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Standard Guide for Use of Activity and Use Limitations, Including Institutional and Engineering Controls[1]

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INTRODUCTION

Valuable property, which is, or is perceived to be, environmentally impacted, remains idle throughout the fifty states because fears of liability and corrective action costs deter potential developers, purchasers, and lenders. In response, many states have adopted voluntary corrective action or brownfields programs that utilize risk-based corrective action principles. One element of these programs may be activity and use limitations to achieve either an "acceptable risk" or a "no significant risk" level. For example, an owner/operator who volunteers to remediate a site to meet an industrial or commercial use standard may do so in exchange for a restrictive covenant that limits the use of the site to industrial or commercial purposes only. Activity and use limitations should be considered an integral part of the remedial action selection process. The user may determine, based upon post-remedial action land use, or based upon the deficiencies in available activity and use limitations, that an activity and use limitation is not feasible for the site. The most effective use of activity and use limitations as part of a federal, state, tribal or local remediation program requires careful consideration of many factors, including effectiveness, amenability to integration with property redevelopment plans, implementability, technical practicability, cost prohibitiveness, long-term reliability, acceptability to stakeholders, and cost effectiveness. While this guidance is most likely to be applied where risk-based corrective actions are conducted, use of activity and use limitations is not restricted to risk-based applications. Both institutional and engineering controls may be employed as elements of a remedial action that is based on concentration level, background, or other non-risk-based approaches.

1. Scope

1.1 This guide covers information for incorporating activity and use limitations that are protective of human health and the environment into federal, state, tribal or local remediation programs using a risk-based approach to corrective action. Activity and use limitations should be considered early in the site assessment and remedial action selection process, and should be considered an integral part of remedial action selection. In the event that an appropriate activity and use limitation cannot be found, the user may need to revisit the initial remedial action selection decision.

1.2 This guide does not mandate any one particular type of activity and use limitation but merely serves to help users identify, implement and maintain the types of activity and use limitations that may be appropriate in programs using a risk-based decision-making approach.

1.3 This guide identifies screening and balancing criteria that should be applied in determining whether any particular activity and use limitation may be appropriate. This guide identifies the need to develop long-term monitoring and stewardship plans to ensure the long-term reliability and enforceability of activity and use limitations. This guide explains the purpose of activity and use limitations in the remedial action process and the types of activity and use limitations that are most commonly available.

1.4 This guide describes the process for evaluating potentially applicable activity and use limitations and using screening and balancing criteria to select one or more activity and use limitations for a specific site. The guide also describes some "best practices" from a transactional, stakeholder involvement, and long-term stewardship perspective. The guide also emphasizes the importance of considering the need for, and potential applicability of, activity and use limitations EARLY in the remedial action process.

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1.5 All references to specific Federal or state programs are current as of the date of publication. The user is cautioned not to rely on this guide alone but to consult directly with the appropriate program.

1.6 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

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

E1912 Guide for Accelerated Site Characterization for Confirmed or Suspected Petroleum Releases (Withdrawn 2013)[3]

E2081 Guide for Risk-Based Corrective Action

E2247 Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property

2.2 *USEPA Documents:*[4]

EPA's Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups (September 29, 2000)

EPA's Interim Guidance Regarding Criteria Landowners Must Meet in Order to Qualify for Bona Fide Prospective Purchaser, Contiguous Property Owner, or Innocent Landowner Limitations on CERCLA Liability ("Common Elements" Guide) (March 2003)

EPA Strategy to Ensure Institutional Control Implementation at Superfund Sites, OSWER No. 9355.0-106, (September 2004)

EPA, A Citizen's Guide to Understanding Institutional Controls at Superfund, Brownfields, Federal Facilities, Underground Storage Tank, and Resource Conservation and Recovery Act Cleanups (March 2005)

EPA, Long Term Stewardship: Ensuring Environmental Site Cleanups Remain Protective Over Time (September 2005)

EPA, National Strategy to Manage Post Construction Completion Activities at Superfund Sites (October 2005)

EPA, "Enforcement First" to Ensure Effective Institutional Controls at Superfund Sites (March 2006)

EPA Draft Interim Final Guide Institutional Controls at Contaminated Sites (2010) (hereinafter, EPA Draft Interim Final Guide)

2.3 *Other Documents:*

American Bar Association Implementing Institutional Controls at Brownfields and Other Contaminated Sites (Edwards, ed., 2003)

NCCUSL (National Conference of Commissioners on Uniform State Laws), UECA Legislative Update[5]

ASTSWMO, State Approaches To Monitoring And Oversight of Land Use Controls (October 2009)[6]

10 CFR 20.1402 and 20. 1403 Energy—Radiological Criteria for Unrestricted Use; Criteria for License Termination under Restricted Conditions[4]

10 CFR 30.36(d), 40.42(d), 50.82(a) and (b), 70.38(d), and 72.54 Energy—Expiration and Termination of Licenses[4]

10 CFR 830 Energy—Nuclear Safety Management[4]

40 CFR 300.430(a)(1)(iii)(D) Protection of Environment National Oil and Hazardous Substances Pollution Contingency Plan[4]

40 CFR 761.61(a), 761.61(a)(3)(i), 761.61(a)(7), and 761.61(a)(8) Protection of Environment—Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions—PCB Remediation Waste[4]

40 CFR 761.75(b)(1)(ii) through (b)(1)(v) Protection of Environment—Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions—Chemical Waste Landfills[4]

42 USC 9620(h)(3) Comprehensive Environmental Response, Compensation, and Liability Act[4]

3. Terminology

3.1 *Definitions:Definitions of Terms Specific to This Standard*— The reader should review the definitions presented herein prior to reviewing this guide, as many of the items included in this guide may have specific regulatory definitions within existing federal, state, tribal, or local programs. The following terms are being defined to reflect their specific use in this guide. Many of these definitions are taken directly from Guide E2081. The user should not assume that these definitions replace existing regulatory definitions. Where the definition or use of a term in this standard differs from an existing regulatory definition or use, the user should address these differences prior to proceeding with the corrective action process.

3.1.1 *acceptable risk*—risk which is deemed to be below a level of regulatory concern.

3.1.2 *activity and use limitations, or AULs*—legal or physical restrictions or limitations on the use of, or access to, a site or facility to eliminate or minimize potential exposures to chemicals of concern, or to prevent activities that could interfere with the effectiveness of a response action, to ensure maintenance of a condition of "acceptable risk" or "no significant risk" to human health and the environment. These legal or

[2] 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.

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

[4] Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.

[5] Available at http://www.environmentalcovenants.org/ueca/uploads/UECA_Chart.pdf.

[6] Available from Association of State and Territorial Solid Waste Management Officials (ASTSWMO), 444 North Capitol Street, NW, Suite 315, Washington, DC 20001, http://www.astswmo.org.

physical restrictions are intended to prevent adverse impacts to individuals or populations that may be exposed to chemicals of concern.

3.1.3 *affirmative easement*—one where the servient estate must permit something to be done thereon, as to pass over it, or to discharge water on it.

3.1.4 *all appropriate inquiries*—an inquiry conducted prior to the date of acquisition of the *property* constituting "all appropriate inquiries into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined in CERCLA, 42 U.S.C. 9601(35)(B), and in EPA's regulations, 40 C.F.R. Part 312, that will qualify a party to a commercial real estate transaction for one of the threshold requirements that an owner of commercial real estate must satisfy in order to be eligible for any of the *Landowner Liability Protections* under CERCLA (42 U.S.C. 9601(35)(B), 9607(b)(3), 9607(q), and 9607(r)), assuming compliance with other elements of the defense.

3.1.5 *appurtenant easement*—an easement that benefits a particular tract of land. An incorporeal right which is attached to a superior right and inheres in land to which it is attached and is in the nature of a covenant running with the land. There must be a dominant estate and a servient estate.

3.1.6 *attribute*—a characteristic of a geographic feature described by numbers, characters, images and CAD drawings, typically stored in tabular format and linked to the feature by a user assigned identifier (e.g., the attributes of a well might include depth and gallons per minute). A column in a database table.

3.1.7 *bona fide prospective purchaser (BFPP)*—a person who meets the criteria set forth in CERCLA 101(40) (42 U.S.C. 9601(40)) qualifies as a *bona fide prospective purchaser*. Generally, a *BFPP* can be a person who purchases property knowing that it is already contaminated. Among other requirements, *BFPPs* must make *all appropriate inquiries* into the previous ownership and uses of the *property* prior to acquiring the *property* and all disposal of *hazardous substances* at the property must have occurred prior to acquisition. The *property* must have been acquired after January 11, 2002.

3.1.8 *Brownfields Amendment of 2002*—amendments to CERCLA contained in the Small Business Liability Relief and Brownfields Revitalization Act, Pub. Law No. 107–118 (2002), 42 U.S.C 9601 *et seq*.

3.1.9 *chemical release*—any spill or leak or detection of concentrations of chemical(s) of concern in environmental media.

3.1.10 *chemical(s) of concern*—the specific compounds and their breakdown products that are identified for evaluation in the risk-based corrective action process. Identification can be based on their historical and current use at a site, detected concentrations in environmental media, and their mobility, toxicity and persistence in the environment. Because chemicals of concern may be identified at many points in the risk-based corrective action process, the term should not be automatically construed to be associated with increased or unacceptable risk.

3.1.11 *computer-aided design (CAD)*—an automated system for the design, drafting, and display of graphically oriented information.

3.1.12 *contiguous property owner (CPO)*—a person who meets the criteria set forth in CERCLA 107(q)(1)(A) (42 U.S.C. 9607(q)(1)(A)) qualifies as a *contiguous property owner*. *Contiguous property owners* are persons who own *commercial real estate* that is contiguous to and that is or may be contaminated by *hazardous substances* from other *property* not owned by that person. To qualify as a *CPO*, a person must have, among other requirements, conducted *all appropriate inquiries* and performed *continuing obligations*.

3.1.13 *coordinate system*—a reference system used to measure horizontal and vertical distances on a planimetric map.

3.1.14 *continuing obligations*—those obligations that a purchaser must satisfy post-closing in order to maintain one of the *Landowner Liability Protections (LLPs)* offered under the Brownfields Amendments of 2002. These obligations include the requirement to (*1*) be in compliance with any *land use restrictions* established or relied on in connection with the *response action* at the facility, (*2*) not impede the effectiveness or integrity of any *institutional controls* employed in connection with a *response action*, (*3*) take *reasonable steps* with respect to releases of *hazardous substances*, including stopping continuing releases, preventing threatened future releases, and preventing or limiting human, environmental or natural resource exposure to prior releases of *hazardous substances*, (*4*) provide full cooperation, assistance and access to persons who are authorized to conduct *response actions* or natural resource restoration at a property, (*5*) comply with information requests and administrative subpoenas, and (*6*) provide legally required notices with respect to releases of any *hazardous substances* at a *property*.

3.1.15 *corrective action*—the sequence of remedial actions that include site assessment and investigation, risk assessment, response actions, interim remedial action, remedial action, operation and maintenance of equipment, monitoring of progress, making no further action determinations, and termination of the remedial action.

3.1.16 *corrective action goals*—concentration or other numeric values, physical condition or remedial action performance criteria that demonstrate that no further action is necessary to protect human health and the environment. For example, these goals may include one or a combination of RBSL, SSTL, RESC, SSEC and ORMC chosen for source area(s), point(s) of demonstration and point(s) of exposure. The corrective action goals are specific to each Tier in the evaluation.

3.1.17 *coverage*—a digital version of a map that forms the basis of the GIS. A coverage stores geographic features and associated feature attribute tables.

3.1.18 *database*—a logical collection of interrelated information, managed and stored as a unit, usually on some form of mass-storage system such as magnetic tape or disk. A GIS database includes data about the spatial location and shape of geographic features recorded as points, lines, areas, pixels, grid cells, or tins, as well as their attributes.

3.1.19 *deed restriction*—a restriction or limitation on an interest in real property, created by a conveyance from one person to another.

3.1.20 *direct exposure pathway*—an exposure pathway where the point of exposure is at the source, without a release to any other medium and without an intermediate biological transfer step.

3.1.21 *easement in gross*—an easement in gross is not appurtenant to any estate in land or does not belong to any person by virtue of ownership of an estate in other land but is merely a personal interest in or right to use the land of another. Easements that do not benefit a particular tract of land (e.g., utility easements).

3.1.22 *easement of access*—right of ingress and egress to and from the premises of a lot owner to a street appurtenant to the land of the lot owner.

3.1.23 *easements*—a right of use over the property of another. Traditionally, the permitted kinds of uses were limited, the most important being rights of way and rights concerning flowing waters. The easement was normally for the benefit of adjoining lands, no matter who the owner was (an easement appurtenant), rather than for the benefit of a specific individual (easement in gross). The land having the right of use as an appurtenance is known as the dominant tenement and the land which is subject to the easement is known as the servient tenement.

3.1.24 *ecological evaluation*—a process for organizing and analyzing data, information, assumptions and uncertainties to evaluate the likelihood that adverse effects to relevant ecological receptors or habitats may occur or are occurring as a result of exposure to chemical(s) of concern.

3.1.25 *engineering controls*—physical modifications to a site or facility to reduce or eliminate the potential for exposure to chemicals of concern (e.g., slurry walls, capping, hydraulic controls for ground water, or point of use water treatment).

3.1.25.1 *Discussion*—Some states define this term differently. For example, Pennsylvania includes within its definition of *engineering controls* only those measures which control the movement of chemicals of concern through the environment (such as slurry walls, liner systems, caps, leachate collection systems and groundwater recovery trenches).

3.1.26 *environmental covenant*—a covenant adopted pursuant to a state's version of the *Uniform Environmental Covenants Act*. An *environmental covenant* has certain attributes, created by statute, that make it more reliable, durable and enforceable than most other types of *AULs*.

3.1.27 *equitable servitudes*—building restrictions and restrictions on the use of land which may be enforced in equity. If there is a scheme in their creation, a subsequent owner may enforce them by injunctive relief against another subsequent owner. Such servitudes are broader than covenants running with the land because they are interests in land.

3.1.28 *exposure*—contact of an organism with chemicals of concern at the exchange boundaries (e.g., skin, lungs, and liver) when the chemicals of concern are available for absorption or adsorption.

3.1.29 *exposure assessment*—the determination or estimation (qualitative or quantitative) of the magnitude, frequency, duration and route of exposure between a source area and a receptor.

3.1.30 *exposure pathway*—the course a chemical(s) of concern takes from the source area(s) to a receptor or relevant ecological receptor and habitat. An exposure pathway describes the mechanism by which an individual or population is exposed to a chemical(s) of concern originating from a site. Each exposure pathway includes a source or release from a source of a chemical concern, a point of exposure, an exposure route, and the potential receptors or relevant ecological receptors and habitats. If the exposure point is not at the source, a transport or exposure medium or both (e.g., air or water) are also included.

3.1.31 *exposure route*—the manner in which a chemical(s) of concern comes in contact with a receptor (e.g., ingestion, inhalation, dermal contact).

3.1.32 *exposure scenario*—the description of the circumstances, including site properties and chemical properties, or the potential circumstances under which a receptor or a relevant ecological receptor or habitat could be in contact with chemical(s) of concern.

3.1.33 *facility*—the property containing the source of the chemical(s) of concern where a release has occurred. A facility may include multiple sources and, therefore, multiple sites.

3.1.34 *geographic information system (GIS)*—a geographic information system (GIS) is a computer-based tool for tracking, mapping and analyzing resources using either an explicit geographic reference, such as a latitude and longitude or national grid coordinate, either from entry of this data from geographical location devices or by geographical coding an address or other descriptive location. GIS technology integrates common database operations such as query and statistical analysis with the visualization and geographic analysis benefits offered by maps.

3.1.35 *global positioning system*—a system of satellites and receiving devices used to compute positions on the Earth. GPS is used in navigation, and its precision supports cadastral surveying.

3.1.36 *highest and best use*—the reasonably probable and legal use of vacant land or an improved property, which is physically possible, appropriately supported, financially feasible, and that results in the highest value. The four criteria that the highest and best use must meet are legal permissibility, physical possibility, financial feasibility, and maximum profitability.

3.1.37 *indirect exposure pathways*—an exposure pathway with at least one intermediate release to any media, or an intermediate biological transfer step, between the source and the point(s) of exposure (e.g., chemicals of concern from soil through ground water to the point(s) of exposure).

3.1.38 *interim remedial action*—the course of action to reduce migration of chemical(s) of concern in its vapor, dissolved, or liquid phase, or to reduce the concentrations of a chemical of concern at a source area.

3.1.39 *institutional control*—a legal or administrative restriction on the use of, or access to a site or facility to eliminate or minimize potential exposures to a chemical(s) of concern (e.g., deed restrictions, restrictive zoning).

3.1.39.1 *Discussion*—Some states define this term differently. For example, Pennsylvania includes fencing and point of use water treatment within its definition of institutional control.

3.1.40 *land use restriction (LUR)*—a limitation placed on the use or enjoyment of real property. This term was used, but not defined, in the *Brownfields Amendments of 2002* ((42 U.S.C. 9601(35(A), 9601(40), 9607(q)(1)(A)(v)(I)) as one of the criteria with which a person must be in compliance in order to qualify for one of the *LLPs*. Specifically, a property owner must be "in compliance with any *land use restrictions* established or relied on in connection with the *response action* at the facility."

3.1.41 *landowner liability protections (LLPs)*—the landowner liability protections established or modified by Congress under the 2002 Amendments to CERCLA, which include the *bona fide prospective purchaser*, *contiguous property owner*, and *innocent landowner* liability protections. See §§ 42 U.S.C. 9601(35)(A)-(B), 9601(40), 9607(b), 9607(q), and 9607(r).

3.1.42 *map query*—the process of selecting information from a GIS by asking spatial or logical questions of the geographic data.

3.1.42.1 *Discussion*—Spatial query is the process of selecting features based on location or spatial relationship (e.g., select all monitoring wells within 300 ft of the river). Logical query is the process of selecting features whose attributes meet specific logical criteria (e.g., select all groundwater data whose value for benzene is greater than 5 ug/l or select all data whose value is "non-detect"). Once selected, additional operations can be performed, such as drawing them, listing their attributes or summarizing attribute values.

3.1.43 *natural attenuation*—the reduction in the mass or concentration(s) of chemicals of concern in environmental media due to naturally occurring physical, chemical and biological process (e.g., diffusion, dispersion, adsorption, chemical degradation and biodegradation).

3.1.44 *negative easement*—an easement where the owner of the servient estate is prohibited from doing something otherwise lawful upon his estate, because it will affect the dominant estate (e.g., a prohibition on excavation deeper than 10 ft).

3.1.45 *no significant risk*—risk which is deemed to be below a level of regulatory concern. This level may vary among states and federal agencies, among regulatory programs, among media and pathways of concern, and among receptors. The terminology may also vary from jurisdiction to jurisdiction, and from regulatory program to regulatory program (e.g., "acceptable risk level" or some similar term indicating that remedial measures have reached the target level for protecting human health and the environment).

3.1.46 *other relevant measurable criteria (ORMC)*—parameters used to define corrective action goals for chemical(s) of concern. The ORMC are concentration values, other numeric values, physical condition or performance criteria other than RBSL, RESC, SSTL or SSEC. Examples of ORMC are regulatory standards, consensus criteria, aesthetic criteria, and groundwater protection criteria. Technical policy decisions regarding ORMC may exist, or may need to be made to determine the appropriate values, conditions or performance criteria that are used for the corrective action goals.

3.1.47 *point(s) of demonstration*—a location(s) selected between the source area(s) and the potential point(s) of exposure where corrective action goals are met.

3.1.48 *point(s) of exposure*—the point(s) at which an individual or population may come in contact with a chemical(s) of concern originating from a site.

3.1.49 *potentially complete exposure pathway*—a situation with a reasonably likely chance of occurrence in which a receptor or relevant ecological receptor or habitat may become directly or indirectly exposed to the chemical(s) of concern.

3.1.50 *proprietary*—belonging to ownership; owned by a particular person; belonging or pertaining to a proprietor; relating to a certain owner or proprietor.

3.1.51 *proprietary controls*—controls based on the rights associated with private ownership, particularly ownership of a limited interest in real property as specified in a legal instrument, such as an easement or a restrictive covenant.

3.1.52 *qualitative ecological screening evaluation*—a process conducted as part of the Tier 1 evaluation wherein relevant ecological receptors and habitats and exposure pathways are identified. The necessary information can be collected as part of the data gathering activities during the initial site assessment or the Tier 1 site assessment. Within Tier 1, this screening-level information, which is typically qualitative, may be used to evaluate potential exposure pathways to relevant ecological receptors and habitats and to identify potential chemical(s) of concern. If available, generic, non-site-specific ecological criteria and guidelines may be used to evaluate complete and potentially complete exposure pathways.

3.1.53 *qualitative risk analysis*—a non-numeric evaluation of the potential risks at a site as determined by the potential exposure pathways and receptors based on known or reasonably available information.

3.1.54 *reasonably anticipated future use*—future use of a site or facility that can be predicted with a reasonably high degree of certainty given historical use, current use, local government planning and zoning, regional trends and community acceptance.

3.1.55 *receptors*—the persons that are or may be affected by a chemical release. (See *relevant ecological receptors and habitats*, for non-human receptor.)

3.1.56 *registry act requirements*—requirements that are imposed by certain state statutes requiring that a list be maintained identifying properties that have been the site of hazardous waste disposal and that may have restrictions on use or transfer.

3.1.57 *relevant ecological receptors and habitats*—the ecological resources that are valued at the site. Because of the variety of ecological resources that may be present, focusing upon those relevant to a site is an important part of the problem

formulation phase of ecological evaluation. Identification of relevant ecological receptors and habitats is dependent upon site-specific factors and technical policy decisions. Examples may include species or communities afforded special protection by law or regulation; recreationally, commercially or culturally important resources; regionally or nationally rare communities; communities with high aesthetic quality; habitats, species or communities that are important in maintaining the integrity and bio-diversity of the environment.

3.1.58 *relevant ecological screening criteria (RESC)*—generic, non-site-specific ecological criteria or guidelines that are determined to be applicable to relevant ecological receptors and habitats, exposure pathways and site conditions utilized during the Tier 1 evaluation. These may include chemical concentrations, biological measures or other relevant generic criteria consistent with the technical policy decisions.

3.1.59 *remedial action*—activities conducted to reduce or eliminate current or future exposures to receptors or relevant ecological receptors and habitats. These activities include monitoring, implementing activity and use limitations, and designing and operating clean-up equipment. Remedial action includes activities that are conducted to reduce sources of exposures to meet corrective action goals, or to sever exposure pathways to meet corrective action goals.

3.1.60 *response action*—an immediate course of action, including monitoring, abatement or containment measures to mitigate known or potential hazards to human health, safety and the environment, taken before interim remedial action or remedial action.

3.1.61 *response action evaluation*—a qualitative evaluation of a site based on known or readily available information to identify the need for interim remedial actions and further information gathering. Response action evaluation is intended to prioritize sites and identify whether there are any appropriate early risk reduction steps.

3.1.62 *restricted use level*—a corrective action cleanup level where one or more activity and use limitations would be needed to eliminate or mitigate potential exposures to chemicals of concern, or to prevent activities that could interfere with the effectiveness of a response action, to ensure maintenance of a level of "acceptable risk" or "no significant risk."

3.1.63 *restrictive covenant*—provision in a deed or lease limiting the use of the property and prohibiting certain uses. In the context of property law, the term describes a contract between the grantor and the grantee that affects the grantee's use and occupancy of land.

3.1.64 *risk assessment*—an analysis of the potential for adverse effects on receptors and relevant ecological receptors and habitats, caused by a chemical(s) of concern from a site. The risk assessment activities are the basis for the development of corrective action goals and determination of where interim remedial or a combination of actions are required.

3.1.65 *risk reduction*—the lowering or elimination of the level of risk posed to human health or the environment through response action, interim remedial actions, remedial action or a combination of actions.

3.1.66 *risk-based corrective action*—a consistent decision-making process for the assessment and response to chemical releases based upon protection of human health and the environment. Assessment and responses to chemical releases may consider the use of activity and use limitations.

3.1.67 *risk-based screening level/screening levels (RBSL)*—non-site-specific human health risk-based values for chemicals of concern that are protective of human health for specified exposure pathways utilized during the Tier 1 evaluation.

3.1.68 *servient estate*—an estate burdened by an easement.

3.1.69 *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.

3.1.70 *site assessment*—the characterization of a site through an evaluation of its physical and environmental context (e.g., subsurface geology, soil properties and structures, hydrology and surface characteristics) to determine if a release has occurred, the levels of the chemical(s) of concern in environmental media, and the likely physical distribution of the chemical(s) of concern. As an example, the site assessment collects data on soil, ground water and surface water quality, land and resource use, and potential receptors, and generates information to develop a site conceptual model and support risk-based decision-making. The site assessment may be conducted using Guide E1912.

3.1.71 *site conceptual model*—the integrated representation of the physical and environmental context, the complete and potentially complete exposure pathways, and the potential fate and transport of chemical(s) of concern at a site. The site conceptual model should include both the current understanding of the site and the understanding of the potential future conditions and uses for the site. It provides a method to conduct the exposure pathway evaluation and to inventory the exposure pathways evaluated and the status of the exposure pathways as incomplete, potentially complete or complete.

3.1.72 *site conditions*—a general description of a site's chemical, physical or biological characteristics that relate to potential exposures to receptors or relevant ecological receptors and habitats.

3.1.73 *site specific*—activities, information and data unique to a particular site.

3.1.74 *site-specific ecological criteria (SSEC)*—risk-based qualitative or quantitative criteria for relevant ecological receptors and habitats identified for a particular site under the Tier 2 or Tier 3 evaluations. These criteria may include chemical concentrations, biological measures or other relevant generic criteria consistent with the technical policy decisions. SSEC may be revised as data are obtained that better describe the conditions and the relevant ecological receptors and habitats.

3.1.75 *site-specific target level(s) (SSTL)*—risk-based values for chemicals of concern that are protective of human health

for specific exposure pathways developed for a particular site under the Tier 2 or Tier 3 evaluations.

3.1.76 *source area(s)*—the source area(s) is defined as the location of non-aqueous phase liquid (NAPL) chemical, the locations of highest soil or ground water concentrations of the chemical(s) of concern, or the location releasing the chemical(s) of concern.

3.1.77 *stakeholders*—individuals, organizations, or other entities that directly affect or may be directly affected by the corrective action. Stakeholders include, but are not limited to, owners, purchasers, developers, lenders, tenants, utilities, insurers, government agencies, Indian tribes, community groups, and members.

3.1.78 *stigma*—the residual loss in value above and beyond the actual cost to cure or control the environmental condition of concern if such extraordinary loss is evident in the marketplace. Stigma generally is a result of uncertainty as to the cost, effectiveness or permanency of the methodology of cure/control, or uncertainty concerning the environmental regulatory agencies' endorsement of such methodology or results. Stigma is a time-dependent phenomena and as such may be only temporary in effect.

3.1.79 *technical policy decisions*—the choices specific to the User that are necessary to implement the risk-based corrective action framework described in Guide E2081, or any replacement standards thereto, at a particular site. The decisions involve regulatory policies, value judgments, different stakeholder decisions and using professional judgment to evaluate available information; therefore, there may be more then one scientifically supportable answer for any particular technical policy decision. The choices represent different approaches. The User should consult the regulatory agency requirements to identify the appropriate technical policy decisions prior to implementing the risk-based corrective action process. Examples of technical policy decisions are: data quality objectives, target risk levels, land use, reasonably anticipated future use, ground water use, natural resource protection, relevant ecological receptors and habitats, stakeholder notification and involvement, and exposure factors.

3.1.80 *Uniform Environmental Convenant Act*—a model law adopted by the National Conference of Commissioners on Uniform State Laws in 2003. The model law must be enacted in individual states before a person can enter into an *environmental covenant* in that state.

3.1.81 *unrestricted use level*—a corrective action level where residential uses would be permissible without the need for any *activity and use limitations*.

3.1.82 *user*—An individual or group involved in remediation involving risk-based decision-making principles, and involving the use of activity and use limitations. Users include owners, operators, regulators, underground storage tank fund managers, attorneys, consultants, legislators and other stakeholders. Two specific types of users are envisioned. The first is the individual or group addressing a site or sites under the circumstances where an activity and use limitation is part of the proposed or final remedial action. The second is a regulatory agency that is developing regulations or guidance regarding the use of activity and use limitations as part of its corrective action program, whether conducted pursuant to a voluntary corrective action, brownfields, Superfund, Resource Conservation and Recovery Act, underground storage tank, or other type of program.

4. Significance and Use

4.1 *Activity and use limitations* are typically used in conjunction with risk-based decision-making principles in Federal, state, tribal, and local remediation programs, or where residual *chemicals of concern* remain following an evaluation of risk or following the implementation of a remedial action (*see* American Bar Association's Implementing Institutional Controls at Brownfields and Other Contaminated Sites; EPA's Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups; EPA's Interim Guidance Regarding Criteria Landowners Must Meet in Order to Qualify for Bona Fide Prospective Purchaser, Contiguous Property Owner, or Innocent Landowner Limitations on CERCLA Liability (Common Elements Guide); and EPA's Strategy to Insure Institutional Control Implementation at Superfund Sites). The principal purposes of *activity and use limitations* are to:

4.1.1 Eliminate *exposure pathways* for, or reduce potential *exposures* to, *chemicals of concern*;

4.1.2 Provide notice to property owners, holders of interests in the property, title companies, utilities, tenants, realtors, lenders, developers, appraisers and others of the presence and location of *chemicals of concern* that may be present on the site;

4.1.3 Identify the objectives and goals of each *activity and use limitation*;

4.1.4 Identify the exposure assumptions upon which each *activity and use limitation* is based;

4.1.5 Identify the site uses and activities which, if they were to occur in the future, would be appropriate and consistent with maintaining a condition of "acceptable risk" or "no significant risk";

4.1.6 Identify the site uses and activities which should NOT occur in the future (unless further evaluation and remedial action, as appropriate, are undertaken), as those activities and uses may result in the *exposure* of persons or ecological receptors to *chemicals of concern* at or near the site in a manner that is inconsistent with a condition of "acceptable risk" or "no significant risk";

4.1.7 Specify long-term stewardship objectives, and the entity which has responsibility for developing stewardship programs and paying for achieving those objectives, including any periodic statements or certification(s) of compliance; and

4.1.8 Specify long-term performance standards, such as operation and maintenance obligations, or monitoring of an engineering control, that are necessary to ensure that the objectives and goals of *activity and use limitations* continue to be met.

4.2 *Activity and use limitations* should be implemented to eliminate *exposure pathways* for, or reduce potential *exposures* to, *chemicals of concern*. The following are some examples of situations where an *activity and use limitations* may be appropriate:

4.2.1 Impacted ground water exists at a site where an alternative water supply is available. A restriction may be placed on the use of ground water for any purpose other than monitoring, or a restriction may place requirements for well construction or evaluation of treatment of ground water.

4.2.2 A site is remediated to levels appropriate only for industrial or commercial uses with respect to the direct contact pathway. The use of the property will then be restricted to those land uses, unless further remedial activities are conducted (that is, the site may not be developed for residential use).

4.2.3 Residual *chemicals of concern* remaining on a site are covered with some type of barrier (e.g., cap, pavement, etc.) The barrier constitutes one type of *activity and use limitation*. In addition, a restriction may be placed on the deed or lease prohibiting excavation in areas where the *chemicals of concern* exceed certain risk levels. The restriction may include prohibiting the disturbance of the cap. Monitoring and maintenance of the integrity of the cap or barrier may be a requirement as well.

4.2.4 Operation and maintenance of an ongoing remedial action may be required and may be specified in a restriction. In this case, an easement or property access right may be given to the former owner (as the responsible party) or to his/her agent.

4.2.5 Also, activities interfering with operations and maintenance may be restricted. These restrictions may include limitations on construction or other activities in areas where remediation system controls, extraction wells, monitoring wells, or other ongoing remedial or monitoring systems are located.

4.3 *Due Diligence*—When a property transaction is involved, the prospective purchaser, lender, title company, real estate appraiser and others need to be aware of the possibility that restrictions have been placed on permissible activities and uses of the property. Knowledge of prior land uses is an important indicator of the potential for such restrictions to exist. The *user* is cautioned that, under Practice E1527 and E2247, it is the *user's* responsibility to provide information about *AULs* to the environmental consultant unless the parties have contracted otherwise (see Practice E1527, section 6.2, and E2247, section 6.2). *AUL* information is frequently contained in the restrictions of record on the title, rather than in a typical chain of title. The *user* should be seeking the recorded land title records, sometimes referred to as a historical environmental title search, and information from relevant regulatory databases, to the extent that such databases exist.

4.4 At the present time, several states provide in their voluntary corrective action programs that liability releases provided in their "No Further Action" letters ("NFA") or "Certificates of Completion" ("Certificates") will be of no effect if any of the conditions in the final letter or certificate are violated. In other words, in these states, the releases from liability may be void or voidable if an *activity and use limitation* is violated. The *activity and use limitation* is typically described in, or attached to, the NFA letter or Certificate. Accordingly, it is critically important for owners, prospective purchasers, lenders, tenants and others who are counting on the liability releases provided in the NFA letter or Certificate to be sure that they understand what limitations or restrictions may have been imposed on the site and to understand who bears primary responsibility for ensuring that those limitations or restrictions are not violated. In Alabama, the statutory limitation of liability is contingent upon the applicant's good faith implementation of the Voluntary Property Assessment ("VPA") and/or Voluntary Cleanup Plan ("VCP") as approved by the Alabama Department of Environmental Management ("ADEM"). See ALA. CODE § 22-30E-10 (current through the end of the 2010 Regular Session). However, such limitation of liability in Alabama's corrective action program will not apply to any activities conducted before ADEM's approval of the VPA, VCP, or Letter of Concurrence with a Certification of Compliance, whichever occurs first. See also ALA. CODE §§ 22-30E-1 to -13 (current through the end of the 2010 Regular Session). Georgia has a similar exception to a statutory limitation of liability. See GA. CODE ANN. § 12-8-207 (current through the 2010 Regular Session). Georgia's limitation is contingent upon the prospective purchaser's good faith implementation of the corrective action plan as approved by the Georgia Environmental Protection Division ("EPD") as well as the certification of compliance with the risk reduction standards and corrective action requirements. See also GA. CODE ANN. §§ 12-8-100 to -108, 12-8-200 to -210 (current through the 2010 Regular Session). In Mississippi, liability protection is afforded to a brownfield party engaged in voluntary remediation. See MISS. CODE ANN. § 49-35-15(5) (current through the 2009 3rd Extraordinary Session). However, the liability protection in Mississippi applies as long as the brownfield party does not violate its brownfield agreement with the Mississippi Department of Environmental Quality ("MDEQ"). See also MISS. CODE ANN. § 49-35-1 to -53 (current through the 2009 3rd Extraordinary Session).

4.5 The *user* is cautioned that *activity and use limitations* are not to be used to encourage or condone "secured abandonment". In general, "secured abandonment" is the practice of physically securing the site and blocking exposure pathways while taking minimal steps to ensure that *chemicals of concern* do not spread beyond the property boundaries or taking minimal steps to put the property back into productive use. In most cases, the property is not placed back into productive use and does not meet its "highest and best" use. There may be instances where *activity and use limitations* are used to completely restrict access to a site (e.g., during remediation), but the expectation is that sites will be remediated to allow some productive use and therefore some potential *exposure*.

4.6 As a general rule, Federal or state governmental authorities have primary responsibility for determining applicable and appropriate remediation standards for *chemicals of concern*, and either the Federal, state, tribal, or local government authority may have primary responsibility for inspecting and enforcing any *activity and use limitations* that may be imposed. It is important for all affected stakeholders (that is, Federal,

state, tribal, and local authorities; potentially responsible parties; utilities; residents; tenants; the financial community; the environmental community; and others) to have an open dialogue about the goals and objectives of any *activity and use limitations*; the *exposure* assumptions underlying any *activity and use limitations*; applicable and relevant legal authorities for implementing any *activity and use limitations*; and the entity which will have responsibility for maintaining and enforcing the *activity and use limitations* over time.

4.7 The language used in *activity and use limitations* may be drafted broadly or have very focused statements about the purpose. The language may specify activities to be conducted, including operation and maintenance or a performance standard, or activities that are prohibited, or land uses that are allowed or disallowed. There may be a requirement for notice to various individuals or entities, such as tenants, lenders, utilities, or local government officials. There may also be language describing who enforces the restriction, the conditions under which the restriction may be removed or terminated, and the procedure for removal or termination of the restriction.

5. Activity and Use Limitations As a Component of Site Assessment and Remedial Action Selection

5.1 *General Considerations:*

5.1.1 The *user* may evaluate the feasibility and appropriateness of *activity and use limitations* at many different points in the *risk-based corrective action* process (or other type of remedial action program). These points may include the initial site assessment stage, where existing and reasonably anticipated future uses are identified, or later in the response action evaluation and response action stages. *See* Fig. 1. If possible, the user should consider the screening and balancing criteria, as discussed in 5.3.

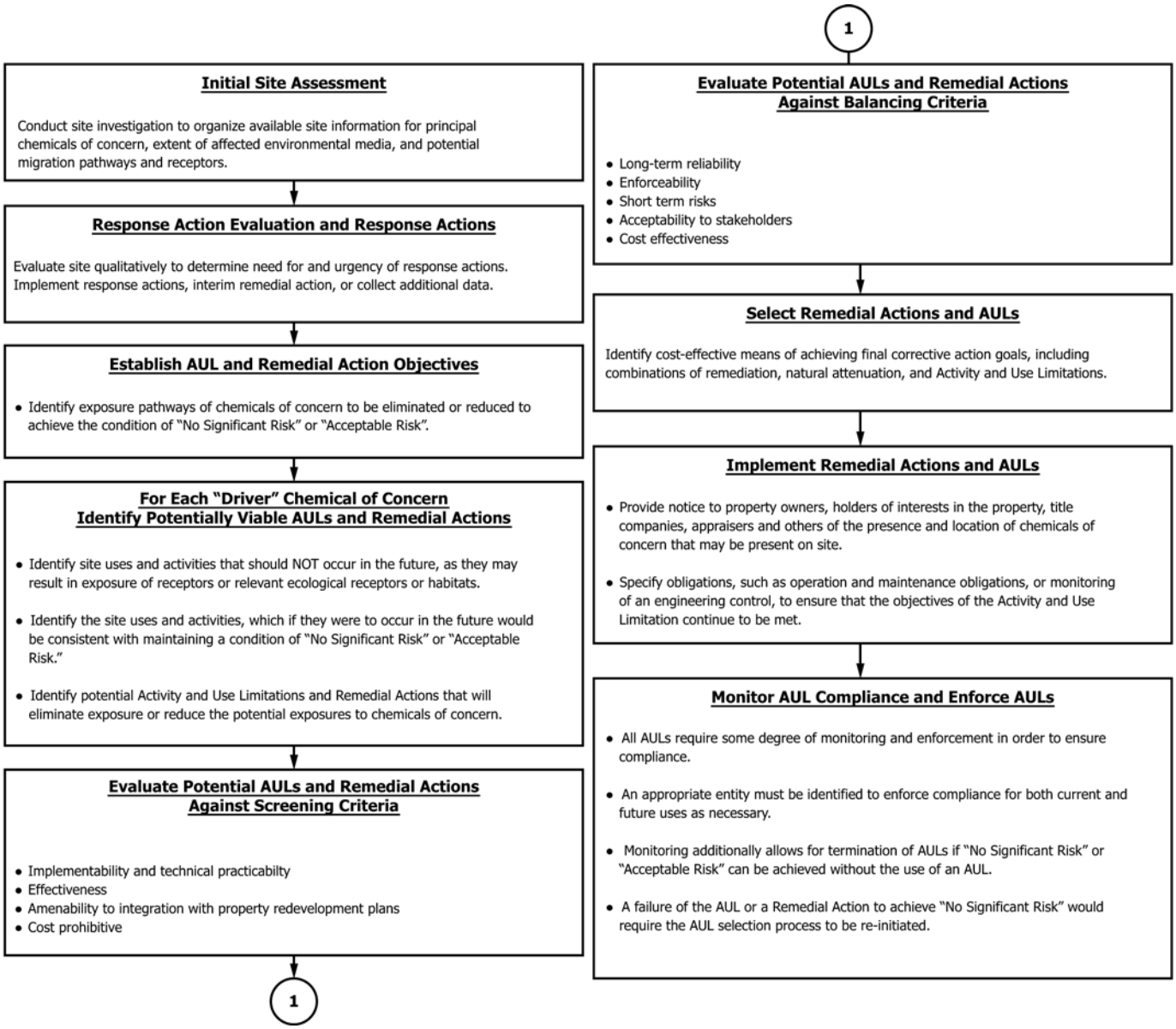


FIG. 1 Activity and Use Limitation Selection Process Flowchart

5.1.2 If the site is remediated to a restricted use level, the user is cautioned that an *activity and use limitation* will likely need to be implemented and maintained for as long as the concentrations of the *chemicals of concern* exceed levels appropriate for unrestricted use.

5.1.3 *Activity and use limitations* should be considered to be part of the remedial action selection process and should be documented in the remedial action selection document (e.g., the Record of Decision, RCRA permit, certificate of completion). Like any other component of remedial action selection, the *user* must evaluate whether the *activity and use limitation(s)* under consideration is feasible and appropriate.

5.1.4 In addition, selection of one or more *activity and use limitations* may lead to an interactive reconsideration of appropriate response actions. If the user determines after an evaluation of potentially applicable *activity and use limitations*, as described below, that none are feasible or appropriate, the user may need to conduct additional response actions to achieve an acceptable risk level. *See* Fig. 2.

5.1.5 Before evaluating the potential applicability of *activity and use limitations*, the *user* must have a good understanding of the *chemicals of concern*; the sources of exposure; the likely exposure routes (e.g., dermal, ingestion, inhalation); the pathways of exposure (e.g., air, surface water, ground water, soil); the likely receptors (both human and ecological); and the reasonably anticipated future use of the site (e.g., industrial; commercial; mixed use; residential; day care). *See* Fig. 3. The *user* is advised to review Guide E2081, or any replacement standard thereto, for further guidance on these issues. The *user* is also cautioned that, while *activity and use limitations* may be one possible component of remedial action selection, they generally should not be considered to be the sole component of remedial action selection. The *user* is further cautioned to consult with the appropriate regulatory authorities and to determine whether other statutory or administrative requirements may apply.

5.2 *Goals and Objectives*—The *user* must identify the goals and objectives that the *activity and use limitation* is intended to achieve.

5.3 *Screening and Balancing Criteria*—The *user* is cautioned to examine the eight following criteria EARLY in the

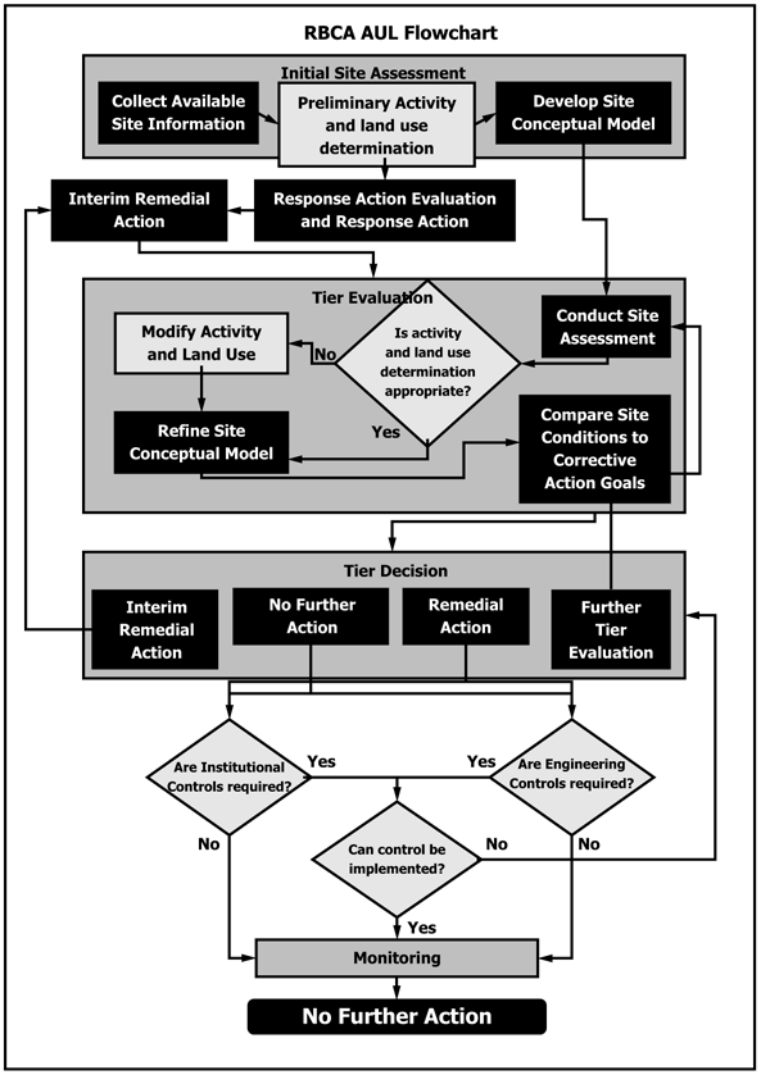


FIG. 2 RBCA AUL Flowchart

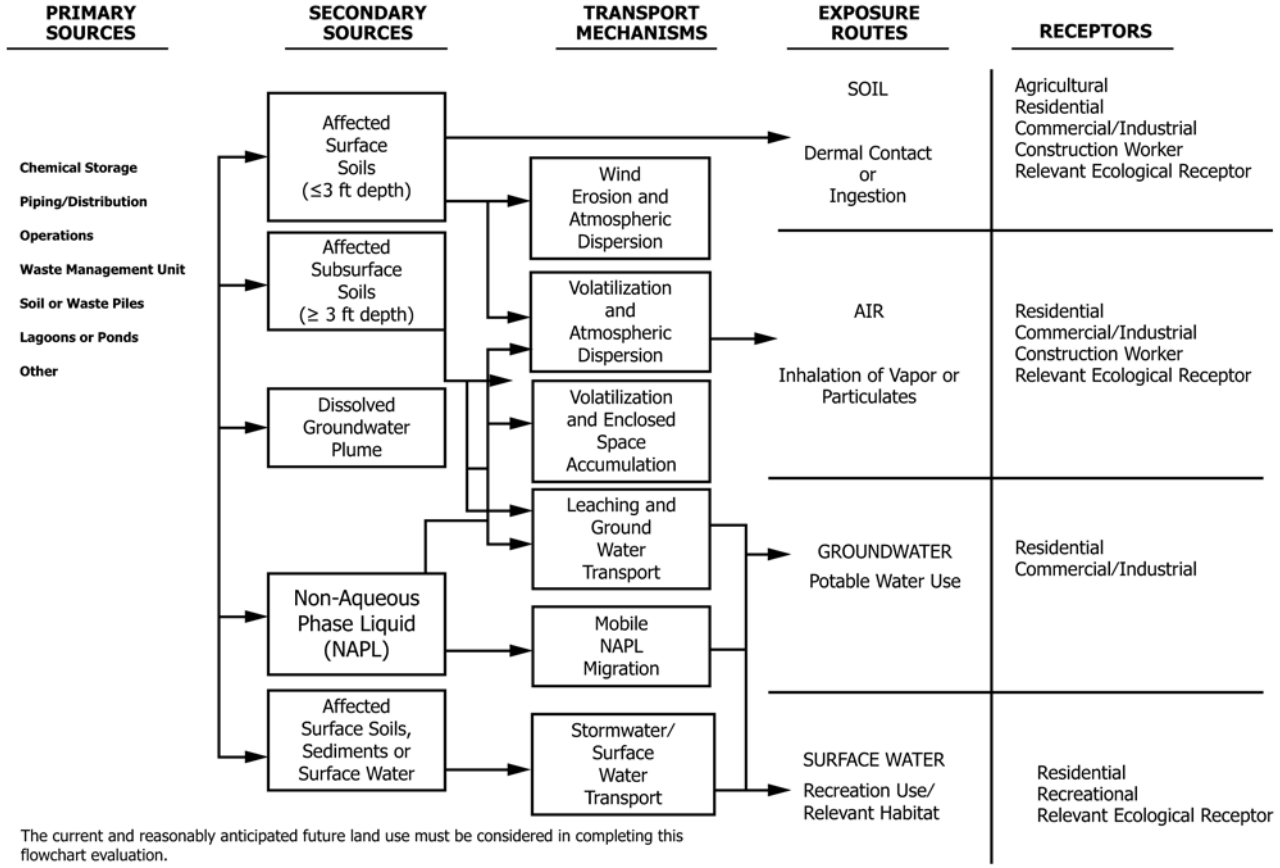


FIG. 3 Example Exposure Scenario Evaluation Flowchart

remedial action selection process: effectiveness; amenability to integration with property redevelopment plans; implementability; technical practicability; cost prohibitiveness; reliability over the long-term; acceptability to stakeholders; and cost-effectiveness.

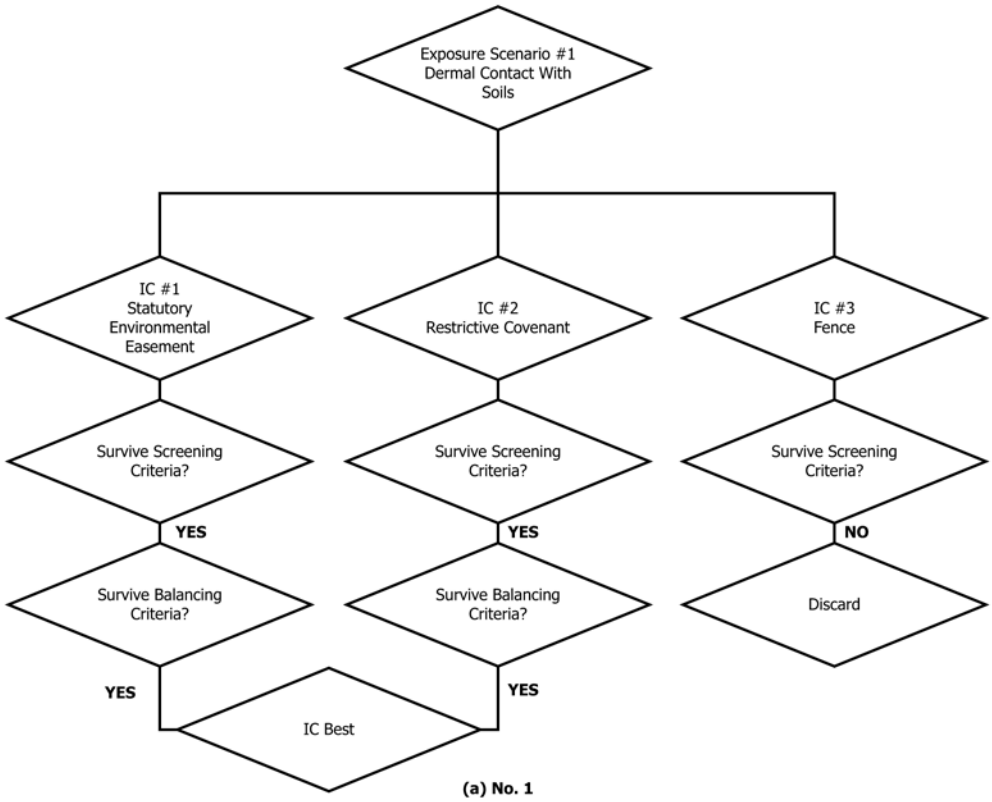
5.3.1 *Introduction*—Initially, the *user* must determine which *activity and use limitation* (as part of a remedial action) is potentially applicable for each *chemical of concern*; for each *exposure pathway*; for each exposure route; and for each potential receptor. For each of these potential scenarios, the *user* should apply the following screening and balancing criteria to determine which *activity and use limitation*, or combination of *activity and use limitations*, best addresses each *exposure pathway*, route of exposure, and likely receptors to achieve an "acceptable risk" or "no significant risk" level. The *activity and use limitation*, or combination of *activity and use limitations*, should be selected that best addresses the "driver" chemical(s) of concern, or principal receptor(s) for each exposure scenario. These "best" solutions should then be compared to determine whether redundant controls are necessary and appropriate, or whether a single type of *activity and use limitation* will address all significant exposure scenarios. *See* Fig. 4*(a) and 4(b).* These examples are intended to be illustrative only and should not be considered to be applicable to every evaluation.

5.3.2 *Suggested Screening Criteria:*

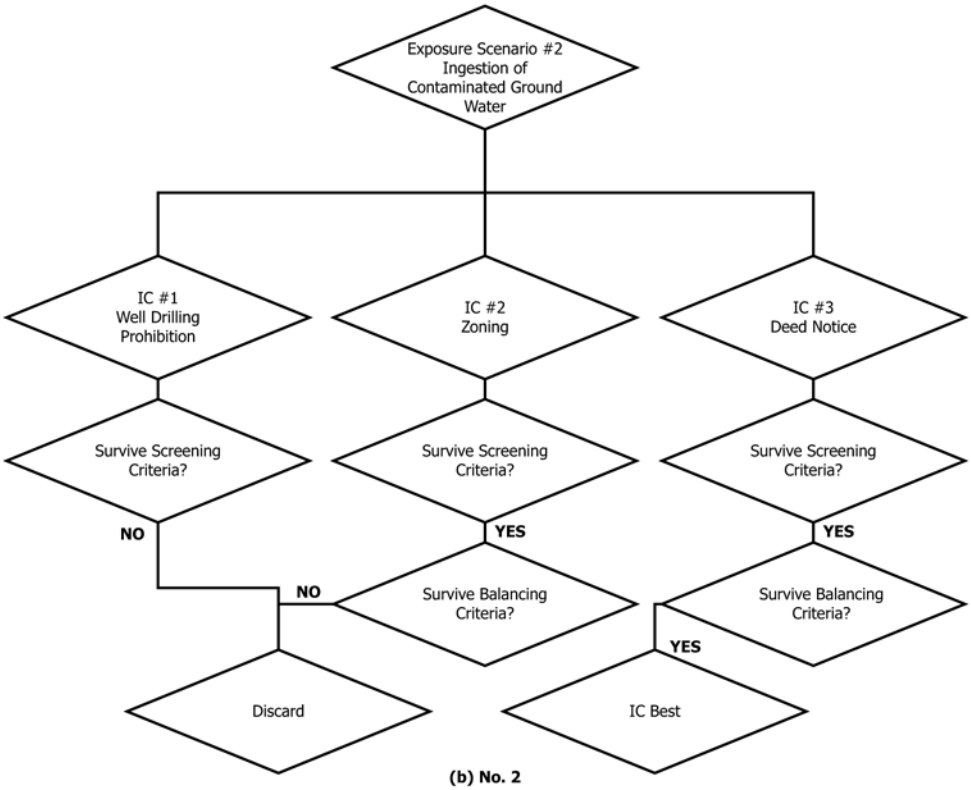
5.3.2.1 *Effectiveness*—The user must determine whether the proposed *activity and use limitation* is likely to be effective, in both the short term and the long term, in eliminating or minimizing potential exposures to *chemicals of concern*, or in preventing activities that could interfere with the effectiveness of a response action, and to thereby maintain a condition of "acceptable risk" or "no significant risk". For example, if potential exposure to *chemicals of concern* in the soil is the potential *exposure pathway*, an *engineering control* such as a cap may not be effective by itself and may need a complimentary *institutional control* to be effective over time.

5.3.2.2 *Amenability to Integration with Property Redevelopment Plans*—The *user* should determine the reasonably anticipated future use of the property, as well as regional and site-specific ground water uses, to be sure that any potentially applicable *activity and use limitations* are amenable to integration with property redevelopment plans. For example, if an area is being developed as residential or high-density residential, a restriction on residential use, or a limitation to industrial use, would not be amenable with the property's redevelopment in that area.

5.3.2.3 *Implementability*—The user should evaluate early in the remedial action selection process whether a particular type of *activity and use limitation* can be implemented under applicable state and local law. For example, if there is off-site migration of ground water containing *chemicals of concern*, and the state does not have a statutory mechanism for implementing restrictions on ground water usage, there may be no practical way to implement *activity and use limitations* on numerous neighboring properties.



(a) No. 1



(b) No. 2

FIG. 4 Exposure Scenarios

5.3.2.4 *Technical Practicability*—The user should determine whether the *activity and use limitation* is technically practicable. For example, an *activity and use limitation* that includes an *engineering control*, such as an impermeable cap that causes *chemicals of concern* to migrate onto an adjoining property, would not be technically practicable to limit the migration of impacted ground water.

5.3.2.5 *Cost Prohibitiveness*—The user should examine both the short term and long term costs of a potentially applicable *activity and use limitation* to determine whether that restriction would be cost prohibitive to implement and maintain compared to the cost of doing additional active remediation. The costs of both implementing and maintaining the *activity and use limitation* should be weighed against the cost of conducting additional remediation. The potential for liability should also be considered. For example, if the property has already been subdivided and sold to numerous new owners, it may be cost prohibitive to impose restrictive covenants on each parcel that would need to be burdened with a soil excavation prohibition or a ground water use restriction.

5.3.3 *Suggested Balancing Criteria*—If the potentially applicable *activity and use limitation* survives the suggested screening criteria identified above, it is recommended that the *activity and use limitation* be evaluated against the balancing criteria identified below.

5.3.3.1 *Long-Term Reliability and Durability:*

(1) Long-Term Reliability of UAL Instruments—Certain *activity and use limitations* are viewed as being more reliable over the long term than others. For example, many people have expressed concern that zoning may not be reliable over the long term to eliminate or minimize potential exposures to chemicals of concern, or to prevent activities that may interfere with the effectiveness of a response action. In addition, state laws may limit the durability and enforceability of specific types of *activity and use limitations*. Some governmental jurisdictions have renewal clauses in rules where a restriction expires or must be rewritten within a given time frame. For example, in Iowa, restrictive covenants must be renewed every 21 years. See Iowa Code §614.24 (2009). In addition, title searches typically go back only 40 to 60 years unless a request is made to look back further in time in the property records. Therefore, if *activity and use limitations* are expected to remain in effect over a long period of time, this issue needs to be considered and addressed in the title search context. The greater the risk of exposure to *chemicals of concern* over a long period of time (e.g., exposure to chemicals of concern that do not attenuate naturally, or that are persistent *chemicals of concern*, or that otherwise present a substantial risk to human health or the environment), the greater the need to address these issues. Many of the concerns about long-term reliability and durability have been addressed in states that have adopted the Uniform Environmental Covenant Act or in states that have adopted similar statutes.

(2) Long-Term Reliability Through Monitoring and Stewardship—Even the types of *AULs* that are viewed as being more reliable and durable over time are likely to require *AUL* monitoring. Property owners are not always aware of the existence of an *AUL*, do not necessarily recognize that a land activity may be in conflict with an *AUL*, or appreciate that an *AUL* needs monitoring and maintenance over time. Some states have established robust *AUL* monitoring and/or auditing programs. For example, some states, such as New Jersey, require periodic inspections and statements and/or certifications from qualified environmental consulting firms or responsible parties that the *activity and use limitations* continue to be in place and protective of human health and the environment. Other states, such as Massachusetts, periodically audit all sites with *activity and use limitations*. Others, as reported in the 2009 ASTSWMO report, have retained private sector services to monitor land activities at sites with *AULs*. Even if an active *AUL* monitoring and reporting system is not required, it can be a good practice for a private landowner to establish its own *AUL* monitoring program. *AUL* monitoring can be accomplished through periodic on-site inspections and/or through third party land activity monitoring services. The types of long-term monitoring and stewardship practices within the jurisdiction or at a given site can be an important balancing criteria.

5.3.3.2 *Acceptability to Stakeholders*—The user should consider the advantages of involving affected stakeholders early in the remedial action selection process in the decision to implement and maintain *activity and use limitations* at a site. Stakeholders may include, but are not necessarily limited to, Federal agency officials; Indian tribes; state agency officials; local government officials; all potentially responsible parties; the environmental community; the business community (local businesses, tenants, lenders, etc.); utilities; and residents. The potentially affected stakeholders need to understand the exposure assumptions underlying the potentially applicable *activity and use limitations*; why *activity and use limitations* may be appropriate; and how those restrictions will be implemented and maintained over time. The local community, including local government officials, local businesses, and residents, may play an important role in both implementing and maintaining the *activity and use limitations* over time. It is also important to note that the regulated community has long been concerned about the potential impacts of "deed restrictions", which are a permanent part of the property record, on property title and the ability to reconvey the property. "Deed restrictions" may discourage any interest that lenders, developers or other prospective purchasers would have in reusable properties.

5.3.3.3 *Cost Effectiveness*—The user should evaluate whether the proposed *activity and use limitation* is cost effective. For example, if a ground water remediation system is likely to require substantial operation and maintenance costs over time, and this control is embodied in a *restrictive covenant* running with the land, this control may not be cost effective over the long term, compared with doing additional remediation now.

5.4 *Risk Assessment Applied to Activity and Use Limitations*—Unless risk-based screening levels are used, site specific risk assessments should be conducted to determine appropriate risk-based site-specific target levels (SSTLs) for each *chemical of concern* detected at a site, for each potentially applicable *exposure pathway*, for each potentially relevant exposure route, and for each potentially relevant receptor

(human and ecological). The SSTL represents the concentration of each *chemical of concern* that presents an "acceptable risk" or "no significant risk" at the site under the exposure assumptions that have been used. For example, if the user assumes that the site will continue to be used for industrial purposes, the risk assessment may assume that exposures from volatile organic compounds in ground water are applicable and relevant to industrial workers only, who may breathe volatilized organic compounds for no more than ten hours per day. These exposure assumptions would no longer be relevant or appropriate if the facility decided to open a day care center on site.

5.5 *The Need to Avoid Overly Simplistic Paradigms*—Although there is a direct relationship between risk assessment and *activity and use limitations*, the user is cautioned to avoid making overly simplistic assumptions. For example, an area might be zoned "industrial," but the actual use of the property where *chemicals of concern* are present is "mixed use", where there are residences and children present. In this case, one should avoid using simplistic industrial risk assessment scenarios based upon zoning designations alone, since the actual exposures will be greater.

5.5.1 *Residential/Commercial/Industrial Zoning Designations May Have Nothing to do with Exposure Pathways*—Zoning designations are usually relevant regarding which human receptors may be at a site, but zoning should never substitute for the professional judgment of a risk assessor regarding which *exposure pathways* should be incorporated into the risk assessment. Again, an area might be zoned "commercial," but the *exposure pathways* may include windblown dust into a school within the commercial zone. Blindly applying assumptions that fit with "commercial" exposures would underestimate risk. Likewise, using "residential" assumptions for every pathway that happens to be in a residential zone may overestimate risk if certain pathways are not complete (e.g., no *exposure* to impacted ground water).

5.5.2 Generally, local zoning or other comprehensive plan designations are not sufficient on their own to ensure *exposures* are limited. As noted above, zoning designations may not limit exposure since uses may be different from what zoning would allow; zoning may not be relevant to the particular pathway; and zoning may change without consideration being given as to how the change might affect exposure (e.g., zoning may change from "industrial" to "mixed use" to bolster economic development without consideration of potentially increased exposures). Additional measures (such as *restrictive covenants*) may complement the zoning to ensure exposures are the same as those reflected in the risk assessment.

5.6 *Long-Term Monitoring and Stewardship Issues:*

5.6.1 The user is cautioned about the importance of determining early in the remedial action selection process not only whether a particular type of *activity and use limitation* is relevant and appropriate, but also of determining how the *activity and use limitation* will be monitored, maintained, and enforced over time. See 5.3.3.1 discussing *AUL* reliability through monitoring and stewardship. Monitoring and maintaining *AULs* may be critical in demonstrating compliance with the *continuing obligations* required to satisfy the *LLPs* under the Brownfields Amendments of 2002. Discussion of the nature and extent of those *continuing obligations* is beyond the scope of this Guide. It may be prudent and advisable to include all affected stakeholders in the resolution of these issues. *See* EPA Draft Interim Final Guide. The affected stakeholders should consider whether the federal, state, tribal, or local government has authority to monitor and enforce the control; whether the federal, state, or local government has the resources to monitor, inspect, and enforce the control; and whether private entities (e.g., environmental insurance companies, third-party land activity monitoring firms, custodial trusts, beneficiaries of conservation easements, the grantee of a *restrictive covenant*, or the holder of an *environmental covenant*) may have a role in monitoring and enforcing the selected *activity and use limitation*. Private sector tools have included firms that monitor and track *activity and use limitations* on a "real time" basis for actual or potential breaches, and periodic inspections and statements and/or certifications from qualified environmental consulting firms or responsible parties that the *activity and use limitations* continue to be in place and protective of human health and the environment. Permitting programs exist which may require the use of either or both techniques.

5.6.2 The user should also consider whether a particular state requires financial assurances as a means of maintaining and enforcing the *activity and use limitation*. Commonly used mechanisms for financial assurance may include bonds, letters of credit, environmental trusts, environmental insurance, custodial trusts, sinking funds, escrows, and similar mechanisms. The user should determine which aspect of the *activity and use limitation* is triggering the need for financial assurances: is it potential liabilities associated with failure to maintain and enforce the *activity and use limitations*, or is it the known and projected costs of monitoring the *activity and use limitations*? Environmental insurance is potentially available for the former, but not for the latter. Accordingly, if environmental insurance is selected as a financial assurance mechanism, it may need to be combined with other tools, such as trusts using structured settlements, to satisfy the state.

5.6.3 The *user* should also determine whether a periodic statement or certification of compliance with the *activity and use limitations* is required by the federal, state, tribal, or local governmental authority and therefore should be part of a long-term stewardship plan. Note—some state voluntary cleanup programs require a periodic statement or certification from a third party of the compliance status of the *activity and use limitation* used in conjunction with the *remedial action*.

EXAMPLES OF ACTIVITY AND USE LIMITATIONS

6. General

6.1 For purposes of this guidance, *activity and use limitations* are those mechanisms used in a Federal, state, tribal, or local remediation program applying risk-based decision-making principles where, as a part of the program, certain concentrations of *chemicals of concern* are allowed to remain in the soil or ground water. Activity and use limitations would then be used to ensure that exposure to the residual *chemicals of concern* does not present a significant risk to human health or the environment.

6.2 The types of *activity and use limitations* to be discussed are: ***proprietary controls***, such as *restrictive covenants* or *easements*; ***state and local government controls***, such as *AULs* established by state statute, zoning, building permits, well drilling prohibitions, and water advisories; ***statutory enforcement tools***, such as orders and permits; ***informational devices***, such as deed notices, geographic information systems, Registry Act requirements and Transfer Act requirements; and ***physical measures***, including engineering and access controls. *See* American Bar Association, Implementing Institutional Controls at Brownfields and Other Contaminated Sites and the EPA's Site Manager's Guide.

6.3 *Activity and use limitations* come in many different forms. Often, an effective Federal, state, or local remediation program involves multiple layers of controls using different types of *activity and use limitations*. For example, an agency may impose a limitation requiring further remediation should the property be used for residential purposes. This use limitation may be incorporated into an easement or *restrictive covenant*, which in turn may have to be registered or recorded.

6.4 In some states, an owner/operator who implements *activity and use limitations* as part of a remediation program will obtain some degree of liability protection for the environmental conditions on-site, provided that the controls are maintained. Examples of devices used by states to limit liability include Certificates of Completion, Covenants Not to Sue and No Further Action letters. However, most of these devices only apply to state actions and do not automatically preclude private or Federal lawsuits. Some states have entered into a Memorandum of Understanding with EPA to minimize the chance that a state corrective action decision resulting in an exemption from future liability will be overturned by EPA. The corrective action decisions may involve the use of *activity and use limitations* as a condition of case close-out. The user is cautioned that it is important to be aware of the legal context of the regulatory programs administering the site.

6.5 *Federal Government Use of Activity and Use Limitations—Activity and use limitations* may be either explicitly or implicitly permitted under Federal, state, and local remediation programs.

NOTE 1—The *user* is cautioned that the statutes and ordinances listed herein are intended to be illustrative only and may have changed from the date of publication of this guide.

6.5.1 *Environmental Protection Agency*—The Environmental Protection Agency has expressed increased interest in the use of *activity and use limitations* at CERCLA and RCRA sites in recent years as the interest in land-use based remedies and performance-based standards has increased.

NOTE 2—At radioactive-contaminated sites, EPA uses an "acceptable risk" factor of 10E-6 and models this to correspond to a dose limit of 15mRem/year.

6.5.1.1 *Activity and use limitations*, including *institutional controls*, are recognized in the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"). While not containing any binding rules regarding when these types of controls may be used, the NCP does state the following regarding *institutional controls*: "EPA expects to use *institutional controls* such as water use and deed restrictions to supplement *engineering controls* as appropriate for short- and long-term management to prevent or limit exposure to *hazardous substances*, pollutants or contaminants. *Institutional controls* may be used during the conduct of the remedial investigation/feasibility study (RI/FS) and implementation of the remedial action and, where necessary, as a component of the completed remedy. The use of *institutional controls* shall not substitute for active response measures (e.g., treatment or containment, or both, of source material, restoration of ground waters to their beneficial uses) as the sole remedy unless such active measures are determined not to be practicable, based on the balancing of trade-offs among alternatives that is conducted during the selection of remedy." 40 CFR 300.430(a)(1)(iii)(D).

6.5.1.2 EPA has stated a similar intent with regard to the use of *institutional controls* in the RCRA program. In a notice published on May 1, 1996, EPA stated that it: "expects to use *institutional controls* such as water and land use restrictions primarily to supplement *engineering controls* as appropriate for short and long term management to prevent or limit exposure to hazardous waste and constituents. EPA does not expect that *institutional controls* will often be the sole remedial action." 61 Fed. Reg. at 19448.

6.5.1.3 EPA has also released guidance that recommends, *inter alia*, that: *institutional controls* be evaluated carefully before the final remedial action is selected; the goals and objectives for the *institutional control* be described clearly in the decision document; state and local governmental agencies be involved early in the remedial action selection process; and an instrument such as an easement or *restrictive covenant* be executed when it is important for the control to run with the land. See EPA's Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups (2000).

6.5.1.4 EPA has also released several guidance documents regarding *institutional controls*, including EPA Draft Interim Final Guide, "*Institutional Controls*: A Guide to Planning, Implementing, Maintaining, and Enforcing *Institutional Controls* at Contaminated Sites" (Nov. 30, 2010); "*Institutional Controls*: A Site Manager's Guide to Identifying, Evaluating and Selecting *Institutional Controls* at Superfund and RCRA Corrective Action Cleanups" (September 29, 2000); "Interim Guidance Regarding Criteria Landowners Must Meet in Order to Qualify for Bona Fide Prospective Purchaser, Contiguous Property Owner, or Innocent Landowner Limitations on CERCLA Liability" (March 2003); "Strategy to Ensure *Institutional Control* Implementation at Superfund Sites" (September 2004); "*Institutional Controls*: A Citizen's Guide to Understanding Institutional Controls at Superfund, Brownfields, Federal Facilities, Underground Storage Tank, and Resource Conservation and Recovery Act Cleanups" (March 2005); "Long Term Stewardship: Ensuring Environmental Site Cleanups Remain Protective Over Time" (September 2005); "National Strategy to Manage Post Construction Completion Activities at Superfund Sites" (October 2005); and "Enforcement First' to Ensure Effective *Institutional Controls* at Superfund Sites" (March 2006).

6.5.1.5 At Brownfields sites, EPA monitors state enforcement and tracking of *institutional controls* through CERCLA §128(a) grants. Brownfields projects receiving §104(k) grants are also required to indicate the nature and type of institutional control used at each eligible site.

6.5.1.6 *Activity and use limitations*, including *institutional controls* and *engineering controls*, are recognized under the TSCA program. Under the TSCA program, EPA published the PCB "mega rule" on June 29, 1998 (*63 FR 35383*), which included provisions for the remediation of PCB-contaminated property, specifically, *40 CFR 761.61(a)*. This portion of the TSCA regulations requires that, at least 30 days prior to the date that the cleanup of a site begins, the person in charge of the cleanup or the owner of the property where the PCB remediation waste is located shall notify, in writing, the EPA Regional Administrator, the Director of the State or Tribal environmental protection agency, and the Director of the county or local environmental protection agency where the cleanup will be conducted (see *40 CFR 761.61(a)(3)(i))* . In addition, if an *engineering control*, specifically a cap as defined in *40 CFR 761.61(a)(7)* is used as a component of the site remediation, any person designing and constructing a cap must do so in accordance with §264.310(a), and ensure that it complies with the permeability, sieve, liquid limit, and plasticity index parameters in §761.75(b)(1)(ii) through (b)(1)(v). A cap of compacted soil shall have a minimum thickness of 25 cm. A concrete or asphalt cap shall have a minimum thickness of 15 cm. A cap must be of sufficient strength to maintain its effectiveness and integrity during the use of the cap surface which is exposed to the environment. Repairs shall begin within 72 h of discovery for any breaches which would impair the integrity of the cap.

Further, the PCB rules require deed restrictions, an *institutional control* for sites with residual PCB contamination (see *40 CFR 761.61(a)(8)*. The *deed restriction* requirements state that, when a PCB cleanup activity includes the use of a fence or a cap, the owner of the site must maintain the fence or cap, in perpetuity. In addition, whenever a cap, or the procedures and requirements for a low occupancy area is used, the owner of the site must meet the following conditions:

> (*i*) Within 60 days of completion of a cleanup activity under this section, the owner of the property shall:
>
> (*A*) Record, in accordance with State law, a notation on the deed to the property, or on some other instrument which is normally examined during a title search, that will in perpetuity notify any potential purchaser of the property:
>
> (*1*) That the land has been used for PCB remediation waste disposal and is restricted to use as a low occupancy area as defined in §761.3.
>
> (*2*) Of the existence of the fence or cap and the requirement to maintain the fence or cap.
>
> (*3*) The applicable cleanup levels left at the site, inside the fence, and/or under the cap.
>
> (*B*) Submit a certification, signed by the owner, that he/she has recorded the notation specified in paragraph (a)(8)(i)(A) of this section to the EPA Regional Administrator.
>
> (*ii*) The owner of a site being cleaned up under this section may remove a fence or cap after conducting additional cleanup activities and achieving cleanup levels, specified in paragraph (a)(4) of this section, which do not require a cap or fence.

6.5.2 *NRC*—Another example of the use of *activity and use limitations* in a federal program is contained in the Nuclear Regulatory Commission's license termination regulations. These regulations (10 CFR 20.1402 and 20.1403) permit the termination of licenses at facilities that have been decommissioned but which still have small concentrations of residual radioactivity. If the concentrations are low enough, the facility may be released without any limitations or restrictions. However, if the concentrations are somewhat higher, the licensee may apply to release the facility with limitations on the future use of the site that will limit the potential future dose to site occupants. Typically, the limitations would be in the form of deed restrictions that limit the use of the property. Some of the provisions in the regulations include the following:

> (*d*) The licensee has submitted a decommissioning plan or License Termination Plan (LTP) to the Commission indicating the licensee's intent to decommission in accordance with 10 CFR 30.36(d), 40.42(d), 50.82(a) and (b), 70.38(d), and 72.54 of this chapter, and specifying that the licensee intends to decommission by restricting use of the site. The licensee shall document in the LTP or decommissioning plan how the advice of individuals and institutions in the community who may be affected by the decommissioning has been sought and incorporated, as appropriate, following analysis of that advice.
>
> (*1*) Licensees proposing to decommission by restricting use of the site shall seek advice from such affected parties regarding the following matters concerning the proposed decommissioning--
>
> (*i*) Whether provisions for *institutional controls* proposed by the licensee;
>
> (*A*) Will provide reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group will not exceed 25 mrem (0.25 mSv) TEDE per year;
>
> (*B*) Will be enforceable; and
>
> (*C*) Will not impose undue burdens on the local community or other affected parties.
>
> (*ii*) Whether the licensee has provided sufficient financial assurance to enable an independent third party, including a governmental custodian of a site, to assume and carry out responsibilities for any necessary control and maintenance of the site;
>
> (*2*) In seeking advice on the issues identified in § 20.1403(d)(1), the licensee shall provide for:
>
> (*i*) Participation by representatives of a broad cross section of community interests who may be affected by the decommissioning;
>
> (*ii*) An opportunity for a comprehensive, collective discussion on the issues by the participants represented; and
>
> (*iii*) A publicly available summary of the results of all such discussions, including a description of the individual viewpoints of the participants on the issues and the extent of agreement and disagreement among the participants on the issues; and
>
> (*e*) Residual radioactivity at the site has been reduced so that if the *institutional controls* were no longer in effect, there is reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group is as low as reasonably achievable and would not exceed either--

(*1*) 100 mrem (1 mSv) per year; or

(*2*) 500 mrem (5 mSv) per year provided the licensee--

(*i*) Demonstrates that further reductions in residual radioactivity necessary to comply with the 100 mrem/y (1 mSv/y) value of paragraph (e)(1) of this section are not technically achievable, would be prohibitively expensive, or would result in net public or environmental harm;

(*ii*) Makes provisions for durable *institutional controls*;

(*iii*) Provides sufficient financial assurance to enable a responsible government entity or independent third party, ncluding a governmental custodian of a site, both to carry out periodic rechecks of the site no less frequently than every 5 years to assure that the *institutional controls* remain in place as necessary to meet the criteria of § 20.1403(b) and to assume and carry out responsibilities for any necessary control and maintenance of those controls. Acceptable financial assurance mechanisms are those in paragraph (c) of this section.

(*1*) In order to release a facility under these restricted conditions, the regulations require that certain conditions be met: levels of residual radioactivity must have been reduced to levels that are as low as reasonably achievable, the licensee must have made provisions for legally enforceable *institutional controls* to limit dose, the licensee must have provided adequate financial assurances to perform maintenance of the controls when such maintenance may be needed, the licensee must seek public advice on the proposed *institutional controls*, and the concentrations at the site must be low enough that, if the limitations were not in effect, the doses to site occupants would not be unacceptably high.

6.5.2.1 In order to release a facility under these restricted conditions, the regulations require that certain conditions be met: levels of residual radioactivity must have been reduced to levels that are as low as reasonably achievable, the licensee must have made provisions for legally enforceable *institutional controls* to limit dose, the licensee must have provided adequate financial assurances to perform maintenance of the controls when such maintenance may be needed, the licensee must seek public advice on the proposed *institutional controls*, and the concentrations at the site must be low enough that, if the limitations were not in effect, the doses to site occupants would not be unacceptably high.

6.5.3 *Department of Defense*—Department of Defense installations that seek to transfer real property on which institutional controls are a component of response actions or remedial actions, must include a notice in the deed of transfer describing the *institutional controls* that must be maintained to protect human health and the environment from *chemicals of concern* remaining on the property (see 42 USC 9620(h)(3)).

NOTE 3—DoD also decommissions and remediates radioactive-contaminated sites that can result in *AULs*.

6.5.4 *Department of Energy*—For Department of Energy (DOE) sites with residual *chemicals of concern*, *AULs* consisting of both *engineering controls* and *institutional controls* are used to conform to the requirements of *10 CFR 830*. DOE requires that the *institutional controls* used to prevent unacceptable risk include provisions for "routine inspection and surveillance" and an annual certification prepared by a professional engineer that the *institutional control* is effective. In addition, DOE expects the required 5-year review under CERCLA §121(c) to substantiate that the *institutional controls* effectively render the *exposure pathway* incomplete.

NOTE 4—DoE also decommissions and remediates radioactive-contaminated sites that can result in *AULs* and follows EPA's guidance on both the process and the limitations of the release. It also enters into Tri-Party Agreements.

6.6 *State and Local Use of Activity and Use Limitations:*

6.6.1 *General:* The term "*deed restriction*" is not a legal term of art. Nevertheless, the term "*deed restriction*" is frequently used to describe various limits and conditions on the use and conveyance of land, including *proprietary controls*, *state and local government controls*, *statutory enforcement tools*, and *informational devices*. In this regard, "*deed restrictions*" are one of the most common forms of *activity and use limitations*.

NOTE 5—The *user* is cautioned that the statutes and ordinances listed herein are intended to be illustrative only and may have changed from the date of publication of this guide.

6.6.1.1 In some states, *activity and use limitations* are an explicit part of the state's hazardous waste corrective action program. See, e.g., Colo. Rev. Stat. § 25-15-318 to 327 (current through 2010 Regular Session); Kan. Stat. Ann. 65-3430 et seq. (current through 2009 regular session); Utah Code Ann. 19-10-101 *et seq*. (current through 2010 General Session); Wis. Admin. Code [WDNR] § 720.11 (current through Register 655, August 2010 Update). In other states, on a site-specific basis, the state will consider the use of *activity and use limitations* and future uses in determining the applicable corrective action standard. See, e.g., 27 Pa. Cons. Stat. § 6501 *et seq*. (current through Act 2010-45,47, and 48); ALA. CODE § 22-30E-4(c)(3) (current through the end of the 2010 Regular Session); GA. CODE ANN. § 12-8-107(h) (current through the 2010 Regular Session); MISS. CODE ANN. § 49-35-7(6) (current through the 2009 Regular and 3rd Extraordinary Session). Finally, some state statutory regimes make no mention of the use of *activity and use limitations* in their voluntary corrective action programs, but in practice consider, and even encourage, their use.

6.6.1.2 *Emergencies*—Some states have found it helpful to include provisions describing procedures to be followed in the case of an emergency that requires the site to be disturbed. See, e.g., 310 Mass. Code Regs. § 40.1071(2)(l) (West 2004). Sample procedures that should be followed if, e.g., an underground utility line must be repaired include: notifying the state environmental authority within 2 h of knowledge of the emergency condition, limiting disturbance of the impacted media to the minimal amount reasonably acceptable to respond to the emergency, taking specified precautions to minimize exposure of workers and neighbors to the impacted media, and hiring a licensed site professional (LSP) to prepare or implement a plan, or both, to restore the site to a condition consistent with the use of an *activity and use limitation*.

6.6.2 *Activity and Use Limitations Created Under State Property Law or Common Law (Proprietary Controls):*

6.6.2.1 *Restrictive Covenants*—Restrictive covenants are created under the common law or property law of a state. In order to be enforceable against current and subsequent owners of the property, a promise in a *restrictive covenant* requires: a writing; an intention by all originating parties that particular restrictions be placed on the land in perpetuity; "privity of estate", and the restriction must "touch and concern the land."

6.6.2.2 *Easements*—An easement may allow access to the property or prohibit a use of the property. Easements are available under common law.

6.6.2.3 *Equitable Servitudes*—Equitable servitudes are specific provisions, usually restricting certain uses, that apply to the property owner. A servitude would restrain the property owner such that he/she must use the land in a manner compatible with the servitude.

6.6.3 *Activity and Use Limitations Created by State Statute*—Many states have adopted specific laws permitting the use of so-called "*deed restrictions* " as a matter of state statutory law. The restrictions serve two principal purposes: to provide notice to subsequent purchasers and lessees that the property has been subject to a certain level of environmental investigation and remediation; and to ensure the long-term efficacy of any *engineering control* or condition that must be maintained over time.

6.6.3.1 In order to be enforceable against current and subsequent owners of the property, common law generally requires that a promise in a *proprietary control* include: a writing; intention by all originating parties that particular restrictions be placed on the land in perpetuity; "privity of estate"; and that the restriction must "touch and concern the land."

NOTE 6—Many states have passed statutes that create requirements for *activity and use limitations* and that address the common law concerns associated with *proprietary controls*. The general common law requirements for *proprietary controls* are discussed above, and the changes often imposed through state statutes to address these concerns are discussed in more detail below.

6.6.3.2 Legal requirements dictate that conveyances of land and "*deed restrictions*" affecting land must be in writing. When "deed restrictions" or environmental restrictions are imposed by state law, rather than common law, many states mandate that these restrictions be created by documents that are either identical to or substantially similar to the model documents provided by the state's department of environmental protection.

6.6.3.3 The second requirement for a legal and binding "*deed restriction*" is a precise reflection of the parties' intentions with regard to the scope and duration of the restrictions therein. Generally, the restriction must run "in perpetuity". Again, where the restriction has been codified in state law, the codified laws or implementing regulations often provide that such restrictions will "run with the land" in their model forms to denote that the restriction will last in perpetuity. See, e.g., ALA. CODE § 35-19-5(a) (current through the end of the 2010 Regular Session); GA. CODE ANN. § 44-16-5(a) (current through the 2010 Regular Session); 310 Mass. Code Regs. , § 40.1099 (Form 1072A, Grant of Environmental Restriction) (2006); MISS. CODE ANN. § 89-23-9(a) (current through the 2009 3rd Extraordinary Session); 22 Cal. Code Regs. §67391.1(d).This phrase is essential as it ensures that any restriction is forever binding against the owner and successors in interest.

6.6.3.4 Under common law, the third requirement is that only persons with a certain relationship, "privity," may enforce a deed restriction. Easements and covenants in gross, that is, those that do not benefit the land, but run to the benefit of a specific party, have been disfavored under the common law. Accordingly, easements and covenants in gross have been difficult to enforce under the common law. A lack of privity can therefore undermine an environmental agency's attempts at enforcement, since "*deed restrictions* " are usually promises between buyers and sellers or between neighbors. Some states have addressed this concern by explicitly eliminating the need for privity in the state statute. Several state programs explicitly provide that the environmental authority has the power to enforce the covenant. See, e.g., ALA. CODE §§ 35-19-5(b)(7), -11(a), -11(b)(2) (current through the end of the 2010 Regular Session); Colo. Rev. Stat. § 25-15-320 (2010); GA. CODE ANN. §§ 44-16-5(b)(7), -11(a)(2) (current through the 2010 Regular Session); N.J. Admin. Code tit 7, § 26E-8 (Appendix E); Cal. Civ. Code § 1471(a)(2) (West 2010); Cal. Health & Safety Code § 25355.5(a)(1)(C) (West 2010); MISS. CODE ANN. §§ 89-23-9(7), -21(a)(2) (current through the 2009 3rd Extraordinary Session); Wis. Stat § 292.93 (2010). States that have developed model covenants often follow this approach. Other states have sought, or are seeking, statutory authority to enforce covenants.

6.6.3.5 Finally, the promise in a "*deed restriction*", as well as the benefit, must "touch and concern the land." This means that the promise, and the benefit, must center on the land and use of the land and must affect the land itself in some way. For example, an owner/operator's promise to refrain from using the land in a certain way in the future could devalue land and thus would be considered to "touch and concern the land." The promise in a "*deed restriction* " may also refer to the use of a remedial action and the maintenance requirements associated with it, or to a different land use classification from adjacent parcels due to corrective action levels specified for soils at the site. See, e.g., ALA. CODE §§ 35-19-6 (current through the end of the 2010 Regular Session).

6.6.3.6 An effective "*deed restriction,*" both from the owner/operator's perspective and the state's perspective, must be drafted using precise and easily understandable language spelling out the specific activities and uses that will be allowed and the specific activities and uses that will be prohibited. General restrictions or requirements may include: granting of an easement to the state environmental authority for inspection, surveillance, monitoring, maintenance, or other purposes necessary to protect health and safety; prohibiting the subdivision of property; a requirement for notification to be sent by the owner of nonresidential property to purchasers, lessees, and tenants disclosing the existence of residual chemicals of concern; a requirement that the owner give notice in all deeds, mortgages, leases, subleases, and rental agreements that there are residual chemicals of concern; a requirement for advance notice to state environmental authorities of any sale, lease, or other conveyance of property; a requirement for notice in the deed notifying prospective purchasers that the property has been used to manage or dispose of hazardous waste, or both, and that its use is restricted; and provisions for enforcement, variance, and termination. See Cal. Health & Safety Code § 25202.5 (West 2010).

6.6.3.7 The process for imposing "*deed restrictions*" should contain a certain amount of flexibility with regard to cancellation or variance. The procedures for cancellation or amendment of a "*deed restriction*" should be readily available. In Texas, the owner/operator must notify the state environmental authority at least 120 days prior to canceling or amending an *activity and use limitation*. 30 Tex. Admin. Code § 334.206(a)(5) (2010). Within 30 days of this notification, the owner/operator must demonstrate to the state that conditions have changed and that a re-evaluation is warranted. See, *id*. Massachusetts is more stringent, requiring any change in activities or uses that may invalidate a finding of "No Significant Risk" to be accompanied by an evaluation by a Licensed Site Professional (LSP). For cancellation or release of an *activity and use limitation*, the owner/operator must submit a standard form along with an LSP opinion. See 310 Mass. Code Regs. § 40.1080 et seq. (2004). Wisconsin states right in the restriction or notice that an affidavit may be filed with a determination that the conditions under which the document was filed no longer apply. Wis. Admin. Code [WDNR] §§ 720.11(1)(c), 726.05(2)(c) (2004). Under UECA, an *environmental covenant* may be amended or terminated by consent if the amendment or termination is signed by the agency, the current owner, the holder, and each party who signed the original covenant (unless that person has waived his right to sign in a signed record or a court finds that that person no longer exists or cannot be located with reasonable diligence). See, e.g., ALA. CODE §§ 35-19-9, -10 (current through the end of the 2010 Regular Session); GA. CODE ANN. §§ 44-16-9, -10 (current through the 2010 Regular Session); MISS. CODE ANN. §§ 89-23-17, -19 (current through the 2009 3rd Extraordinary Session). 6.2.1.9 The need for a soil vapor extraction system may be determined as part of the remedial action selection process. A "*deed restriction*" would then be used to ensure the continued operation and maintenance of the remedial system.

6.6.4 *Model Uniform Environmental Covenants Act*—Because of the limitations of *proprietary controls* utilized under state property law, and the limitations of early "deed restrictions" created by state statute, the National Conference of Commissioners on Uniform State Laws ("NCCUSL") set out in 2001 to see whether it could create a more durable, reliable and enforceable type of *activity and use limitation* that would be easier to implement, modify, terminate and enforce in multiple jurisdictions. In 2003, NCCUSL approved a model *Uniform Environmental Covenants Act ("UECA"*) after two years of negotiations and deliberations by commissioners from 15 states. As of December 2010, the model law had been adopted into law in 23 states, the District of Columbia, and the U.S. Virgin Islands. See, e.g., ALA. CODE §§ 35-19-1 to -14 (current through the end of the 2010 Regular Session); COLO. REV. STAT. §§ 25-15-318 to -327 (current through the 2010 Legislative Session); DEL. CODE ANN. tit. 7. §§ 7907 - 7920 (current through 77 Del Laws. Ch. 471; 2010); D.C. CODE §§ 8-671.01 to 8-671.14 (current through D.C. Law 18-210, Effective July 27, 2010 and through D.C. Act 18-463); GA. CODE ANN. §§ 44-16-1 to -14 (current through the 2010 Regular Session); HAWAII REV. STAT. §§ 508C-1 to -13 (current for 2010 Legislation Acts 1 through 212); IDAHO CODE ANN. §§ 55-3001 to -15 (current through the 2010 Regular Session); 765 ILL. COMP. STAT. ANN. 122/1 – 122/15 (current through Public Acts 96-1167 of the 2010 Legislative Session); IOWA CODE §§ 455I.1 – 455I.12 (current through the 2009 Supplement of the 2009 Legislation); KY. REV. STAT. ANN. §§ 224.80-100 to -210 (current through the 2009 First Extraordinary Session); ME. REV. STAT. ANN. tit. 38, §§ 3001-3013 (current with Legislation through 2009 Second Regular Session of the 124th Legislature); MD. CODE ANN. [ENVIR.] §§ 1-801 to 1-815 (2010); MINN. STAT. §§ 114E.01 – 114E.65 (current through the 2009 Regular Session); MISS. CODE ANN. § 89-23-1 to -27 (current through the 2009 3rd Extraordinary Session); MO. REV. STAT. §§ 260.1000 - 260.1039 (current through the 95th General Assembly, First Regular Session 2009); NEB. REV. STAT. §§ 76-2601 to -2613 (current through the 2009 101st First Special Session); NEV. REV. STAT. ANN. §§ 445D.010 - 445D.220 (current through the 75th (2009) Regular Session); OHIO REV. CODE. ANN. §§ 5301.80 –5301.99 (current through legislation passed by the 128th (2010) Ohio General Assembly and filed with the Secretary of State through File 54); OKLA. STAT. ANN. tit. 60, §§ 49.11 – 49.23 (current with legislation through Emergency Effective Chapter 170, 2010 Second Regular Session of the 52nd Legislature); 27 PA. STAT. ANN. §§ 6501 – 6517 (current through Acts 45, 47, and 48 of the 2010 Legislative Session); S.D. CODIFIED LAWS §§ 34A-17-1 to -14 (current through all 2009 Legislation passed at the 84th Regular Session, including Supreme Court Rule 09-01 through 09-09); UTAH CODE ANN. §§ 57-25-101 to -114 (current through the 2010 General Session); V.I. CODE ANN. tit. 28, §§ 381 – 395 (current through Act 7174 of the 2010 Regular Session, Excludes Act 7167); WASH REV. CODE Ann. §§ 64.70.005 – 64.70.900 (current through the 2010 Regular and 1st Special Sessions); W. VA. CODE ANN. §§ 22-22B-1 to -14 (current through 2010 2nd Extraordinary Session).

6.6.4.1 The model law creates a statutory process for implementing, modifying, terminating and enforcing *AULs*. It removes a number of impediments to the long-term reliability or durability of *AULs* that otherwise exist under the common law, such as the need to have vertical and horizontal privity, the common law's disfavor of "spurious" easements and affirmative obligations, and the need to re-record restrictions on title after a set period of time (generally, 40 to 60 years) under the Marketable Title Act. An environmental covenant utilized in a state that has adopted UECA is a type of State Government Control, not a Proprietary Control. Adoption of UECA in the states will dramatically improve parties' ability to implement and enforce robust and durable *AULs*. See ABA, Implementing Institutional Controls.

6.6.4.2 It is important to note that many of the terms under *UECA* are unique to *AULs* adopted under the model law. These concepts and terms do not exist under state property law or in states that have adopted other types of "deed restrictions" by state statute. An "*environmental covenant*," for example, is only available in a state that has adopted *UECA*. Similarly, an entity can be a "holder" of an *environmental covenant* only in a state that has adopted *UECA*.

6.6.5 *Other Types of State and Local Government Controls:*

6.6.5.1 *Zoning/Rezoning/Variances*—Municipal or local government authorities may impose restrictions on certain activities or uses through restrictive or "overlay" zoning. For example, restrictive zoning may be used to prohibit residential uses in a formerly industrial area. The user is cautioned, however, that zoning is generally not very effective as a stand-alone control because zoning doesn't impact existing uses; it may require the property owner's consent; the control may not be adequately communicated to third parties, such as contractors and utilities; and it may be construed as an "inverse condemnation" or taking. Another shortcoming is the inability to limit uses or activities at individual sites, thus taking away some of the flexibility offered by individually-tailored *activity and use limitations*.

6.6.5.2 *Building Permits/Development Plan Review:*

(1) A few local jurisdictions review activity and use limitations before issuing building permits. However, the more typical situation is for the development process to review only local code compliance rather than to look to conditions that may be imposed by "deed restrictions" or other private contractual arrangements.

(2) Building permits are a form of local authority (that is, town, city, county) that can be used for implementation of activity and use limitations. In general, building permits are required to erect, construct, reconstruct, demolish, alter, or use any building or structure covered under the local ordinance. Regulated activities extend to changes in plumbing, gas, mechanical, electrical, and fire protection systems. The permitting process includes both a review component and an inspection component. There are significant powers of enforcement associated with the permitting process including, but not limited to, fines, injunctions and withdrawal of occupancy certificates. The broad scope of activities regulated by the permitting process could make it an effective and comprehensive tool for monitoring the land use activities of owners and operators.

(3) State programs do not ordinarily use building permits as a formal mechanism for land use and activity control related to environmental exposure. However, two states, New York and Colorado, have enacted laws which would establish formal mechanisms whereby building permit procedures would screen building permit applications against the location of AULs. See N.Y. Envtl. Conserv. Law §71-3607; Colo. Rev. Stat. §25-15-324. Many states have put mechanisms in place to distribute information on use restrictions imposed at the state or federal level to municipalities, but the application of this information is left to the local government.

6.6.5.3 *Well Drilling Prohibitions—Well Restriction Areas*—Well restriction areas can be a form of activity and use limitation by prohibiting or conditioning the construction of wells in that area.

6.6.5.4 *Geographic Information Systems*—Some states require that a site with ground water containing residual chemicals of concern that exceed state standards be registered on a GIS system so that affected parties may review information pertinent to the site prior to making decisions about purchase, future land use, and the like. New Jersey has a robust scheme that employs GIS. The use of GIS technology is integral to much of the work done at the New Jersey Department of Environmental Protection ("NJDEP"). The use of GIS technology is the focus of the Bureau of GIS and is used by many programs within NJDEP in order to make better environmental decisions. NJDEP GIS data is publicly available by download and is divided into the following categories: statewide layers, county, and watershed management area. Data is available for a vast range of environmental categories including ambient air quality, elevation contours, environmentally sensitive areas pursuant to the Permit Extension Act of 2008, and groundwater contamination areas. *See generally* New Jersey Department of Environmental Protection Bureau of Geographic Information Systems, available at http://www.state.nj.us/dep/gis/index.html. Other states have also adopted GIS-based systems. For instance, Wisconsin adopted a GIS-based system as a means of tracking institutional controls in 2006. The Wisconsin Department of Natural Resources GIS Program's mission is to develop and maintain technology, tools, databases, and applications which provide spatial data management, analysis, and mapping capabilities to support WDNR policy evaluation, decision-making, and program operations. See generally Wisconsin Department of Natural Resources, DNR Geographic Information Systems, available at http://dnr.wi.gov/maps/gis/.

6.6.5.5 *Permitting*—Many states have developed regulations that prohibit construction of a private well without a written permit. Often, limited water quality testing and well inspections are required prior to acceptance of the well for human use. In the case of new subdivisions, special use permits may be issued by state or local regulatory agencies prior to issuing development permits. Local and state health agencies may use ground water quality information to deny well permits for affected aquifers for the purpose of protecting public health, welfare, and safety.

6.6.5.6 *Overlay Zoning*—Overlay zoning consists of zones that are drawn on a municipality's existing zoning map which provide protection not explicitly stated under existing zoning regulations. In a number of states, aquifers and their quality are designated through a specific classification system. These classification systems are an outgrowth of the Safe Drinking Water Act (SDWA) provision for protection of sole source aquifers. Connecticut, e.g., maintains a published map of existing quality and classified uses of its groundwater resources. See Superficial Aquifier Potential Map of Connecticut *available at* http://www.ct.gov/dep/cwp/view.asp?a=2701=431436_GID=164. Ground water underlying Superfund sites and known impacted sites are classified as GB, which does not allow the human consumption of ground water; thus, drinking water wells are prohibited in these designated areas. Vermont has reclassified groundwater at two Superfund sites from Class 3 (suitable for individual water supply) to Class 4 (not suitable for human consumption) and maintains its ground water classifications on a GIS.

6.6.5.7 *Governmental Ordinances/Legislation*—County ordinances can restrict the use of ground water in cases where the existing water supply on a property is a potential threat to health. For example, the Municipal Setting Designation process is being used in various cities in Texas (including, without

limitation, Houston, Dallas, Irving, Port Arthur, Beaumont, Fort Worth, Garland, Grapevine, Lubbock, Brownsville, Wichita Falls, and Abilene) to restrict access to contaminated groundwater . See Municipal Setting Designation: Application Status (avail. at http://www.tceq.state.tx.us/remediation/msd/html). Chicago has passed an ordinance covering excavation in streets where *AULs* exist. *See* City of Chicago Highway Authority Agreement (avail. at http://www.cityofchicago.org/city/en/depts/doe/provdrs/permits/svcs/highway_authorityagreement.html). In Michigan, the state pre-approves ordinances as acceptable *AULs*.Similarly, Illinois has listed groundwater ordinances as acceptable/non-acceptable *AULs*. See Illinois Environmental Protection Agency, Groundwater Ordinance Status (avail. at http://epadata.epa.state.il.us/land/gwordinance/). In Howard County, Maryland, the County health officer can order a property owner to connect to the public water supply if there is a potential threat to human health and if there is an operating public water main available for delivery of water service to the property. The County Code has provisions for notification of the property owner, decision appeal, and compliance. Howard County Code § 18.101(2) (2010). Financial assistance may be obtained through the County for those property owners with financial difficulties. In Wisconsin, the state offers financial assistance for well replacement for eligible parties. Governmental ordinances may be used to preserve the integrity of any ground water remedial action by prohibiting or conditioning the placement and use of any or all types of wells within the area.

6.6.5.8 *Notices of Restrictions on Wells Within Deeds:*

(1) Deed notices or deed restrictions may be used to place restrictions on the installation and use of wells. Deed notices are informational only and do not convey a directly enforceable restriction. Deed restrictions are private controls between the past owner and current owner of the property. They are governed by state property law and thus vary from state to state. The restrictions can only be terminated upon a showing that the concentrations of the chemical(s) of concern in the well restriction area have been remediated in accordance with state standards.

(2) In Wisconsin, a Groundwater Use Restriction is placed on a property deed for sites where natural attenuation has been demonstrated to be effective, and will continue to be effective, in containing a plume and reducing contaminant concentrations (Wis. Admin. Code [WDNR] § 726.05(2)(c) (West 2004)). At the time that the restriction is filed, the case is considered closed and there are no additional monitoring requirements on the responsible party.

6.6.5.9 *Water and Well Use Advisories:*

(1) Water and well use advisories serve the public by alerting them to potential risks to health and safety from impacted ground water.

(2) Notices of water and well use advisories may be recorded in the land records. Some states require notification of state agencies upon proposed sale or transfer of environmentally-impacted properties as part of state remediation programs. In New Jersey, "Restrictions of Record" (ROR), including water well restrictions, must be filed with local officials, including the county clerk, county health officer, mayor, local zoning officials, and local construction code officials.

(3) Notification of ground water containing chemicals of concern may also be presented in the form of public notice of remediation as part of the federal or state program. Many programs require dissemination of remedial action plans (or notice of the same) through public libraries or newspapers, or both.

(4) Most states have controls for public utilities that serve as "one-call" telephone hotlines to ensure that buried power, water and gas lines are not disturbed. The possibility of expanding this service to include notification of the presence of environmentally-impacted media has been widely discussed by states and commentators, but the inclusion of environmentally-impacted sites within the one call service has only occurred in a handful of states.

6.6.6 *Statutory Enforcement Tools*—Where a government agency is actively involved in conducting or overseeing a corrective action, the agency may have enforcement authorities that can be used to impose activity and use limitations. Although these tools do not generally run with the land, they can be useful when a control is only needed for the short term, or when the current landowner is likely to own the property for as long as controls are needed. Short-term controls may be adequate, e.g., where the goal is simply to control access or exposure while the active corrective action is going on, or where a more permanent control is anticipated but will take time to implement.

6.6.6.1 *Orders*—Both Federal and state regulatory programs use orders as a mechanism for implementing activity and use limitations. For example, Section 106 of CERCLA authorizes EPA to issue administrative orders, or to seek a court order, whenever there is an imminent and substantial endangerment to public health, welfare or the environment. Many state laws contain similar authority. Federal and state RCRA programs also contain order authority, although more narrowly focused; e.g., for unpermitted facilities with "interim status", § 3008(h) of RCRA authorizes EPA to issue orders for corrective action, and again state law often provides similar authority. In addition, § 7003 of RCRA authorizes the issuance of an order when there is an imminent and substantial endangerment. Even some state Voluntary Corrective Action Programs use orders as a mechanism for moving those sites through their programs (e.g., Arkansas). In most cases, orders are negotiated and issued on consent, although they may also be issued unilaterally. In some cases, primarily in connection with CERCLA corrective actions at NPL sites, they may take the form of a consent decree.

(1) These authorities are very broad in scope and can address virtually any aspect of a corrective action. Accordingly, such an order may, among other things, specify activities that are prohibited at a particular property. In addition, in many states, a copy of the order is filed in the local land records in order to give potential purchasers notice of the residual chemicals of concern at the site.

(2) The chief disadvantage of orders as a form of activity and use limitation is that, in most cases, they are only binding on named parties. They do not bind a subsequent owner if the property changes hands, even if that party receives notice of the order. Therefore, they have limitations as long-term controls. In a few states, the state has specific statutory authority to issue orders that run with the land.

(3) However, for shorter term use, or as a "bridge" to a more permanent control, orders can be valuable. Moreover, depending on the statutory authority involved, an order may be enforceable by citizen suit, which may be considered desirable in some cases (i.e., it allows governments not directly involved in the corrective action decision to take the lead responsibility for oversight and enforcement). Finally, the mechanics of issuing an order may be less complicated than those of a transaction that involves conveyance of a property interest such as an easement.

6.6.6.2 *Permits*—Where a facility requires an operating permit of some kind, as under RCRA, that permit may be a vehicle for imposing activity and use limitations. Under RCRA, the permit for any hazardous waste treatment, storage or disposal facility must require corrective action across the facility. The corrective action permit may, among other things, specify uses that are prohibited in light of the type of corrective action being conducted. Since RCRA facilities are industrial by nature, RCRA corrective actions may lend themselves to a land-use based approach, particularly where the facility is located in an area likely to remain industrial for the reasonably anticipated future. In such cases the permit is the natural vehicle for imposing activity and use limitations, in the form of permit conditions.

(1) Where a permit is required, it can greatly simplify the process of establishing controls. Since the controls are in the permit itself, it is unnecessary either to seek separate regulatory action from a local government, or to negotiate the conveyance of a property interest.

(2) Permits can be a useful tool for memorializing an activity and use limitation. Their shortcomings include the lack of adequate resources to enforce these controls and the general absence of agency oversight. In addition, permit conditions bind only the permittee, and only for the life of the permit. If the permit expires or is not renewed, the long-term effectiveness of the restriction may be impaired. Therefore, it may ultimately be necessary to implement controls through some other mechanism (or it may be necessary to conduct additional corrective action to allow unrestricted use of the property).

(3) In addition to operating permits, some states have statutes or regulations establishing special corrective action-related permits. For example, some states can issue ground water permits under which access to ground water is limited during the time that it takes to conduct ground water restoration.

6.6.7 *Informational Devices:*

6.6.7.1 *Notice:*

(1) Notice may be informational only, or it may be an integral and enforceable part of an activity and use limitation. Notice is a tool for ensuring that parties to a real estate transaction (including purchasers, tenants, and lenders) are aware of the environmental status of the property prior to finalizing a transaction.

(2) Notice requirements usually require disclosure of the specific location of chemical releases on a site and of any restrictions on use, access, and development of part or all of the impacted site necessary to preserve the integrity of the remedial action. Notice comes in three forms: record notice; actual notice to the other party to a real estate transaction; and notice to the appropriate government authority.

6.6.7.2 *Record Notice:*

(1) Most states have some type of provision requiring the owner/operator of a site having residual *chemicals of concern* to file a notice on the land records. See, e.g., Tex. Health & Safety Code Ann. § 361.184 (Vernon 2001). This notice provides subsequent purchasers with information regarding past or present activities that may have left chemicals of concern on the site. These notices are easy to file, but they are not consistently reported by title companies.

(2) The notice requirements can be narrowly drawn to include the use restrictions only, see, e.g., Ohio Rev. Code Ann. § 3746.10(3)(a) (West 2004), or can be broad to include all the components that went into the formation of a restrictive covenant, such as the opinion of a Licensed Site Professional. See, e.g., 310 Mass. Code Regs. § 40.1071(1)(b) (2004). Otherwise, the record notice may be ancillary to a Transfer Act, whereby recordation is only required in conjunction with a land transaction. See, e.g., Ind. Code § 13-25-3-1 to 13-25-3-15 (2010).

(3) Record notice is sometimes informational only, such as the Massachusetts Notice of AUL, and sometimes it is part of a legally enforceable control, such as the Massachusetts Grant of Environmental Restriction.

6.6.7.3 *Actual Notice:*

(1) Another notice option that may be used is to require direct notice of environmental information to the other parties to a land transaction. When this notice is not provided, the purchaser is entitled to rescind the agreement and receive reimbursement for any deposits made for the proposed property transfer. See, e.g., Ohio Rev. Code Ann. § 5302.30(K)(4) Thus, remedies may include cancellation of the transaction, liability for actual damages, and civil penalties.

(2) Actual notice protects potential purchasers of land. Actual notice also ensures that use restrictions and other forms of activity and use limitations are adhered to by subsequent parties.

(3) It should be noted that failure to provide actual notice may also void the "third party" or "innocent landowner" defense under Section 101(35) of CERCLA.

6.6.7.4 *Notice to Government Authority:*

(1) Many states with statutory authority for activity and use limitations require an owner/operator to provide notice to the state's environmental authority at the time of consummation of any land transaction or land activity that would conflict with an *AUL*. Those states may require notice prior to completion of the transaction or within a specified period of time following completion of the transaction. Notice to the environmental authority aids the state in ensuring that activity and use

limitations are properly followed. *See*, e.g. Colo. Rev. Stat. Ann., §§25-15-104,25-15-105 (West 2001). A handful of states have retained private sector services to assist them in obtaining early notice of land activities, land transactions, or other activities that could result in the breach of an *AUL*.

(2) Some state statutory programs require notice to local officials as well. Experience has demonstrated that notification to local or municipal authorities is important, yet frequently missing. Key local officials may include municipal clerks, local zoning officials, construction code officials, and local health officials. Many states are short on resources to monitor and enforce environmental restrictions and thus rely on local authorities (usually informally, rather than through a required notification mechanism) to inform them when a transaction that could affect a property with environmental restrictions occurs. See, e.g., N.J. Admin. Code tit. 7, § 26E-8.2 (2004) and 2009 ASTSWMO report, "State Approaches to Monitoring And Oversight of Land Use Controls". A handful of states have retained private sector services to assist them in obtaining early notice of potential breaches of AULs.

(3) These governmental notice requirements are generally imposed under the state's voluntary corrective action statute, but they may also be imposed by the state's RCRA statute, Superfund law, real estate transfer laws, or other free standing notice statutes.

6.6.7.5 *Registry Act Requirements:*

(1) Under the Brownfields Amendments, states have been provided funding to create registries of brownfields sites relying on *AULs*. See 42 U.S.C. § 9628(b)(1)(C) and http://epa.gov/brownfields/proposal_guides/fy10_ST_final.pdf. Even prior to passage of the Brownfields Amendments, some states employed programs that required their environmental agency to keep a list of all properties that have been the site of hazardous waste disposal and that have restrictions on use or transfer. *See, e.g.*, N.Y. Envtl. Conserv. Law 27-1305 to 27-1321 (McKinney's 2003); 415 Ill. Comp. Stat. 5/20.1. However, given the scarcity of resources available to state environmental authorities, some states have found that the lists are difficult to maintain and may not be beneficial.

(2) Listing of an environmentally-impacted site on a state registry may result in restrictions on the use and transfer of the site. For example, related regulations may prohibit changing the use of the site without permission from the state environmental agency, or they may require permission of, or notification to, or both, the agency to convey a registered property. As previously mentioned, for these restrictions to be enforceable, notice that the site has been registered must also be recorded at the local land registry or other appropriate authority to ensure that the registration appears in the chain of title.

(3) Effective Registry Acts provide for the establishment and maintenance of a list of all real property that has been used for hazardous waste disposal either illegally or before federal or state regulation of hazardous waste disposal was in place. For example, there may be a requirement that a list available to the public include all sites and facilities with a confirmed release of hazardous waste or materials. *See, e.g.,* Or. Rev. Stat. § 465.225 (2009).

(4) Often, responsibility for investigation of potential sites for inclusion on the registry lies with the state. Registries are commonly available to the public and disclose the location of the site, a listing of the *chemicals of concern* on the site, and may disclose the level of health or environmental risk posed by the hazardous wastes on the site. Some states maintain registries that are prioritized based on these risks; thus, it falls upon the environmental authority to rank the sites according to risk.

(5) Most states that have Registry Act requirements also have established a hearings and appeals process for owners of sites that have been proposed for inclusion. Once a site is registered, the owner may have rights to terminate or modify the listing. A proposal by the state to include a site on its registry can sometimes provide the impetus to the owner/operator to enter into an agreement with the state to undertake certain actions in lieu of inclusion on the registry.

6.6.7.6 *Transfer Act Requirements:*

(1) Some states, as part of their notice requirements, have instituted specific Transfer Act programs that require full evaluation of the environmental condition of a site before or after a transfer occurs. Examples include the New Jersey Industrial Site Recovery Act, N.J. Stat. Ann. §§ 13:1K-6 *et seq*. (2003), Conn. Gen. Stat. §§ 22a-134 to 22a-134h (2010), and the Indiana Responsible Property Transfer Law, Ind. Code §§ 13-25-3-1 to 13-25-3-15 (2010). These requirements work in conjunction with other kinds of institutional controls. These types of programs ensure that parties involved in certain real estate transactions are aware of the potential environmental liabilities associated with ownership of the property. Other types of activity and use limitations that establish enforceability and responsibility may be incorporated as part of the Transfer Act program.

(2) A typical state's transfer act program will create information disclosure obligations on the seller or lessor of property. *See, e.g.*, Ind. Code § 13-25-3-2, (2010) (requiring delivery of disclosure document at least thirty days before the transfer). Usually, disclosure must include property-specific information such as the presence of *chemicals of concern*, permitting requirements and status, and past and present enforcement actions and variances.

(3) For a successful conveyance to be recognized, a transferor must adhere to all the components of a state's Transfer Act program. If the disclosure document reveals an environmental defect in the property that was previously unknown to the receiving party, the prospective purchaser will not have to accept the transfer of property. *See*, Ind. Code § 13-25-3-3 (2010).

(4) A transfer act also imposes certain obligations on the landowner to make information available to other parties to a transaction. Failure to comply with these requirements may render a transaction voidable by the other party or may serve as the basis for a lawsuit, even if the contract has been executed. *See, e.g.*, Conn. Gen. Stat. §§ 22a-134 to 22a-134h (2010).

6.6.8 *Engineering and Access Controls*—Engineering and access controls, including physical controls, are a type of activity and use limitation. They need to be enforced by means of institutional controls (that is, legal instruments).

6.6.8.1 Engineering and access controls are physical measures which serve to limit who may actually enter an impacted site. They may also limit the migration of *chemicals of concern* from the site. Typical examples of engineering and access controls to restrict admittance include: caps, floors, fencing and gates, security systems, signs, or posted warnings. Examples of engineering controls to prevent migration of *chemicals of concern* include concrete or paving caps or covers, vapor pumping systems, groundwater pumping systems, cut-off or slurry walls. *See* Wash. Admin. Code §§ 173-340-200, 173-340-440 (2001); N.J. Admin. Code § 7:26E-1.8 (2004).

6.6.8.2 When engineering and access controls are designed to minimize health risks to those who may enter a site, states typically look at four factors that determine the level of engineering and access controls needed to protect persons who may enter the site: *location*—is the site located in a residential or mixed use neighborhood? *surroundings*—is it near sensitive land use areas, e.g., day care centers, playgrounds, nursery schools, grammar schools, and high schools? *usage* —is the site frequently used by area residents, e.g., a footpath that is frequently traversed by area residents or local workers? and *accessibility*—how accessible are the relevant chemicals of concern? *See, e.g.*, 310 Mass. Code Regs. § 40.0933 (1999).

6.6.8.3 Most engineering and access controls require maintenance and monitoring for the duration of the potential exposure. If site conditions change or if concentrations of chemicals of concern are reduced over time to levels that are protective of human health and the environment given the potential exposure scenarios, then the continued use of the engineering or access controls should be re-evaluated and may be discontinued. It is helpful for any agreement between the state and an owner/operator to include a provision delineating who will be financially responsible for the maintenance and monitoring of the required engineering and access controls. Generally, financial responsibility falls upon the owner/operator because of limited state resources.

7. State and Local Implementation Considerations

7.1 *Identification of Available State and Local Authorities:*

7.1.1 Numerous federal, state, tribal, or local laws affect the use of *activity and use limitations*. Supplemental controls will often be appropriate even though the current land use is similar to planned use after remediation. Because of the differences in state law, different *activity and use limitations* will have differing degrees of effectiveness and long-term reliability. The particular mix of *activity and use limitations* that may be appropriate for a site will vary by both the conditions at the site and the legal framework of the state.

7.1.2 The *activity and use limitation* specifies limits on activities on-site. For example, if a performance standard is a final remedial action, the restriction is written to maintain the performance standard and limit the use of the site to the zoned land use. If conditions change such that residual *chemicals of concern* are exposed, the *activity and use limitation* must have some form of "trigger" mechanism so that it comes into play for the site in terms of protecting human health and the environment. The *activity and use limitation* must also include specific actions to be taken if a new release or exposure occurs at a site.

7.1.3 Access agreements or easements between the responsible party and private party may be required during the period of remediation. While many state environmental corrective action programs have statutory authority for access, long-term access for monitoring or otherwise ensuring the remedial action may be negotiated among the responsible party, other affected private parties, and the agency.

7.1.4 A state or local agency may track remediation site conditions. This tracking information is normally available to the public and provides another supplemental control. A few states and localities have taken an active role by instituting a notification system, such as a "diggers hotline" used by excavators, utility managers, etc. who need the information for contractor notification.

7.2 *Evaluation of Screening and Balancing Criteria at the State and Local Level:*

7.2.1 The screening and balancing criteria for determining which *activity and use limitations* are most appropriate at a given site should be considered early in the scoping process. It is important that the bases for current and future land uses are known and clearly understood. Knowledge of potential risks to receptors (e.g., types and concentrations of chemicals of concern; potential exposure pathways, such as inhalation, ingestion, dermal or other; and media of concern) must be understood before remedies are evaluated. Planning should also consider whether a remedial action decision will lock property into a specific land use.

7.2.1.1 A reliability analysis should examine the types of factors discussed in Section 6, *supra*, such as limitations on various legal doctrines, the existence (or lack of existence) of programs and systems for the monitoring and long-term stewardship of *AULs* and the risk of change in local regulations.

7.2.1.2 An implementability analysis should look at factors such as whether there is a small enough number of landowners to make negotiating deed restrictions on a case-by-case basis feasible, whether landowners are likely to consent to the restrictions, and whether the potentially responsible party will face prohibitive costs if it tries to seek deed restrictions from adjoining property owners.

7.2.1.3 Also, in the study phase, any alternative involving *activity and use limitations* should address what system will exist for monitoring and enforcing these controls. The cost of the controls should be taken into account in evaluating this alternative.

7.2.2 It is important to make a site safe for its intended use by ensuring *exposure pathways* are considered in remediation decisions. If future land use is different from current zoned use, remedial action considerations may be different.

7.2.3 "Conditional land use" permits are allowed in many states and localities. The concern is for maintenance of the level of protection in a more protective use, that is, residential, when a lesser protection level might occur from a conditional land use permit. A conditional land use permit may be granted for purposes of accommodating a final remedial action or clean up standard.

7.2.4 "Nonconforming uses" may result when areas are initially zoned or rezoned. *Activity and use limitations* may be

required for the nonconforming use if it is likely to result in a threat to human health or the environment when surrounding uses or the existing non-conforming use would result in greater exposure. It is recommended that a parcel by parcel consideration be made when requests for zoning changes are made that may result in a direct contact threat. *Activity and use limitations* should be written for the property as appropriate.

7.2.5 An existing deed restriction may need to be amended or updated to reflect a change in the use of a property. The enforcing agency must identify the time frame that must be adhered to in making the amendment and deciding how to enforce this. Notice which is inconsistent with the requirements of the National Contingency Plan, 40 CFR Part 300, may also defeat a property owner's right to pursue other potentially responsible parties for response costs under Superfund, even if public notice has been adequate for purposes of the state program.

7.3 *Enforceability Issues*—A critical consideration, particularly for federal, state, and local jurisdictions in selecting an *activity and use limitation*, is whether the *activity and use limitation* will be legally enforceable, and enforceable over the desired period of time. While enforceability may not be deemed necessary in every case, it is important to at least consider the implications of choosing between enforceable and non-enforceable approaches.

7.3.1 *Degrees of Enforceability*—There is a wide range of enforceability in the various types of *activity and use limitations* currently being used. At one end are purely informational instruments, such as deed notices, which do not establish any directly enforceable restrictions. However, notices do make land users aware that certain uses are incompatible with the condition of the land. A notice, even though unenforceable, may be a significant deterrent because the landowner frequently risks being forced to conduct remedial action if it uses the property inappropriately. (This is not always the case if the landowner has a legal responsibility for cleaning up the residual *chemicals of concern*.) Concerns about tort liability and inability to obtain financing or resell land may also discourage landowners from disregarding known risks.

7.3.1.1 Under some state programs, deed notices may be required as a condition for approval of a corrective action plan and release from further liability. In such cases, while the notices do not create directly enforceable restrictions, the violation of their terms voids the release, creating an additional incentive to follow them.

7.3.1.2 Information and incentives are not, however, equivalent to legal enforceability. Under a legally enforceable control, the landowner can be compelled to abide by the terms of the use restriction. Property instruments and regulatory devices, such as local ordinances or agency orders, are legally enforceable.

7.3.1.3 Another consideration in evaluating enforceability is whether the control binds only the current occupant, or future owners as well. Land use ordinances and most property interests "run with the land"; orders and permits do not.

7.3.2 *Ensuring Long-Term Enforceability*—Where controls are being imposed through property law devices, it is necessary to become familiar with the state's real estate laws to ensure that the tool being used will in fact be reliable over the long term. While legal rules can vary from state to state, and are evolving over time, some common doctrines can present significant obstacles to long-term enforceability in the context of corrective actions.

7.3.2.1 *Requirement of Conveyance*—Unless a state has specifically provided otherwise by statute, a conveyance of some kind will be required to establish an enforceable property interest. In other words, a landowner generally cannot impose an enforceable restriction on its own property simply by filing a document in the land records. Rather, there must be a transaction between the landowner and some other party in which rights are actually conveyed to the grantee (who is then able to enforce those rights). It will generally be necessary, therefore, to find a suitable grantee. Potential grantees may include regulatory agencies, local governments, custodial trusts, community organizations or other parties responsible for the corrective action. It should be noted, however, that local and state regulatory agencies may be reluctant recipients of these property rights.

7.3.2.2 *Doctrines Limiting Long-Term Enforceability*—Even where a property interest is created through a transaction of some kind, traditional legal doctrines may limit its long-term enforceability. Historically, the common law allowed restrictions on the use of property to "run with the land" only where they benefited some adjoining property. Easements or covenants that were not for some neighbor's benefit but were simply held by some other party, were classified as "in gross" and generally could be enforced only against the original landowner.

(1) Restrictions for corrective action purposes are likely to be "in gross"; they are not held by an adjoining landowner, or for the benefit of the adjoining land, but by some unrelated third party such as a government agency and for the benefit of the public (or the restricted landowner itself). Therefore, there is a risk that such restrictions may be found unenforceable against subsequent landowners.

(2) Over time, courts have recognized exceptions to the common law rules. Today, in many states, it is quite possible that a restriction in gross, entered into for the public benefit, will be enforceable against subsequent landowners as long as that intent is clearly stated in the document. Moreover, even where courts do not honor the traditional doctrine against restrictions in gross, other peculiarities of local real estate law may present barriers to long-term reliability.

7.3.2.3 *Need for an Enforcer*—Legal instruments do not enforce themselves; they require someone to monitor compliance and take legal action if necessary. Finding some entity willing and able to take responsibility for this function is critical to the long-term reliability of the controls.

(1) Who can enforce the control will depend largely on the type of control used. Property interests, such as easements, are generally enforceable only by the named grantee (or its assigns). Therefore, in determining to whom the interest will be conveyed, it is important to ask whether this is the most appropriate enforcer. It is also important to keep in mind that,

if the grantee neglects to enforce, it may be difficult or impossible for any other party to compel it to do so, unless the applicable statute and regulations reserve those rights to the state.

(2) Restrictions imposed through local regulation, on the other hand, are generally enforceable only by the local government. Whether the government has the resources, or the motivation, to effectively oversee and enforce the controls will depend upon the circumstances.

(3) UECA broadens the universe of parties who can have a right to enforce an *environmental covenant*. Potential enforcers would include any party to the *environmental covenant*, the agency, any person to whom the *environmental covenant* expressly grants power to enforce, any person whose interest in the real property or liability may be affected by any alleged violation of the *environmental covenant*, and a municipality or other unit of local government in which the real property is located.

7.3.2.4 *Legal Formalities*—There are certain legal formalities that must be followed for an *activity and use limitations* to be enforceable (see 4.2). Additionally, some states have adopted specific provisions outlining the enforcement process. Among the most common are provisions authorizing the state's environmental authority or attorney general to file suit for injunctive relief, *see, e.g.,* Wis. Stat. § 299.95 (West 2004) (attorney general shall enforce agreements by seeking injunctive relief), or for civil and criminal penalties. *See, e.g.*, Wash. Rev. Code Ann. § 70.105D.050 (2002) (civil penalty of up to $25,000 for each day party refuses to comply). Another effective provision authorizes third parties injured by violations of environmental restrictions to bring suit through the state's environmental authority or attorney general. *See, e.g.*, Conn. Gen. Stat. § 22a-133p (2009). Finally, states that utilize No Further Action Letters or Certificates of Completion of Remediation often revoke these documents in light of an owner/operator's failure to comply with an agreement to use *activity and use limitations* and consequently may order further remediation. *See, e.g.*, Me. Rev. Stat. Ann. tit. 38, § 343-E (West 2004).

7.4 *Considerations for Changes in Uses at Sites Where an Activity and Use Limitation Has Been Implemented:*

7.4.1 *General Principles*—Over time, activities and uses at a site may change in ways that are very difficult to predict at the time that an *activity and use limitation* is first implemented. A basic tenet of a risk-based approach to corrective action decisions is that the need for corrective action should be based on likely exposure to *chemicals of concern* resulting from current uses of a site (soil and ground water), as well as reasonably likely future uses. If activities and uses change in ways that were not anticipated when the initial corrective action decisions were made, then the site needs to be re-evaluated to determine whether additional remediation is needed to provide an adequate level of protection.

7.4.2 *Compliance with State Environmental Requirements*—State corrective action programs frequently have "reopeners" that require re-evaluation of site conditions before a new use will result in significantly higher levels of risk from exposure to residual *chemicals of concern* remaining onsite from the original corrective action, then additional remediation will be required before the new use can be implemented. Different states have different requirements in terms of notification of the state agency of a new use and need for additional corrective action, and approvals of new uses and remediation plans. Some states require that development and remediation plans be submitted and state approval be obtained before proceeding. Other states (with more privatized programs) require that an expert licensed by the state conduct the necessary evaluation and prepare any plans for additional response actions. For example, in Massachusetts, these plans would then need to be filed with the state. Mass. Code Regs. § 40.1071 (2004). Parties who are contemplating redeveloping sites where corrective action has relied on *activity and use limitations* to prevent future exposure to residual chemicals of concern should check with their state corrective action program to identify applicable requirements.

7.4.3 *Need for Local Land Use Approvals as Well as State Environmental Review*—Reviews by state environmental agencies (or by experts licensed by states) usually focus on the adequacy of plans for additional remediation to provide an adequate level of protection for the new use of the site. These reviews are usually required by state law, regulation or policy. However, they do not substitute for any requirements of local or county government or of other state agencies for approval of the new use itself (e.g., zoning approvals) or of specific building plans (e.g., subdivision approvals, building permits, etc.)

7.4.4 *Responsibility for Evaluating Needs for Additional Remediation and for Implementing Resulting Plans*—Responsibility for implementing plans for additional remediation required to support a new use of a site usually falls to the party who is redeveloping the site. However, this party may request that other parties contribute to (or take full responsibility for) additional remediation. Parties who may be able to contribute are the party who implemented the original corrective action, former owners, tenants, and other potentially responsible parties. State laws differ considerably in the responsibility they place on new and former owners, developers and other parties involved in corrective action supporting redevelopment. Generally, parties wishing to change the use at a site where prior remediation relied on an *activity and use limitation* should seek advice from the state environmental agency or an attorney, or both, experienced in this area of state or local law, or both.

7.4.5 *Recommendations for "Good Practice" When Uses Change at a Site:*

7.4.5.1 Where a new use is clearly permitted by the existing control, no further evaluation is needed. In general, this argues for clearly written *activity and use limitations* that are drafted to identify prohibited uses with a high degree of specificity, and to establish permitted uses as generally as possible.

7.4.5.2 Where a new use is expressly prohibited by the *activity and use limitation* that was part of the original remediation, evaluate potential exposures to residual *chemicals of concern* that may result from the new use (soil or ground water, or both), and identify the need for additional remediation to ensure that the new use can be safely implemented.

7.4.5.3 The user should check with the state environmental agency to identify requirements for approvals of additional response actions, and ensure that these requirements are complied with. These requirements may also include specific steps for amending or terminating the *activity and use limitation*. These requirements may also include notifications to local or county government, or both, (of changes or termination of the control as well of additional remediation plans), and opportunities for public comment.

7.4.5.4 Finally, the user should implement required remedial actions in conjunction with (or prior to) site redevelopment, and modify the *activity and use limitation* in accordance with state requirements. Please note that, in some cases, additional remediation may remove the need for the control; it should be amended or terminated so that the property is not encumbered more than necessary.

7.4.6 *Activity and Use Limitations Are Not Self-Executing:*

7.4.6.1 Most *activity and use limitations* in the context of remedial actions will be negotiated and incorporated into the decision document. Many states will require some form of periodic monitoring of the *activity and use limitation*, and changes in either circumstances or the control itself will require written modification by the parties. Some *activity and use limitations* that occur outside of the remediation context (e.g., a change in land use zoning) might occur without the parties' direct involvement, but if such changes would affect the *activity and use limitations*, the parties would need to modify the *activity and use limitations* that were implemented as part of the remedial action.

7.4.7 *Notification Process to Local Government or the State:*

7.4.7.1 Notice requirements will vary state by state and by the type of *activity and use limitation* being used. Many *activity and use limitations* will involve some restriction on permissible uses of land. Typically, these restrictions will require:

(1) Some form of property right transfer to the state agency (e.g., grantor/grantee);

(2) Some form of documentation in the decision document (e.g., order);

(3) Recordation with the local property recording agency (e.g., County Clerk);

(4) Some consultation with the local land use jurisdiction; and

(5) Some form of public notice or opportunity for comment on the selected remedial action, or both, that includes the use of *activity and use limitations*.

7.4.7.2 No blanket statement can be made regarding notice, formal or otherwise. It may be wise to assume that any remedial action that involves *activity and use limitations* will be subject to some form of public notice or review, whether the "public" is the general public or representatives. "Good practice" would again advise providing notice to various stakeholders throughout the remedial process so surprises are avoided at the remedial action selection stage.

7.4.8 *Whether There Is a Process for Removing Controls:*

7.4.8.1 There should be a process for removing the *activity and use limitation* when it is no longer necessary to protect human health and the environment. A good deal of attention has been directed at *activity and use limitations* to ensure they will be in place over the long run. For example, some restrictions are structured to "run with the land" so successors maintain the protective elements of the control. However, when those controls are no longer needed to protect human health or the environment, they should be removed. The possibility of amending or terminating *activity and use limitations* should be anticipated in the state's statute and regulations and in the final decision document. *UECA* establishes a clear process for modifying or terminating *AULs*. For example, if natural attenuation is the selected remedial action and prohibitions on the use of groundwater are in place until certain standards are met, a process should be in the state statute and regulations, as well as in the final decision document, to allow the removal of the control.

7.5 *Public Notice/Participation/Stakeholder Issues:*

7.5.1 Successful corrective actions should consider the concerns of the communities in which they are located. Local officials, residents, utilities, neighboring businesses, environmental groups, and others are all ultimately "stakeholders" of a site corrective action, since they live and work with the results over time.

7.5.2 State corrective action programs usually have requirements for public notice of site conditions and corrective action plans, as well as specific opportunities for the public to be involved in developing corrective action plans. These requirements usually include officials of the municipality (or county, or both) in which the site is located, residents and businesses in the site's neighborhood, and the general public. State public involvement requirements can apply to the assessment of site conditions and risks, as well as to specific plans for remediation.

7.5.3 There are two aspects of *activity and use limitations* that may trigger specific requirements for public involvement:

7.5.3.1 The first is the specification of current and *reasonably anticipated future uses* that will be made of the site (and resulting potential exposures to *chemicals of concern* remaining in soil and/or ground water); and

7.5.3.2 The second is the drafting of an *activity and use limitation* document (e.g., a "deed restriction", deed notice or local bylaw) that establishes prohibited and permitted activities at the site and associated continuing obligations and conditions.

7.5.4 In general, the user should consult its state environmental agency to identify specific requirements to notify the public while the site is being assessed and plans for corrective action are being developed, and to provide opportunities for public involvement (e.g., a hearing on a remediation plan).

7.5.5 Some states require that specific opportunities for involvement be provided for every site (usually at the point where a full assessment of site conditions and risks is available and when a remediation plan has been drafted). Other states require that public notice be provided at specific points in the corrective action process and that opportunities for public involvement be provided when local officials and/or citizens indicate their interest. Some state requirements may apply to any site that is being assessed and cleaned up, while others may

only apply to sites that have more residual *chemicals of concern* or present relatively high levels of risk of harm to public health and the environment.

7.5.6 Corrective action of many sites is not publicly controversial, especially where the corrective action will result in general environmental improvements for the neighborhood. Also, there may be little or no controversy if the use of the site is changing in a way that satisfies local needs or is otherwise acceptable to the municipality and site neighbors (e.g., from industrial to commercial or residential, or vice versa, or from vacant/underused property to a more productive use). However, some redevelopment plans become controversial when there is not widespread public agreement that the new use is appropriate. Even in situations where the community supports a new use, there may be local issues about how the corrective action is implemented (e.g., the adequacy of the corrective action plans to protect the health of people and the environment in that neighborhood, how truck traffic will be handled during remediation, etc.).

7.5.7 Typically, one should have early substantive communication with local officials, members of the public and others (such as utilities) who may be affected by the site or its corrective action, or both. However, sometimes the scale of the project is small and there is little or no community interest. By identifying community interest, the scale of the project, and the likely concerns as early in the remediation process as possible, the appropriate level of public participation can be determined. Where there is a large scale, high interest project, users should provide information as it is developed, be open to public comments, and develop a working relationship with the people who will have to live with the results of the corrective action over the long term. Those who are cleaning up a large scale, high interest site are encouraged to invite the public to become involved while environmental conditions and risks are being assessed, and while plans are being developed.

7.5.8 Activity and use limitations are generally part of an overall remediation strategy for a site. Public involvement in the development and implementation of the *activity and use limitation* should focus on whether the *activity and use limitation* has been drafted to adequately explain what the prohibited and permitted uses of the site will be, and whether there are any continuing obligations and conditions required of the property owner (and tenants).

7.5.9 Some states also require that notice be provided to local officials (and in some cases to site abutting property owners) of an *activity and use limitation* once it is implemented. These notices may not be very effective unless the locality has a database or other tracking system. These notice requirements generally attempt to reach people who may be in a position to observe when a provision of the *institutional control* is violated (e.g., a planning board may receive an application for a change in use that is not permitted by the *activity and use limitation*). These officials may notify the state environmental regulatory agency which is authorized to monitor compliance and take appropriate enforcement action.

7.5.10 Where an *activity and use limitation* becomes publicly controversial, it is often due to a lack of public acceptance of plans for corrective action and redevelopment. In these cases, the user may find it productive to reopen the site assessment and remediation plan to identify the areas of public concern, and to initiate an open dialogue with the dissatisfied interests, working toward a goal of developing a consensus plan for the site.

8. Keywords

8.1 activity and use limitations; all appropriate inquiry; all appropriate inquiries; AULs; corrective action; easements; engineering controls; environmental covenants; environmental site assessments; exposure pathways; institutional controls; land use controls; land use restrictions; LUCs; Phase 1 ESAs; proprietary controls; RBCA; remedial action; remediation; response action; restricted land use; restrictive covenants; risk-based corrective action; servitudes

APPENDIXES

(Nonmandatory Information)

X1. BUSINESS AND FINANCIAL CONSIDERATIONS INVOLVED IN THE USE OF ACTIVITY AND USE LIMITATIONS

X1.1 Financial Risk Allocation Mechanisms

X1.1.1 *Introduction:*

X1.1.1.1 This section identifies financial assurance closure mechanisms available to the real estate community at reasonable cost for risk-based closures. The mechanisms effectively cover this low probability liability, thus facilitating real estate transactions. This section also may be used to ensure financial responsibility of the owner when implementing or enforcing provisions of the *activity and use limitation*.

X1.1.1.2 Most of these mechanisms, or a combination thereof, can be tailored to fit the specific site needs and needs of the parties to the transaction, including:

(1) First-party coverage for the effectiveness of the risk-based corrective action, business interruption costs due to environmental considerations, and/or diminution of realty value of the "site"; and

(2) Third-party coverage for government or private party actions including damages, diminution of realty value of adjacent landowners, corrective action costs and/or transaction costs such as attorneys fees and consultant costs.

X1.1.2 *Environmental Insurance*—Insurance is now a frequently used device and can become part of the transaction closing, comparable to title insurance. There are a number of top-rated national carriers providing this coverage obtainable

through many general commercial insurance agents. The insurance falls within the category of environmental impairment liability insurance (EIL), which is specifically written and intended to cover qualifying first party or third party environmental claims, or both, with residual *chemicals of concern*. Often, specific policies are modified for each transaction.

X1.1.2.1 Most of the coverage is "claims made", which means insurance coverage must be initiated by a claim from the insured or policy holder during the policy period as defined in the insurance contract. The time-frame for making a claim can be extended by obtaining EIL "extended reporting period" coverage.

X1.1.3 *Environmental Bonds*—Bonds have been extensively used for environmental closure and can be obtained from many commercial insurance brokers. Bonds are written obligations for a sum certain usually secured by a mortgage on real estate. They include liability bonds to protect the assured from liability due to environmental damages or injuries to third parties as imposed by law or a court, and indemnity bonds providing reimbursement for a specified environmental loss.

X1.1.4 *Contracts Assigning the Risk of Loss*—Routinely used in most commercial property transactions, the parties to the transaction generally also assign the risk of potential liability through indemnities, warranties and covenants. Environmental insurance, discussed above, is also often available as excess to an indemnity.

X1.1.4.1 Contracts may have limited protection because the party to the contract who is the warrantor may become insolvent, or the owner of the real estate, or transporter, or generator of any hazardous or regulated substance which is a party to the transaction, generally can not "contract away liability" to third parties through indemnities and warranties due to the federal Resource Conservation and Recovery Act (RCRA) and Superfund laws and comparable state laws.

X1.1.5 *Letters of Credit*—Bank letters of credit have been used in limited instances for environmental closure and are available from most commercial banks. A letter of credit is a binding negotiable instrument honored and paid when specified environmental conditions occur. It is governed by Section 5-103 of the Uniform Commercial Code, which has been enacted in all states. Letters of credit generally cost more than insurance, however, and may tie up capital needed for other purposes.

X1.2 Transactional Issues

X1.2.1 *Environmental Due Diligence*—The user is cautioned that the existence of an *activity and use limitation* may not be detected during routine environmental due diligence activities. At the present time, under Practice E1527 and E2247, it is the user's responsibility to discuss with its environmental consultant which party will take responsibility for identifying relevant and applicable information regarding *activity and use limitations* in either the recorded land records or in relevant regulatory databases and registries. The user and the environmental consultant are encouraged to discuss who should assume responsibility for obtaining and analyzing this information.

X1.2.2 *Need to Obtain the Property Owner's Consent*—Difficult transactional issues may arise if the state program does not provide a mechanism for notifying all parties with any interest in the real property about the potential imposition of an *activity and use limitation*. For example, it is not uncommon for a seller of real property to retain responsibility and liability for cleaning up residual *chemicals of concern* that have been detected during the environmental due diligence associated with the transaction. As part of the state voluntary corrective action program, the seller, which becomes the participant, may have choices regarding the level of corrective action that is required, depending upon whether an *activity and use limitation* is part of the ultimate remedial action (although, in some states, it may be required to do so under applicable real estate law). The seller may not be required under applicable environmental law to inform the current owner that it is considering using an *activity and use limitation* as part of the remedial action. The failure to include the current property owner in these discussions and negotiations could have very significant impacts upon the future value of the property and the owner's ability to use the property without significant limitations. Similarly, the participant may not be required to notify the lender that it intends to seek the imposition of an *activity and use limitation*. The lender's exclusion from the process where such a restriction might be imposed could also have significant adverse impacts upon the value of the collateral being held by the lender.

X1.2.3 *Clarification of Responsibilities of Landlord and Tenant*—Given the increasing use of risk-based approaches to cleanup, in which it is permissible to allow residual *chemicals of concern* to remain in place if there is an enforceable *activity and use limitation*, it is important for landlords and tenants to negotiate, in advance, what type of remediation will be expected under the lease when the lease terminates, and whether an *activity and use limitation* may be used to achieve applicable cleanup standards. It is no longer helpful simply to state that the tenant must comply with all applicable laws. Likewise, if an *activity and use limitation* has already been put in place, it is important for the lease to specify whether the landlord, or tenant, or both, will have primary responsibility for monitoring and maintaining the *activity and use limitation*. Otherwise, if the *activity and use limitation* is not maintained, the landlord may lose any protections that it may have negotiated through a state voluntary cleanup program.

X1.3 Other Issues

X1.3.1 *Potential Stigma/Devaluation Concerns:*

X1.3.1.1 The value of real property is determined by the ability of the property to provide wealth to the property owner. Value is defined as the present worth of future benefits. *The Dictionary of Real Estate Appraisal*, Second Edition, American Institute of Real Estate Appraisers (now the Appraisal Institute), Chicago, IL. Accordingly, when an *activity and use limitation* may be imposed upon real property, the question arising is whether the property's value may be impaired by this restriction on property rights. Stigma arises from uncertainty concerning the use or cost to use a property, or both. As such, stigma impacts may be reduced by well-designed *activity and*

use limitations. Excepting the case of poorly designed *AULs* which do not fully recognize the highest and best use of the property, *AULs* should be expected to reduce stigma impacts resulting from the existence of a recognized environmental condition.

X1.3.1.2 From a real estate appraisal perspective, whether property value is impaired by an *activity and use limitation* depends upon the "highest and best use" of the property. First determine what the "highest and best use" of the property is, without the restriction, and then determine whether that "highest and best use" will change as a result of the imposition of the restriction. In some cases, the "highest and best use" may change, and in others, it may not.

X1.3.1.3 While there may be minor differences in the legally recognized definition of "highest and best use" from jurisdiction to jurisdiction, the fundamental points remain the same. The highest and best use is defined by how the property may be legally used, what is physically possible with respect to use, what is financially feasible supporting the use, and what will return the maximum net income to the owner. All four issues must be dealt with simultaneously to establish the highest and best use for a specific property.

X1.3.1.4 Under the Uniform Standards of Professional Appraisal Practice (USPAP), the guidance document established by the Financial Institutes Reform, Recovery and Enforcement Act (FIRREA), all appraisals of real property must contain at least one, and possibly two, opinions of the highest and best use of a property. One opinion deals with the highest and best use of the property as if it were vacant. This opinion addresses the issue of how property might be used, given all current information on such matters as zoning, topography, neighborhood, and market demand as if there currently were no structure or other improvement on the property. The second opinion of highest and best use deals with the issue of how the value of the property may be maximized given the current improvements.

X1.3.1.5 The highest and best use, the value of the property to the owner, and the issue of *activity and use limitations* are inextricably linked to each other. A desire on the part of the owner to initiate a substantive change in the highest and best use must, of necessity, generate a significant concern with respect to any existing or proposed *activity and use limitations*. Similarly, the imposition of *activity and use limitations* must result in a reconsideration of the highest and best use for the property.

X1.3.1.6 Highest and best use is controlled, among other things, by the legally permissible and practical use to which the property may be put. The existence of an activity restriction or a use control must be considered in the determination of highest and best use by the appraiser and will, if substantive, influence the value of the property.

X1.3.1.7 Conversely, an *activity and use limitation* that does not recognize the highest and best use cannot be said to address the reality of the marketplace except through the action of random chance. One is cautioned to observe that the concept of highest and best use addresses not only current use, but also the most likely future use, because the value of the property is determined by the future, not the present or the past.

X1.3.1.8 Highest and best use should be explicitly identified and documented in the development of the appropriate *activity and use limitation*, and any change in highest and best use should not take place without revisiting the issue of the *activity and use limitations*. In all cases the highest and best use description will identify both the current maximally beneficial economic use. As such, the highest and best use must embody full economic consideration of all factors of the property, including the impact, if any, of *AULs*. The underlying economic forces described by the highest and best use will govern the property owner's adherence to *AULs*, desire to modify *AULs*, or to remove *AULs* by further remedial actions. An understanding of the highest and best use and the forces defining it are critical to the success of *AULs*.

X1.3.2 *Potential Takings Claims*

X1.3.2.1 *Overview*—A question exists whether the imposition of *activity and use limitations* may be viewed as a "takings" under the Fifth Amendment to the U.S. Constitution, particularly if the controls are imposed without the property owner's consent or adjoining property owners' full consent. The answer to this question depends upon whether the *activity and use limitation* advances a legitimate state interest, and whether the *activity and use limitation* denies the property owner an economically viable use of its land.

X1.3.2.2 *What Constitutes a Takings*—The Fifth Amendment is designed to provide just compensation when the government interferes with private property rights for a public purpose. See *Kelo v. City of New London*, 545 U.S. 469, 477 (2005); *Tahoe-Sierra Preservation Council v. Tahoe Regional Planning Agency*, 535 U.S. 302, 321 (2002) *Palazzolo v. Rhode Island,* 533 U.S. 606, 617 (2001); *First English Evangelical Lutheran Church of Glendale v. County of Los Angeles California*, 482 U.S. 304, 313 (1987). Governmental interference with private property rights may range from a direct appropriation of the land, to a physical invasion of property, to the implementation of a regulation that interferes with a property owner's use of his or her property. The government is authorized to take all of these actions, provided that the taking of private property:

(1) Substantially advances a legitimate state interest; and

(2) The property owner is justly compensated for the taking of his or her property. *First English*, 482 U.S. at 314. A government acts lawfully when it takes property, pursuant to proper authorization, and justly compensates the owner for it. *Id.* at 315. However, the government violates its constitutional duty to provide just compensation when it either (i) denies just compensation, or (ii) denies the procedures through which a landowner can seek just compensation. *Monterey v. Del Monte Dunes at Monterey, Ltd.*, 526 U.S. 687, 717 (1999).

X1.3.2.3 *Types of Takings*—There are two primary ways in which the government can violate the Takings Clause of the Fifth Amendment:

(1) Direct government appropriation without just compensation; or

(2) Government regulation that interferes with a property owner's use of his or her property when the regulation accomplishes the same result as direct appropriation. *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003, 1014 (1992).

In a regulatory taking, the government prevents the landowner from making use of his property that would otherwise be permissible. *Forest Properties Inc., v. United States,* 177 F.3d 1360, 1364 (1999).

(3) A government regulation will constitute a taking when either of the following two conditions are met: the regulation does not substantially advance a legitimate state interest; or the regulation denies the owner economically viable use of his or her land. *Agins v. City of Tiburon*, 447 U.S. 255, 260 (1980).

X1.3.2.4 *Advancing a Legitimate State Interest*—There is no clear test for determining whether a regulation substantially advances a legitimate state interest with regard to generally applicable regulations. However, the question of economic viability has been greatly debated. In the absence of a clear test to determine whether a generally applicable regulation substantially advances a legitimate state interest, precedent indicates two standards:

(1) Whether the regulation is "arbitrary"; and

(2) Whether there is a "reasonable relationship" between the regulation and the legitimate state interest. *Dolan v. City of Tigard*, 512 U.S. 374, 391 n.8 (1994); *Del Monte Dunes*, 526 U.S. at 700-01. Thus, if a state or local government imposes generally applicable *activity and use limitations* that are found to be either arbitrary or have no reasonable relationship to a legitimate state purpose, the government would be liable for an unconstitutional taking.

X1.3.2.5 *Deprivation of Economic Viability*—If it is determined that the regulation authorizing *activity and use limitations* deprives the property owner of an economically viable use of his land, the extent of the deprivation of economic viability must then be determined. This determination could range from a "taking" which deprives the landowner of all economically beneficial use of the land, *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003, 1015 (1992), to a determination that the regulation that constitutes a compensable 'partial taking.' *Forest Properties* 177 F.3d at 1364.

(1) If the regulation deprives the landowner of all economically beneficial and productive use of the land, then the regulation would constitute a "categorical" taking, and no further inquiry would be necessary. *Lucas*, 505 U.S. at 1015. The landowner is entitled to just compensation for the taking. *Id.*

(2) If a regulation deprives the landowner of partial economic viability of the land, courts use the test clearly laid out in *Penn Central Transportation Co. v. New York City*, 438 U.S. 104, 124 (1978). The factors examined in the *Penn Central* test are: the economic impact of the regulation on the claimant; the extent to which the regulation has interfered with distinct investment-backed expectations; and the character of the governmental action. *Id.* These factors should be balanced rather than reduced to any set formula. *Palazzolo v. Rhode Island*, 533 U.S. 606, 635 (2001).

X1.3.2.6 *Mere Diminution Does Not Constitute a Takings*—A mere diminution in the value of property does not establish a taking. Thus, when a regulation insignificantly affects the value of property, this does not constitute a compensable taking under the Fifth Amendment. To determine whether a regulation results in a partial taking or a mere diminution in value, the courts compare the ratio of the land subject to restrictions with the plaintiff's parcel as a whole. *Broadwater Farms Joint Venture v. United States*, 1997 U.S. App. LEXIS 19859, at *4 (1997). If an *activity and use limitation* is imposed, and there is minimal economic impact on the landowner in relation to the relevant parcel, the government may not be liable for a taking.

X1.3.2.7 *Temporary or Permanent Takings*—The last aspect to be examined is whether the taking is temporary or permanent. In cases where an *activity and use limitation* results in a temporary taking, but this is only evident retrospectively, and the property interest has been altered during the period of the taking, the property owner may be entitled to just compensation for the period of taking. *First English*, 482 U.S. at 322. A temporary regulatory moratorium on development is not a categorical taking. *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency*, 535 U.S. 302, 342 (2002). Rather, whether such a moratorium qualifies as a taking, requiring just compensation, will depend on analysis under the *Penn Central* test. Id.

X1.3.2.8 *Determination of Appropriate Compensation*—Once it has been determined that a taking has occurred, the next question is what amount of compensation is just. To determine whether the compensation is just, the court must determine what the property owner has lost, not what the taker has gained. *Brown v. Legal Foundation of Washington*, 538 U.S. 216, 237 (2003); *Del Monte Dunes*, 526 U.S. at 710 (citing *Boston Chamber of Commerce v. Boston*, 217 U.S. 189, 195, 54 L.Ed. 725, 30 S. Ct. 459 (1910)). The economic impact is measured by the change in the fair market value caused by the regulation. *Forest Properties*, 177 F.3d at 1367.

X1.3.2.9 *Conclusion*—In conclusion, there are a number of fact specific inquiries necessary to determine whether state and local governments are at risk of facing takings claims when they impose *activity and use limitations*. Consequently, in order to avoid an unconstitutional taking, the state or local government must be able to: (i) prove that the regulation substantially advances a legitimate state purpose; (ii) provide procedures for landowners to seek just compensation; (iii) determine the economic impact on the landowner; (iv) state whether the regulation is temporary or permanent; and (v) provide just compensation when appropriate.

X2. CASE STUDY

TABLE X2.1 Case Study—Industri-Plex NPL Site Woburn, MA

Site Name:	Industri-Plex Site, Woburn, MA
Future land use summary:	The site is being redeveloped as a Regional Transportation Center, retail center, and mixed use parcel (office and hotel space).
Former land use:	Former industrial park used for manufacturing chemicals such as lead-arsenic insecticides, acetic acid, and sulfuric acid, as well as phenol, benzene and toluene. The site was also used to manufacture glue from raw animal hides and chrome-tanned hide waste.
Contamination:	1. Soil: metals, including arsenic, lead and chrome. 2. Ground water: VOCs, including benzene and toluene, and arsenic. 3. Air: hydrogen sulfide gases from decay of buried animal hides.
Clean-up activities:	1. Permeable caps over 105 acres of soils and sediments impacted with arsenic, lead and chromium. 2. Impermeable cap over the 5 acre East Hide Pile; and a gas collection and treatment system. 3. Interim ground water treatment system to treat “hot spots” of toluene and benzene. 4. Investigation of ground water and surface water. 5. Implementation of *AULs*. 6. Fencing and warning signs.
Activity and Use Limitations:	1. The 245 acre site is divided into four types of properties for purposes of implementing *AULs*: a. Class A - “Clean”; non-impacted soil, but the ground water may contain *chemicals of concern* b. Class B - soil containing *chemicals of concern* above state levels c. Class C - capped portions of the site; no ground water use allowed d. Class D - the animal hide properties; undevelopable; no ground water use allowed 2. A Custodial Trust is being used to help implement and maintain the *AULs*.
Benefits of Activity and Use Limitations:	1. The *AULs* will be implemented by means of a Grant of Environmental Restrictions and Easements, which will run in perpetuity and be enforced by EPA and MA-DEP. 2. The Easements allow the PRPs and the regulatory agencies to inspect the *AULs* and to conduct subsurface investigations. 3. *AULs* require property owners to do quarterly, non-intrusive inspections of the site for compliance with the *AULs*. 4. The *AULs* must be incorporated into all deeds, easements, mortgages, leases, and other instruments of transfer.
Shortcomings of Activity and Use Limitations:	1. *AULs* are required even in those portions of the site that are “clean”. 2. Property owners and their tenants are potentially liable for stipulated penalties and fines if the *AULs* are violated. 3. If the property owner fails to cure any violation of an *AUL*, the PRPs may cure the violation and secure a lien against the Property. 4. Each property owner is responsible for establishing the *AULs*, including any title work, survey plans and legal descriptions.

X3. AUL TRACKING SYSTEMS

X3.1 Introduction

X3.1.1 This appendix describes the process for evaluating whether *AULs* are in place for a specific site. This appendix also describes some "best practices" from a transactional, stakeholder involvement, and long-term stewardship perspective.

X3.2 Summary of the Appendix

X3.2.1 This appendix establishes minimum requirements for effective tracking and monitoring of *AULs*. The information required to effectively monitor *AULs* include the location of the site or facility; the chemicals of concern that each *AUL* addresses; the exposure routes that each *AUL* controls or mitigates; the entity or entities responsible for enforcing each *AUL*; the point of demonstration for each *AUL*; and operations and maintenance activities for each *AUL*.

X3.3 Approach to Monitoring and Tracking AULs

X3.3.1 The approach offered in this appendix is a practical and streamlined process for monitoring and tracking *AULs*. *AULs*, including both land use restrictions and *institutional controls*, must be complied with and their effectiveness and integrity not impeded under the Brownfields Amendments of 2002 if the purchaser of a prospective brownfields site is to avoid potential liability associated with the residual *chemicals of concern* at the site. Specifically, Section 221(q)(1)(A)(v) of the Small Business Liability Relief and Brownfields Revitalization Act states that a "[p]erson shall not be considered to be an owner or operator of a vessel or a facility under paragraph (1) or (2) of subsection (a) solely by reason of contamination if the person (I) is in compliance with any *land use restrictions* established or relied on in connection with the response action at the facility; and (II) does not impede the effectiveness or integrity of any *institutional control* employed in connection with a response action."

X3.3.2 This appendix is intended to be used primarily by environmental agencies that have responsibility for monitoring and enforcing *AULs*. It may also be used by other environmental professionals, including consultants, industry, local government agencies, other state agencies and other federal agencies that may have an interest in the use of *AULs* at environmentally-impaired sites. Managing the development, implementation and maintenance of *AUL* tracking and monitoring can facilitate communication between stakeholders.

X3.4 Required Data Elements

X3.4.1 *Site or Facility Identification*—The *AUL* Tracking and Monitoring system shall identify the site or facility by its common name as well as by any aliases.

X3.4.1.1 The site or facility name shall include the current owner's name, address, and contact information.

X3.4.2 *Site or Facility Location*—The *AUL* Tracking and Monitoring system shall use several data elements for identifying the location of the site or facility.

X3.4.2.1 The street address of the site or facility shall be provided in the *AUL* Tracking and Monitoring System.

X3.4.2.2 Both the GPS coordinates and the latitude and longitude of the site or facility shall be provided in the *AUL* Tracking and Monitoring System.

X3.4.2.3 The legal description and parcel number of the site or facility shall be provided in the *AUL* Tracking and Monitoring System. This is especially important if the site or facility is part of a larger parcel of land that is being sub-divided.

X3.4.3 *Chemical(s) of Concern*—(See 3.1.10.) The *AUL* Tracking and Monitoring System shall identify the *chemical(s) of concern* that drive the corrective action process and that are addressed in each *AUL*. Some *AULs* (e.g., *engineering controls*) may address a range of *chemicals of concern*.

X3.4.4 *Exposure Pathways*—(See 3.1.30.) The *AUL* Tracking and Monitoring system shall identify the *exposure pathway(s)* (e.g., dermal exposure or inhalation exposure) that each *AUL* controls or renders incomplete, or both.

X3.4.5 *Type of AUL*—(See 6.2.) The *AUL* Tracking and Monitoring System will identify each *AUL* as either an *institutional control*, *land use restriction*, or an *engineering control*.

X3.4.5.1 The *AUL* Tracking and Monitoring system will identify the type of *institutional control* (e.g., *restrictive covenant*, easement, *environmental covenant*) or the type of *land use restriction* that applies at the site or facility.

X3.4.5.2 The *AUL* Tracking and Monitoring system shall identify the entity or entities responsible for enforcing the *AUL*. The public contact information for that entity shall be provided in the *AUL* Tracking and Monitoring System.

X3.4.5.3 The *AUL* Tracking and Monitoring System will identify the entity responsible for operations and maintenance of each *engineering control*.

X3.4.5.4 The *AUL* Tracking and Monitoring System will identify whether or not periodic reports as to the effectiveness of the engineering control(s) are required and the location of the repository for these reports.

X3.4.6 *Duration*—The *AUL* Tracking and Monitoring System shall provide information on the expected duration of the *AUL*. Some *AULs* have a short- or medium-term duration as these *AULs* are designed to provide continued and unrestricted access to remediation equipment or monitoring locations at or near the points of demonstration.

X4. AUL COMPLETENESS CHECKLIST

The AUL Completeness Checklist is shown in Table X4.1.

TABLE X4.1 AUL Completeness Checklist

NOTE 1—This *Activity and Use Limitation* Screening Checklist is a tool that can be used to ascertain whether *AULs* developed in accordance with this guide are complete.

General Area	Specific Concern	Yes	No	N/A	Unk
Design & Implementation	Was a Site Conceptual Model developed for the subject property during the remedial design?				
	Does the Site Conceptual Model identify the Chemical(s) of Concern?				
	Do the Stakeholders agree or concur that the Site Conceptual Model is adequate?				
	Does the Site Conceptual Model identify all complete and potentially complete exposure pathways based upon the future land use? (See Section 3.1.56)				
	Does the Site Conceptual Model identify all of the potential human receptors (e.g., office workers, construction workers, residential, industrial, commercial, at-risk populations)?				
	Does the Site Conceptual Model identify the reasonably anticipated future use(s) of the subject property?				
	Is the future land use consistent with the assumptions made in implementing the AULs?				
	Do the stakeholders concur with the future land use?				
	Was one or more potentially viable AUL identified to eliminate potential exposure(s) pathways or to protect the remedy (engineering control) for each chemical of concern?				
	Was one or more potentially viable AUL identified to eliminate potential exposure(s) or to protect the remedy (engineering control) for each receptor?				
	Does the AUL identify the important/sensitive ecological receptors e.g., rare, threatened, or endangered species)?				
	Was one or more potentially viable AUL identified to eliminate potentially complete pathways?				
	Does the selected AUL(s) survive the suggested screening criteria in Section 5.3?				
	Does the selected AUL(s) survive the balancing criteria in Section 5.3.3?				
	Does the AUL clearly identify prohibited uses on the subject property while avoiding overly simplistic paradigms (e.g., no residential use or industrial uses only)?				
	Does the AUL clearly identify acceptable uses of the subject property?				
	Does the AUL clearly identify all the long-term stewardship obligations (e.g., operations and maintenance activities, inspections, periodic sampling) and who is responsible for these activities and who is responsible for enforcing the AUL?				
	Does the decision document or AUL provide a mechanism for modifying the AUL?				
	Does the decision document or the AUL provide a mechanism for terminating the AUL?				
Enforceability	Is the entity that will enforce each AUL identified?				
	Is the AUL enforcement entity's authority to enforce unambiguous under the law and durable as long as residual chemicals of concern remain on the subject property?				
	Does the AUL "run with the land"?				
	If the AUL does not run with the land (e.g., it's a permit condition or in an Order) does the AUL need to be periodically renewed?				
	If the AUL needs periodic renewal, does the AUL specify who is responsible for renewal, when the AUL must be renewed, and adequate notice to stakeholders of the renewal?				
	For permits and Orders, is a procedure clearly defined in the AUL to notify the appropriate governmental agency prior to any property transfers?				
Notice	Does the decision document (e.g., Record of Decision, Order, Permit, Ordinance) or the AUL require that the AUL (or notice of the AUL) be filed in the local land records?				
	Does the decision document or the AUL require that the AUL be filed with the appropriate federal, state, or local agency?				
	Does the state have a mechanism in place requiring notice of the AUL to subsequent owners, tenants, lenders, and utilities?				
	Does the State have a mechanism in place requiring notice to the local government in the event of change in property use?				
	Does the State have a mechanism in place requiring notice to the local government in the event of a change in property ownership?				
	Does the State have a mechanism in place requiring local government to notify the state environmental agency in the event of a request for a change in zoning?				
	Does the State have a mechanism in place requiring local government to notify the state environmental agency in the event of a request for building permits, excavation permits, demolition permits?				
Long Term Stewardship	Does the decision document or the AUL identify how long the AUL will need to remain in place?				
	Does the decision document or the AUL identify who will be responsible for maintaining the AUL over time?				
	Do financial assurances need to be posted or otherwise secured to ensure the long-term viability of the AUL?				
	If the AUL is being applied to a RCRA site, does the financial assurance mechanism comply with the requirements of RCRA Subpart H?				
	Does the decision document or the AUL identify any **and** all routine inspection and monitoring requirements?				
	Does the decision document or the AUL identify any **and** annual or similar certification requirements?				
	Does the decision document or the AUL identify the person or entity responsible for conducting long-term stewardship activities?				
	Does the decision document or the AUL identify the entity that should receive any inspection or certification reports?				
	Does the decision document or the AUL identify the long-term performance standards applicable to the AUL?				

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