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# Standard Guide for Integrating Sustainable Objectives into Cleanup[1]

This standard is issued under the fixed designation E2876; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This guide presents a framework that allows and encourages the user to address sustainable aspects (environmental, economic and social) within cleanup projects. The user may implement this guide to integrate sustainable objectives into cleanup while working within applicable regulatory criteria.

1.2 The guide provides an overarching, consistent, transparent and scalable framework that helps the user identify and incorporate sustainable best management practices (BMPs) into site cleanup (which includes assessment and remediation), and enables the user to perform measurement of BMPs during the cleanup process. See Appendix X1 for example BMPs.

1.3 The guide is intended to encourage incremental steps to incorporate sustainable elements into cleanup projects. The user chooses whether to pursue BMP implementation alone (Section 6) or to also measure the benefits of the implemented BMPs (Sections 6 and 7). The user also chooses the phases of the cleanup to which they apply the guide.

1.4 The guide should be implemented within the existing site assessment and remediation process. The approach described in this guide should be used with other existing technical tools and policy to encourage the consideration of a more holistic approach with a broader range of cleanup options and activities than traditionally employed (NICOLE 2012(**1**))[2].

1.5 BMPs implemented under this guide should address all three aspects of sustainability: environmental, economic and social, while assuring that human health and safety as well as ecological risks are addressed. The goal of implementing BMPs is to take actions to address the sustainable objectives identified for the site.

1.6 3.1.17 defines sustainable objectives; 3.1.15.1 defines sustainable aspects; 5.3 provides detail about core elements; and Section 6 describes a process to identify, evaluate, select, and implement BMPs.

1.7 While the guide specifically applies to the cleanup phases of a project (which includes assessment and remediation phases), decisions made in the cleanup may influence reuse activities. The anticipated reuse of the site may influence cleanup activities.

1.8 This guide may not be used as a justification for elimination or reduction of cleanup actions that are required to protect human health and the environment.

1.9 The guide is composed of the following sections: Section 2 Referenced Documents, Section 3 Terminology, Section 4 Significance and Use, Section 5 Planning and Scoping; Section 6 Selection and Implementation of best management practices (BMPs); Section 7 Quantifying Site-Specific results from BMPs; and Section 8 Documentation. Fig. 1 Using the guide is provided to assist the user in navigating the guide.

1.9.1 The user may pursue either the BMP implementation section or both the BMP implementation and measurement sections.

1.9.2 The environmental portions of the guide align with the Greener Cleanup Principles released by USEPA in August 2009 (**2**).

1.9.3 When evaluating the sustainable BMPs the user should consider the short and long-term environmental, economic and social aspects, including the potential negative impacts, while ensuring protection of human health and the environment.

1.10 The guide is intended to provide an overarching framework for integrating sustainable objectives in cleanup projects. The user may choose to consider the Guide E2893 for greener cleanups along with this guide to more fully address the environmental elements of a project.

1.11 When implementing this guide, the user must comply with all applicable federal, state, and local statutes and regulations requiring or relating to protection of human health and the environment. This includes, but is not limited to, laws and regulations relating to health and safety, of the surrounding community, or on-site workers. No action taken in connection with implementing this guide should generate unacceptable human health or ecological risks.

1.11.1 CERCLA and RCRA include worker safety as part of health and safety plans following OSHA regulations.

[1] This guide is under the jurisdiction of ASTM Committee E50 on Environmental Assessment, Risk Management and Corrective Action and is the direct responsibility of Subcommittee E50.04 on Corrective Action.

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[2] The boldface numbers in parentheses refer to a list of references at the end of this standard.

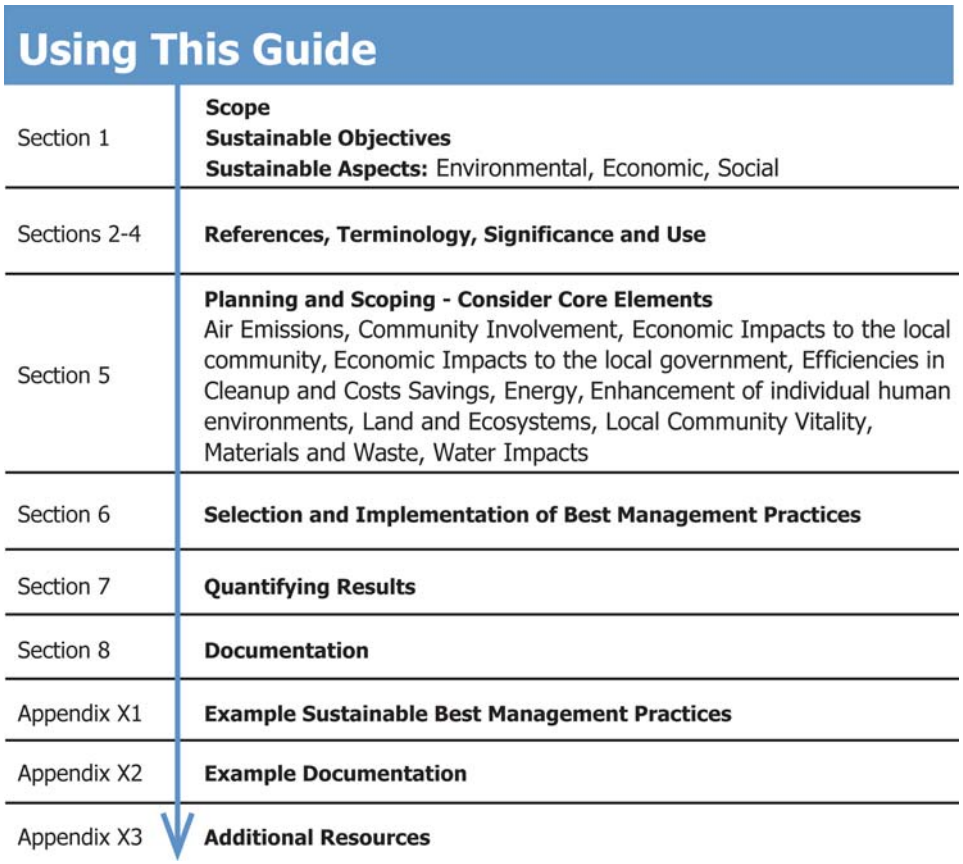


**FIG. 1 Using this Guide**

1.11.2 Most sites fall under specific regulatory programs that include provisions for health and safety plans following OSHA regulations. For more information see OSHA FAQ (**3**).

1.11.3 For all sites, the user must identify potential risks to the surrounding community as well as to site workers and manage those potential risks appropriately.

1.12 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards:*[3]

E1527 Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process

E1903 Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process

E1984 Guide for Brownfields Redevelopment (Withdrawn 2012)[4]

E2081 Guide for Risk-Based Corrective Action

E2091 Guide for Use of Activity and Use Limitations, Including Institutional and Engineering Controls

E2137 Guide for Estimating Monetary Costs and Liabilities for Environmental Matters

E2348 Guide for Framework for a Consensus-based Environmental Decision-making Process

E2893 Guide for Greener Cleanups

## 3. Terminology

3.1 *Definitions:*

3.1.1 *Best Management Practice (BMP)*—for the purposes of this guide, an activity that, under most situations, improves one or more sustainable aspects (environmental, social, economic) of a cleanup at a specific site.

3.1.1.1 *Discussion*—For example, a BMP for the environmental aspect would reduce the environmental footprint of a cleanup activity.

3.1.2 *CERCLA*—the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 *et seq*., as amended, the primary federal statute that governs the imposition of liability for environmental cleanups. CERCLA is commonly referred to as Superfund.

3.1.3 *cleanup*—the range of activities that may occur to address releases of hazardous substances or petroleum products at a site.

[3] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[4] The last approved version of this historical standard is referenced on www.astm.org.

3.1.3.1 *Discussion*—In the environmental industry this term is also referred to as assessment and remediation.

3.1.4 *community engagement charrette*—a meeting or series of meetings where the user identifies the stakeholders and invites them into the discussion of actions for the site.

3.1.4.1 *Discussion*—The community engagement charrette is one option for stakeholder collaboration. The interactions between and among the user and the stakeholders (including the regulatory agency) have the intent of sharing information and options where collaboration and consensus are goals of the meetings. The user and stakeholders discuss the important aspects, issues, and preferences for the site assessment or remediation. The community engagement charrette can be a series of meetings held as the user continues to implement subsequent steps of a cleanup.

3.1.5 *economic multiplier effect*—the increased value of currency/money that is inserted into an area, city, or region (in the form of wages, purchased goods, services, and manufactures) due to the fact the currency/money circulates close to where it is first spent.

3.1.5.1 *Discussion*—For example, *(a)* $10 from a city worker's wages, buys *(b)* lunch from a corner restaurant, that pays *(c)* a cook's wages, that buy *(d)* shares in a community solar garden.

3.1.6 *hazardous substance* —a substance defined as a hazardous substance pursuant to CERCLA, 42 U.S.C. § 9601(14), as interpreted by EPA regulations and the courts.

3.1.7 *petroleum products*—those substances included within the meaning of the petroleum exclusion to CERCLA, 42 USC § 9601(14), as interpreted by the courts and EPA: "petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance under subparagraphs *(A)* through *(F)* of this paragraph, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas)."

3.1.8 *project team*—the group of individuals and experts brought together to implement the activities identified by this guide for a specific site. Typically, the project team includes the user (for example, environmental consultant, specialists), the state or federal regulator, site owner representative and additional experts as needed. For some sites the project team may include community stakeholders.

3.1.8.1 *Discussion*—For the purposes of this guide, multidisciplinary project teams will often be the most effective. Additional members of the team may include specific experts (for example, solar power engineers, architectural or historic preservation specialists, economists, social scientists, life-cycle analysts, risk assessors, decision-support specialists) and facilitators.

3.1.9 *RCRA*—the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 *et seq*., as amended, sometimes also known as the Solid Waste Disposal Act, the primary federal statute that, *inter alia*, establishes a framework for regulation of solid and hazardous waste and for promoting resource recovery through a federal-state partnership.

3.1.10 *reasonably anticipated future use*—future use of a site that can be predicted with a reasonably high degree of certainty given historical use, current use, local governmental planning and zoning.

3.1.10.1 *Discussion*—Other factors that may be considered in determining reasonably anticipated future use include accessibility of the site to existing infrastructure, recent development patterns, cultural factors, environmental justice, regional trends, and community acceptance.

3.1.11 *site*—the area(s) defined by the likely physical distribution of the chemical(s) of concern from a source area. A site could be an entire property or facility, a defined area or portion of a facility or property or multiple facilities or properties. One facility may contain multiple sites. Multiple sites at one facility may be addressed individually or as a group.

3.1.12 *small, non-complex site*—a site that meets the attributes in the guide for a project that is not large or potentially complex, as identified by the user.

3.1.12.1 *Discussion*—In the case of a small project of limited complexity and scope, the user may consider the following site attributes to streamline the implementation of the evaluation. If the site meets the following attributes, the site may be considered small and non-complex and use the adaptations identified in the guide, including reduced documentation. The attributes are:

3.1.12.1 *limited release complexity*—small number or well understood chemicals of concern (COCs), limited light non-aqueous phase liquids (LNAPL) and no dense non-aqueous phase liquids (DNAPL).

3.1.12.2 *small scale site (such as a service station) and well defined soil and/or groundwater impacts*—generally limited to a relatively small area.

3.1.12.3 *lower risk land use*—open space, unoccupied commercial, or industrial land use surrounding the site; low population density surrounding the site, or areas with no current complete exposure pathways (see Guide E2081 for discussion of complete exposure pathways).

3.1.13 *stakeholders*—individuals, organizations, or other entities who directly or indirectly affect, or are affected by, site releases or cleanup activities, or other interested parties. Stakeholders are site-specific and can include members of the local community (for example, residents, regular visitors, nearby businesses, economic development corporations, and downgradient groundwater users), regulatory agencies having jurisdiction over the cleanup, site owner or responsible parties, and future users of the property.

3.1.13.1 *Discussion*—The site owners may or may not be the parties responsible for the cleanup. In addition, there may be other federal, state, and local oversight entities for permitting, historic preservation, or storm water management who should be considered when determining the stakeholders for the project. In addition, there may be commercial and industrial stakeholders or interested third parties that may be affected by the cleanup activities or that can affect the cleanup. Under the guide, the user and the project team consider the ideas, potential issues, and concerns of the different stakeholders in the decision making process.