMENT OF ENERGY  
ENVIRONMENTAL MANAGEMENT SYSTEM  
DECLARATIONS OF CONFORMANCE TO ISO 14001:2015  
FISCAL YEAR 2018**

The attached Memorandum-to-File templates (see Attachments 2a and 2b) may be used to document conformance based on:

1. Registration to the ISO 14001:2015 standard by an ISO registrar; or
2. Completion of a formal audit by a qualified party outside the control or scope of the EMS.

If the audit is conducted by an ISO registrar, and the audit identifies no major non-conformances, then the registrar will issue a certificate of registration. This document supports the Field Manager's, or other appropriate senior manager's, declaration of conformance (see Attachment 2a). If the ISO registrar identifies non-conformities which prevent the issuance of a certificate of registration, the Field Manager or other appropriate senior manager, must wait until the necessary corrective actions are completed and the ISO registrar issues a certificate of registration, to make a declaration of conformance.

If the audit is conducted by another qualified party outside the control or scope of the EMS, there are several possible outcomes.

1. The audit identifies no non-conformances. Based on this, the Field Manager, or other appropriate senior manager, can declare the EMS to be in conformance with ISO 14001:2015 (see Attachment 2b); or
2. The audit identifies some minor non-conformances. Based on this, the organization implementing the EMS must develop and adopt a Corrective Action Plan; then the Field Manager, or other appropriate senior manager, can declare the EMS in conformance with ISO 14001:2015 (see Attachment 2b); or
3. The audit identifies one or more major non-conformances. Based on this, the organization implementing the EMS must develop and complete a Corrective Action Plan. The Field Manager, or other appropriate senior manager, must verify its completion, prior to declaring the EMS to be in conformance with ISO 14001:2015.

Declaration of conformance should reflect the severity of any non-conformances found during the formal audit. Although an EMS can be considered conformant even with some minor non-conformances, it is necessary that corrective actions be defined and planned, and that senior management commit to these actions. Major findings, such as systemic problems with an element(s) or completely missing elements, will lead to the system being non-conformant and conformity should not be declared. A trained auditor can distinguish between major and minor non-conformances. Minor non-conformances would not hinder declaration as long as corrective action is defined, planned, and endorsed, i.e. "accepted," by the Field Manager or other appropriate senior manager.

Copies of the Memorandum-to-File should be sent to the EMS contact in the appropriate PO, where applicable; to the director of the Office of Sustainable Environmental Stewardship (AU-21); and to the director of the Sustainability Performance Office (SPO).

**DEPARTMENT OF ENERGY  
ENVIRONMENTAL MANAGEMENT SYSTEM  
DECLARATIONS OF CONFORMANCE TO ISO 14001:2015  
FISCAL YEAR 2018**

**Attachment 2b  
Three-Year EMS Declaration Memorandum Template:  
Formal Audit by a Qualified Party**

Date: [Date]

From: [Name], [Field/Site Office] OR [Other Appropriate Senior Manager]

To: File

Subject: Declaration that [Contractor/Organization/Site] EMS conforms to the ISO 14001:2015 standard

This memorandum documents that the Environmental Management System (EMS) for [Contractor/Organization/Site] conforms to the International Organization for Standardization's (ISO) 14001:2015 standard, on the basis of the results of a formal audit by a qualified party outside the control or scope of the EMS, and of my oversight of the EMS. This satisfies the requirements of DOE O 436.1, §§ 4.c.(3) and 5.c.(2).

The audit was conducted on [Dates]. The audit report is attached. Based on my review of the audit results, and my oversight of the EMS, I find that the EMS conforms to the ISO 14001:2015 standard.

The scope of the EMS includes [specify e.g.: on- and off-site activities of employees and contractors, tenants and concessionaires, environmental remediation activities].

[Name], [Field/Site Office] OR  
[Other Appropriate Senior Manager]

Attachment: [Report of the Formal Audit by a qualified Party Outside the Control or Scope of the EMS]

cc: [Name of EMS Contact], [Program Office]  
[Name], Director, Office of Sustainable Environmental Stewardship (AU-21)  
[Name], Director, Sustainability Performance Office (SPO)