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By email to Greg.Braun@mass.gov

June 5, 2024

Greg Braun
MassDEP/ORS
100 Cambridge Street, Suite 900
Boston, MA 02114

Subject: LSPA Comments, Risk Characterization Guidance, Chapters 1-5, Public Review Draft

Dear Mr. Braun:

The LSPA Association (LSPA), a professional non-profit association of 800 LSPs and other environmental professionals, appreciates the opportunity to provide comments on the above-referenced draft guidance document. The LSPA adhered to its typical process for collecting and submitting comments to MassDEP on draft documents: we solicited comments from the membership at large; the LSPA Regulations Committee formed a focused subcommittee of practitioners who drafted a set of comments based on those submitted and those from subcommittee members; and finally, the LSPA Board vetted the draft comments to develop this final matrix of comments document (attached).

LSPA comments on the draft guidance document fall into three broad categories:

- LSPA suggestions for reorganizing the structure and order of topics in the document, and suggestions for making the document easier to navigate;
- Areas that the LSPA feels need general clarification, where inconsistencies might need addressing, and where specific language changes might be more appropriate; and
- Areas where the LSPA thinks there are significant omissions from the draft guidance, or the draft guidance does not correspond to the experience of LSPs and other practitioners regarding the process of characterizing risk.

The attached matrix presents a full list of our comments; however, we felt that the following items were of significant importance to our membership to highlight them herein. These are divided into the broad categories listed above.

Suggestions for reorganizing the structure and order of topics in the document, and suggestions for making the document easier to navigate.

The LSPA suggests that MassDEP consider reorganizing the document so that it more closely aligns with the presentation of risk characterization in the MCP. A different internal organization would make the document easier to follow and would make it easier to find specific information.

One alternative would be to divide this into two separate documents: one that addresses "sampling and analysis" guidance for sampling approaches and chemical analyses, and another that is solely risk characterization guidance. Another alternative might be to better divide this guidance document into two distinct sections, with the first more focused on sampling and analysis planning and implementation, and the second focused exclusively on the risk assessment process and methods. As written, this document intermingles field sampling guidance and risk characterization guidance in a way that could make the information less accessible for some practitioners. While the LSPA understands the interconnectivity of these two multifaceted subjects, practitioners are not always conducting both (e.g., risk assessors rarely collect samples) and separating the topics into different guidance documents or sections would provide better focus for the target audiences. The guidance document should also be retitled to reflect its content more accurately.

In addition to dividing the document, some other organizational changes could be made to increase clarity and usability. Specific examples of potential confusion related to the current document format include:

- The subsection on AULs and soil characterization comes before any discussion of the selected Method of the risk assessment. While soil categorization is used in each risk assessment method, the actual evaluation of risk and exposure to soil depends on the risk assessment method. A Method 1 approach may identify exposure points differently than a Method 3 approach. While it is the case that an AUL can be implemented using a Method 1 or 2 risk characterization, this section is not really relevant for risk characterizations that use a Method 3 approach. The LSPA suggests that this section include a discussion on the use of a Method 3 to evaluate whether an AUL is required.
- The document does not follow the same general path that the MCP lays out. We suggest that MassDEP consider moving the entire AUL section to the end of the Risk Characterization guidance or, preferably, making it a part of MassDEP's AUL guidance. This would conform with the order within the MCP, as risk characterization is Subpart I and AULs are discussed in Subpart J.
- Quick access to sections and topics. We suggest a Table of Contents and an index be included in the next version (even if it is only a partial document) so that the structure of the document is more easily understood and accessed from the outset.

Areas that the LSPA feels need general clarification, where inconsistencies might need addressing, and where specific language changes might be more appropriate.

The editorial comments in our attached matrix are presented in chronological order according to MassDEP's draft guidance document. Overall, the LSPA suggests a careful editorial reading of the guidance to correct typos, punctuation, grammar, inconsistent use of typeface and font size, inconsistent use of abbreviations, and repetitive introduction of terms and abbreviations. The LSPA also recommends including a list of abbreviations, acronyms, and initialisms in the guidance.

Areas where the LSPA thinks there are significant omissions from the draft guidance, or the draft guidance does not correspond to the experience of LSPs and other practitioners regarding the process of characterizing risk.

Overall, the Draft Risk Characterization Guidance document, particularly the revised approaches to sampling and calculation of EPCs, appears to drive a paradigm shift by significantly reducing the use of professional judgement, both in the field and during risk evaluations, thereby making the process of assessing risk more prescriptive without necessarily increasing health protection. Shifting to a more rigid and conservative approach will disproportionately impact smaller sites, such as AST/UST releases, in some cases resulting in higher costs for PRPs without reducing potential exposure.

Acknowledge and discuss sites with data from both systematic and judgemental sampling. The draft guidance does not address the more common scenarios where some amount of sampling and/or remediation has been conducted at a site using a mix or "hybrid" of systematic and judgmental sampling. These situations frequently occur and should be discussed in the guidance, along with the related implications.

Allow calculation of EPCs based on the appropriate exposure point (location where exposure may occur) and not on the individual type of sampling plan(s) that may have been employed at the site. It seems counterintuitive that it is strictly prohibited to consider use of a 90 or 95 UCL as an EPC for exposure points unless they are characterized using only systematic sampling. There are situations where data quality, density, nature and extent, and variability/heterogeneity may be captured using various sampling approaches. There should be flexibility for the risk assessor to use professional judgment and select a 90 or 95 UCL on the mean concentration (for example) in lieu of an arithmetic mean, since it is more conservative for almost any environmental data set. This restriction seems punitive to the LSP who tried to clean up the Site and the Responsible Party paying to clean up the Site.

Clarify what is meant by OHM concentrations "in the surrounding environment." Section 5.6 states that "the risk assessment should contain summary tables which clearly indicate which oil or hazardous materials at or from the disposal site have been identified in each medium at the disposal site and in the surrounding environment" and that "[t]hese tables should also present the range of reported concentrations for each OHM detected at the disposal site and in the surrounding environment."

It is unclear what is meant by concentrations "in the surrounding environment." If the sample results are not considered to represent the disposal site, then they would not be included in the site data set by definition. If this text is referring to background, the vast majority of MCP sites do not have site-specific background data sets (for soil or other media), so it would seem unlikely that these data would be available in most cases. The LSPA suggests deleting the text "and in the surrounding environment" from these statements. If necessary, a separate statement could be made about including background data, if that is what was intended by these statements.

Include further revisions to the draft guidance document. We expect that further revisions to Chapters 1 through 5 will be needed once MassDEP releases the Exposure Assessment portion of the guidance. This will be a critical section of the guidance because exposure point concentrations consider the location/depth/types of exposure. The risk characterization guidance needs to provide examples of how sampling approaches are tied to exposure point definition and exposure point concentrations.

Thank you once again for providing this public comment opportunity and for considering our opinions. We respectfully suggest that MassDEP convene a stakeholder work group to discuss significant comments on the draft guidance before and during production of the next draft of the guidance. The LSPA is available at your convenience to discuss any of our comments.

Respectfully,

THE LSP ASSOCIATION, INC.



Charles P. Young, LSP, President



Wendy Rundle, Executive Director

cc:

Millie Garcia-Serrano, Assistant Commissioner, BWSC, MassDEP

Attachment:

LSPA Comments on the 2024 MassDEP Guidance for Disposal Site Risk Characterization (matrix)



LSPA Comments on

2024 MassDEP Draft Guidance for Disposal Site Risk Characterization (Risk Characterization Guidance), Chapters 1 through 5.

Provided below are the LSPA Association’s (LSPA’s) detailed comments on the 2024 MassDEP *Draft Guidance for Disposal Site Risk Characterization (Risk Characterization Guidance), Chapters 1 through 5.*

“Page” refers to the pages in the 2024 Draft Risk Characterization Guidance made available electronically in PDF format [here](#).
 “Section” refers to the section or subsection of the Draft Risk Characterization Guidance, unless otherwise noted.

The LSPA has made every effort to state the issue of concern, provide a specific example wherever possible, and propose suggested language changes where appropriate (shown in red).

Page	Section	LSPA Comment
All	General Comment	Please consider reorganizing the document so that it more closely aligns with the presentation of risk characterization in the MCP. The order of the chapters and content does not necessarily follow a discernable flow. A different internal organization would make it easier to follow the document and to find specific information. Alternatives for modification: <ul style="list-style-type: none"> • Split into two documents: one document that is "sampling and analysis" guidance to directly address sampling approaches and chemical analysis; and another that is risk characterization guidance, so that the risk characterization guidance is specific only to conducting risk characterizations. • Split into two sections, with the first section more focused on sampling and analysis planning and implementation, and the second section focused exclusively on the risk assessment process and methods, Retitle the guidance document to include both aspects.
All	General Comment	The LSPA anticipates further revisions to Chapters 1 through 5 because the Exposure Assessment portion of the guidance has not been released. This will be a critical section of the guidance because exposure point concentrations take into account the location/depth/types of exposure. The risk characterization guidance needs to provide examples of how sampling approaches are tied to exposure point definition and exposure point concentrations.



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Page	Section	LSPA Comment
All	General Comment	The discussions about sampling approach and estimation of exposure point concentrations are optimal for sites at which no investigation or data collection has yet been done, versus the more common scenarios where some amount of sampling and/or remediation has been conducted previously, and/or a mixture or "hybrid" of systematic and judgmental sampling has been conducted. For example, one portion of a site may have had a dry well, spill, leaking tank etc. representing an identified release point/source area at which judgmental/biased sampling was appropriately conducted while another portion of the same site exposure point may have had urban fill with metals emplaced and grid sampling was performed. However, the same receptor is potentially exposed to the entire exposure point with two different types of sampling approaches. These types of situations occur and should be acknowledged and discussed in the guidance. In summary, EPCs should be based upon the appropriate exposure point (location where exposure may occur) and not on the individual type of sampling plan(s) that may have been employed at the Site.
All	General Comment	There are data sets where the "75/10" rule may not be met for select COPCs, but there is a robust and representative data set for which a 90 or 95 UCL may be calculated and is consistent with an exposure scenario that represents Reasonable Maximum Exposure ("RME"). Use of the maximum detected concentration could generate the Maximum Exposed Individual ("MEI") scenario, which is not the intent of the risk characterization process. The LSPA recommends that MassDEP needs to articulate that Professional Judgement may be used, with appropriate documentation, for determining EPCs using a UCL in this case.
All	General Comment	It seems counterintuitive that it is strictly prohibited to consider use of a 90 or 95 UCL as an EPC for exposure points that are not 100% characterized using systematic sampling. As noted in the comment above, situations exist where data quality, density, nature and extent, and variability/heterogeneity may be captured using various sampling approaches. There should be flexibility for the risk assessor to use professional judgment and select a 90 or 95 UCL on the mean concentration (for example) in lieu of an arithmetic mean, since it is more conservative for almost any environmental data set.
All	General Comment	There are Q&As published on the MassDEP website that clarify topics presented throughout the risk characterization guidance. The LSPA recommends that MassDEP consider the guidance and existing Q&A in conjunction to avoid discrepancies.
All	General Comment	The LSPA strongly recommends adding field codes to the chapter headings and subheadings so that chapter titles appear in the table of contents and the structure of the document is more easily understood and accessed.
All	General Comment	The LSPA strongly recommends including a list of abbreviations, acronyms, and initialisms in this guidance.
All	General Comment	An editorial reading of the guidance is necessary to correct typos, missing or excess punctuation, grammar, inconsistent use of typeface and font size, inconsistent use of abbreviations, repetitive introduction of terms and abbreviations, missing carriage returns in the list of references, etc.



Page	Section	LSPA Comment
1	1.1	Second paragraph: Use of "and/or" is ambiguous. Is it "and", is it "or", or is it "or both"? The LSPA suggests correcting throughout document.
1	1.1	Third paragraph: "temporary or permanent solution": Be consistent with capitalization.
1	1.1	Add language for consistency: "If the Preliminary Response Actions or Comprehensive Site Assessment shows that site conditions are entirely . . ."
2	1.1	Suggest deleting "public" throughout text where "public health" is used. Risk Characterization under the MCP evaluates the incremental risk to human health associated with exposure to Site COPCs. The risk characterization is not intended to be protective of the general public health.
2	1.2	Suggest adding: "associated" before "...technical literature."
3	1.3	Fifth paragraph: "...explained ed...": Delete extra "ed".
4	1.4	Suggest modifying the final sentence: "While risk characterizations may be performed at any point during the site assessment and remediation process (assuming that sufficient information about the site and the contamination has been gathered), they are typically conducted at two points in the process: (1) following a comprehensive site assessment to determine whether or not a remedial response action is necessary, and (2) following a remedial response action to determine whether the action effectively eliminated significant risk."
5	1.4.2	Suggest clarifying final sentences of first paragraph to: "Thus, a baseline Risk Characterization describes the health, safety, public welfare and environmental risks which that would exist if no response or remedial actions were taken to address the contamination at a disposal site. Because a baseline risk characterization assumes that no response or remedial actions will take place, the assessment includes an evaluation of both current and future exposures to the existing contamination that has not been remediated."
5	1.4.2	Suggest modifying the final sentences of second paragraph to: "Without an adequate understanding of the site, chemical concentrations, and exposure pathways, the initial remedial measures may not be sufficient to achieve a level of NSR, and further response actions may be necessary. Risk characterizations conducted before a remedial measure is carried out can be used to plan cost effective remedial strategies, such as focusing cleanup on those chemicals and exposure media contributing the most risk."
5	1.4.4	Suggest rewriting to clarify confusing sentence: "When a risk characterization indicates that remediation is needed (i.e., a condition of NSR has not been achieved), the question "When can the response action stop?" can be addressed by reversing the calculations to identify target cleanup levels."
6	1.4.4	First paragraph: "Some measures commonly relied upon for environmental risk characterization, such as sediment toxicity tests and benthic community assessment, are not amenable to estimation of cleanup levels.": Missing comma (,) between "assessment" and "are".
6	1.4.4	Clarify a response action such as an AUL or remediation. "When a risk characterization indicates that a response action or remediation is needed... "



Page	Section	LSPA Comment
7	2.0	Second paragraph: Add period after "receptors" and then capitalize "As soon..." to create two sentences.
8	2.0	First bullet, second line: "...pathways and that lead to human and environmental receptors (i.e., people, wildlife and other resources that...": Delete "and".
9	2.1	Second paragraph, third bullet: "Non-aqueous phase liquid (NAPL)": Abbreviation for NAPL was previously defined. Keep abbreviation use consistent throughout document.
11	2.6	Second paragraph: "Each decision to eliminate a potential exposure medium, or pathway from the risk assessment must...": Change comma between "medium" and "pathway" to "or".
11	2.7	Second paragraph: Change "hotspots" to "Hot Spot" for consistency with MCP.
12	Table 2.1	Suggest expanding Table 2.1 for Recreational Use to include surface water and sediment, including fishing and swimming activities.
13	Figure 2.3	Top box: Change "expend" to "expand".
15	3.1	First paragraph: "No Significant Risk" and "oil and/or hazardous material (OHM)" were already defined and abbreviated. Correct throughout rest of document.
16	3.1	Suggest revised wording: "Zoning terms, such as "residential," "commercial" and "industrial" are not reliable indicators of use, as zoning limitations may change or be violated waived through a variance . They are helpful in identifying current use but do not necessarily reflect all current or foreseeable uses or activities."
16	3.1.2	First paragraph: The statement at the end says that risks should only be evaluated for the most sensitive receptors as well as the most exposed receptors, etc. This may be applicable in a Method 1 or 2 risk characterization, but in a Method 3 risk characterization, selection of receptors should be at the discretion of the risk assessor and LSP. There are scenarios where it may be useful to evaluate receptors other than the most sensitive/most exposed. For example, one may want to evaluate both residential and commercial receptors to support a rationale for excluding residential use and allowing commercial use as part of an AUL. Another example is evaluating the construction/utility worker scenario for an AUL; these workers are generally neither the most sensitive nor the most exposed overall, but may have specific exposure in certain areas. The LSPA suggests revising this statement or removing it.
16	Text Box	Last sentence: Change "AULs" to "AUL".
16	3.1.1	"The risk assessment should be based on the possible activities associated with the most frequent and intense exposures." The LSPA suggests clarifying this sentence as it may sometimes be necessary to evaluate less exposed receptors to know if they meet NSR.
17	3.2	Add comma after "When conducting Method 3 risk assessment,..."
17	3.2.1	In text box: Add comma after "disposal site,..."



Page	Section	LSPA Comment
19	3.2.1	The intro to the list on page 19 identifies the situations resulting in reclassification of groundwater and references 40.0932(5)(a) through (c), but the list actually includes situations related to subparts a (bullet 1), b (bullet 2), and d (bullet 4). Please add (d) to the introduction and see below re: (c).
19	3.2.1	The list at top of page 19 (situations resulting in reclassification of groundwater) should also include the situation related to case-specific designation of groundwater as non-potential drinking water source area based on petition per 40.0932(5)(c).
19	3.2.1	The first bullet of the list on page 19 should be modified to also include situations where groundwater can be demonstrated as having no hydrogeological connection to a Zone A surface water body, per 40.0932(5)(e).
19	3.2.1	The LSPA suggests it would be helpful to identify the MCP criteria referenced in the second bullet: "If the groundwater would be classified as GW-1 solely on the basis that it is located within a PPA, it need not be classified as GW-1 if the regional or site characteristics meet MCP criteria for exclusion from GW-1."
20	3.2.2	The LSPA suggests providing an example of a permanent structure that is not a building. "Note that for unrestricted future site use, all soil within 15 feet of the ground surface must be categorized as S-1 unless it is under the footprint of a building or permanent structure."
21-28	3.3	The LSPA suggests that MassDEP consider moving the entire AUL section to the end of the Risk Characterization guidance or making it a part of MassDEP's AUL guidance. This would conform with the order within the MCP as risk characterization is Subpart I and AULs are discussed in Subpart J.
21	3.3	The first ¶ states that AULs identify uses that are consistent or inconsistent with a "Permanent or Temporary Solution." This is not strictly the case; an AUL can be implemented at any point in the MCP process. Suggest revising to state that an AUL can be used in situations consistent or inconsistent with a "condition of No Significant Risk or No Substantial Hazard." Thus, the LSPA suggests adding this: "An AUL may be used as part of either a Temporary or Permanent Solution but can also be implemented at any point in the MCP compliance process. "
22	3.3	Correct typo in second line: "... for the purpose of readability throughout this guidance to refer to the disposal site cleanup standard related to the implementation of of an AUL"
22	3.3	First full paragraph: delete "Permanent Solution and" from the third sentence.



Page	Section	LSPA Comment
22	3.3	The third full paragraph states that the most common application of an AUL would be to limit uses to the current uses etc. Certainly this is one possible outcome of an AUL, but many MCP sites are redevelopment sites, which by their nature are undergoing a change in site use. The LSPA suggests clarification that an AUL cannot be used to restrict current uses at a site and also that MassDEP revise this entire paragraph to describe the concept of consistent and inconsistent uses more broadly in the context of restricting foreseeable exposures. Consistent uses are those that are consistent with a condition of No Significant Risk or No Substantial Hazard. These uses could be current or foreseeable.
22	3.3	The box on page 22 states that an AUL must be used anytime the risk characterization assumes that some site uses or activities would be inconsistent with No Significant Risk. This is one scenario, but it is not the only one. A risk assessment might also show or confirm that there is a Significant Risk for a certain use or activity, and then that use or activity could be restricted using an AUL in order to achieve a condition of No Significant Risk. The LSPA suggests rewording to: "An AUL must be used anytime the risk characterization assumes or confirms that some site uses or activities would be inconsistent with maintaining a level of No Significant risk."
22	3.3.2	Last sentence: Please insert "and" between "activity use".
23	3.3.4	First and second major bullets: delete "used to support the Permanent Solution" and replace with "condition of No Significant Risk"
23-24	3.3.5	It is extremely uncommon to use an AUL unless one is actually required. In particular, it is unclear why one would consider an AUL for sites meeting the criteria in Section 3.5.5.1. Examples or further information would be useful.
24	3.3.5.1	Please clarify that the arithmetic average concentration (or EPC) needs to exceed the M3CL (per 310 CMR 40.0996(3)) to require an AUL and not a single detected concentration in exceedance of the M3CL in relation to this sentence: "Any disposal site or portion of a disposal site at which the OHM in soil located at a depth greater than fifteen feet from the ground surface exceeds an applicable Method 3 Ceiling Limits"
24	3.3.5.2	In addition to use of the term "but may be used" in each of the four subsections, the LSPA suggests adding one statement at the end of the first paragraph that says "These limitations may also be used as part of an AUL."
25	3.3.5.2	"Public Ways or Rail Rights-of-Way" paragraph, third sentence stating that "all other cleanup requirements in these areas must be met": The LSPA requests more specificity. Use of "all" is vague.



Page	Section	LSPA Comment
26	3.3.7.1	<p>This section is confusing because it comes before any discussion of the selected Method of the risk assessment. While soil categorization is used in each risk assessment method, the actual evaluation of risk and exposure to soil depends on the risk assessment method. A Method 1 approach may identify exposure points differently than a Method 3. This section is overly generic in terms of applying an AUL based on soil categorization alone. For example, it is possible to have S-1 soil at a multi-family residential site and use an AUL to restrict the property to multi-family residential use and exclude uses such as gardening and active recreation. In addition, application of an AUL at a site where a Method 3 risk characterization is used can be site-specific relative to the scenarios evaluated in the risk assessment, and would not necessarily be directly tied to soil categorization alone.</p> <p>The LSPA suggests that this section include a discussion on the use of a Method 3 to evaluate whether an AUL is required.</p>
26	3.3.7.1	Under Soil Category S-1, third line: "...where soil is categorized as Method 1 S-1 must consider..."
27	3.3.7.2	There is an opportunity here to discuss risk characterization and AUL requirements around non-potable supply wells (which is a question in the MCP Q&A Special Edition 4, February 1995). In the MCP Q&A, MassDEP indicates that non-potable supply wells (i.e., wells not ever connected to an indoor water distribution system but used for other purposes) require a Method 3 risk characterization to demonstrate No Significant Risk (and there would be no need for an AUL for non-potable water well if NSR). Revised regulations at 40.0932(5)(d) now say an AUL prohibiting private water supply use is required.
27	3.3.7.2	The LSPA suggests, in the first paragraph, revising and replacing the words "somewhat restricted" with "not typically used" because the possible restrictions are very limited. With exceptions as noted below, an AUL cannot be used to restrict groundwater uses or change a Site's groundwater category."
27	3.3.7.2	Edits to last paragraph, last sentence: "This represents a policy decision to safeguard the drinking water resources of the Commonwealth, and to prevent the use of AULs as a means by which persons performing response actions may permanently to eliminate such resources."
28	3.3.7.3	First sentence suggested edit: "AULs may be necessary to ensure the maintenance of Exposure Pathway Mitigation Measures that are installed and maintained to either mitigate or prevent exposure to the volatilization of OHM in the subsurface environment into the indoor air of a building ..."
28	3.3.7.3	The LSPA notes that this section only addresses Permanent Solutions; please clarify that this is because an AUL is not necessary when a site is in Temporary Solution or ROS. Discussion of the use of AEPMMs for Temporary Solutions is also needed.



Page	Section	LSPA Comment
General Comment	4.0	When discussing sample numbers for the various media and sampling approaches, this section would benefit greatly from a single table outlining sample number recommendations for the various scenarios. The information is currently spread through the chapter and difficult to find.
29	4.1	Often, the LSP has more control over sampling plans than the risk assessor. Putting this in the risk characterization guidance implies that the risk assessor is engaged in this aspect of project planning, which is not always the case. Rather than drawing lines between LSPs and risk assessors, the LSPA suggests that MassDEP consider adding statements that clarify the LSP's responsibility to collect data that will support the CSM including but not limited to data to define the nature and extent of contamination, to describe the potential for exposure, and to characterize risk.
30	4.1	Third bullet from examples: PFAS has not been mentioned in guidance document to this point; this acronym needs to be spelled out.
33	4.2.1	Third bullet: "For example, soil concentrations can vary widely within very short differences distances (on the order of one foot)..." Please change "differences" to "distances".
34	4.2.2	Judgmental samples are usually biased high due to the nature of the sampling (e.g., samples are collected from a release area, PIDs are used to try to collect from the highest areas of contamination, etc.). What often happens in UST-type releases is that there are multiple samples that are ND because the remediation cleaned up the spill in that area, but there is a residual area, often times in a hard-to-reach place like under a building, that is greater than Method 1 standards and a Method 3 must be done. If we cannot include NDs, because they are now outside of the Disposal Site, the site may not meet the 75/10 rule. Based on this guidance and the 2024 MCP, we would have to use the maximum concentration and there is no way to use a 90 UCL, even though we know that the maximum concentration is skewed to represent a small area of the highest residual concentrations at the Site. This seems punitive to the LSP who tried to clean up the Site and the client paying to clean up the Site. Also, a lot of these UST/AST spill sites where we do judgmental sampling are homeowner sites that are financially devastating. The LSPA proposes that: 1) MassDEP allow NDs in the excavation area to be counted in the 75% part of the estimation. Or, 2) allow a 90 UCL to be calculated in cases where there is an adequate number of samples with technical justification. Or, 3) Include the technical justification language to use the average. Paul Locke indicated in the live training (January 2024) that a judgmental data set using a UCL is likely going to be a conservative estimate of true mean, so there will be some sites for which using the existing judgmental data set, and generating a UCL will be a sufficiently conservative approach. It is also noted that prohibiting the use of ND values in this context disincentivizes achievement of background conditions, where feasible. Under this approach, closure of the site using Method 1 may be more feasible if you leave low residual concentrations in place rather than excavating to ND where possible.



Page	Section	LSPA Comment
37	4.2.3	As long as the Site is adequately characterized and there are a sufficient number of samples, calculating a 90 UCL should be acceptable for sites that use judgmental sampling. EPA RAGS recommends using a 95 UCL or the maximum concentration and does not change the recommendation based on the type of sampling implemented. But rather, it is based on the exposure point.
38	4.2.5	Third paragraph, third sentence: Add abbreviation "UCL" for "upper confidence limit" because it is the first time this term is used in the document.
39	4.2.5	First paragraph after Table 4-1: "However, an investigator cannot wait until the documentation is required at the end of the assessment and cleanup process to carry out the representativeness analysis." The LSPA suggests clarification of the expectation that a REDUA be provided as part of the Risk Characterization, regardless of what stage in the MCP process the RC is performed.
42	4.3.1	The boxed-out text box (and surrounding section) doesn't address Sites containing both known and unknown source areas, and should include the calculation of EPCs with a hybrid sampling approach. The LSPA strongly suggests that this is needed for a complete guidance document.
42	4.3.1, Table 4-2	Under "Evaluating Background Conditions" - Please provide further explanation. This seems to imply that even at a Site with judgmental sampling, systematic sampling is required to characterize background at the site itself. Is it envisioned that background is defined concurrently with, but separate from, the extent of contamination at the site? Is there not a situation where the data collected during judgmental sampling may be employed?
42	4.3.1, Table 4-2	Under "Estimating EPCs" - Systematic, Incremental Sampling seems to imply that judgmental sampling is not the best approach. However, the MCP allows judgmental sampling for defined sources with limited extents, when the area of highest contamination within EPC can be identified, and there is no evidence of significant disturbance.
43	4.3.1, Table 4-2	Please clarify where Judgmental sampling combined with Focused Systematic sampling (hybrid approach) would not allow for statistical calculations of the mean due to biased data. For example, is it an option to exclude the biased data for EPC development?



Page	Section	LSPA Comment
44	4.3.2	The LSPA suggests it may be important to clarify and expand further on the following point with an example: "If an area of elevated concentrations is apparent and the soil in that area is removed from the site, the initial elevated result may simply be eliminated from the data set to recalculate the mean concentration. However, if soil is removed from the vicinity of an elevated concentration result without first determining whether that concentration is a reflection of variability throughout the grid, it is inappropriate to simply eliminate the elevated concentration from the data set to re-calculate the mean concentration for the grid."
46	4.3.2.1	Text box: Please clarify whether this sample number is for a systematic sampling approach or if it can be used for other/hybrid approaches: "As a general guideline, based on a combination of practical and technical considerations, MassDEP will generally deem 20 to 30 discrete samples sufficient to estimate an exposure point concentration using an upper confidence limit as described in Section 4.3.6.1."
46	4.3.2.2	First paragraph, third sentence: "Compositing reduces the number of chemical analyses needed to characterize the area(s) from which discrete samples are collected and can be more cost effective than collecting and analyzing a larger number of discrete samples when information on variability is not needed." The LSPA requests that MassDEP please provide specific examples when information on variability is not needed. Also please provide examples of compositing sample approaches that are relevant and appropriate to the conduct of risk characterizations.
46	4.3.2.2	Second paragraph, third sentence: Change "lager-sized" to "larger-sized"
49	4.3.2.3	Second paragraph, second sentence: "This characterization can be performed as the stockpile is being formed or moved, or if the stockpile is small, by first spreading it out and then sampling using an incremental sampling grid". This is unrealistic and impractical on most disposal sites, especially ones that are under development in urban areas. Please explain how data from incremental sampling of stockpile samples would be used in a risk characterization.
53	4.3.6	Second bullet: The LSPA requests that MassDEP please provide a list of contaminants MassDEP considers to have acute effects at levels present at sites. In 2023, the LSPA provided to Nancy Bettinger at the Office of Research and Standards (ORS) helpful flow charts to assist LSPs when needing to evaluate acute exposure to the current Emergency Utility Worker. Have those flow charts been received by ORS and considered for inclusion in the risk characterization and Activity and Use Limitation guidance documents? The LSPA is happy to provide them again upon request.



Page	Section	LSPA Comment
53	4.3.6	Third bullet: Please clarify this sample number is for a systematic sampling approach but allows for the arithmetic average as the EPC: "In other words, if the data set is large enough, the use of an upper confidence limit (UCL) of the mean may not be required. MassDEP will consider data sets of 60 samples or more to be adequate,..."
59	4.5	Please spell out PCBs; this is the first time PCBs are mentioned in the guidance document.
66	4.7	Last paragraph: "Additionally, the Wisconsin Department of Natural Resources (WI DNR) has published guidance on the investigation of preferential pathways for vapor intrusion (WI DNR, 2021)." Does the WI guidance document conflict with or expand significantly on MassDEP's guidance? If so, this reference may cause confusion for practitioners without additional explanation.
67	4.9	Last bullet: Please clarify this sentence to make clear that NAPL is not synonymous with a "visible coal tar waste deposit" which has specific regulatory requirements under the 2024 MCP revisions: "In soil and sediment, the most common types of NAPL are petroleum products and coal tar wastes."
69	Reference for Chapter 4	Gilbert & Doctor (1985): Incorrect spelling of author's name (as Gi/lbert instead of Gilbert)
69	Reference for Chapter 4	The reference for ITRC (2012) provides a link to a consultant's website. Please find another source for this document (such as ITRC - https://itrcweb.org/teams/projects/incremental-sampling-methodology) instead of a specific firm's website. The linked document is also missing the "Clarifications to ITRC 2012 ISM-1 Guidance," which is present on ITRC's website.
70	Reference s for Chapter 4	The title of the Sherrell & Ross 1999 document appears to be missing the word temporal. The LSPA suggests: Sherrell, R.M. & Ross, J.M. (1999). Temporal variability of trace metals in New Jersey Pinelands streams: Relationships to discharge and pH. Geochimica et Cosmochimica Acta, 63(19/20).
74	5.1	Second paragraph suggested LSPA revision: This section focuses on managing chemical analysis data contaminant- concentrations in environmental media such as soil and groundwater that may pose a risk to human health..."



Page	Section	LSPA Comment
75	5.2.1	MassDEP suggests, "Risk assessors using data for which a laboratory is not certified...". Please clarify whether this means certified for drinking water. Obviously if the samples are soil, etc, there won't be a certification (which the previous sentence states). If the intent is to suggest that risk assessors conduct periodic audits on lab work for all non-drinking water samples, then that should be more plainly stated.
75	5.2.1	Last paragraph: Please provide more details on MassDEP expectations. For example: "evaluate method compliance and assess data quality" instead of "ensure sufficient quality."
76	5.2.3	First paragraph/sentence: Change "All" to "Reported"
76	5.2.3	This section cites 310 CMR 40.1056(2)(k) and quotes the language therein regarding including REDUA in a PSS. A reference to 310 CMR 40.1057(2)(k) should also be added to reference the same requirement but for TSS.
77	5.2.4	The end of this section states, "It is therefore recommended that site investigators become familiar with U.S. EPA's recommended principles and practices, and to adopt them for use at specific MCP sites as appropriate." The following sections do not provide any guidance on how one potentially might be adopting these guidelines for use on an MCP project, so it is unclear under what circumstances it might be "appropriate" to adopt them. In addition, the last paragraph of section 5.2.4 discusses the general data quality indicators and lists the PARCCS parameters, which are already included in the REDUA guidance. If the general concepts of the EPA guidance are already covered in the REDUA, this should be emphasized at the beginning of the section and not only at the end.
78	5.2.4	Please provide a definition of PARCCS.
78	5.2.4, Table 5.1	The LSPA suggests reordering the table in PARCCS order (Precision, Accuracy, etc.) Also, "Sensitivity" is missing from the table. Right below the table, there is a typo that needs to be changed to PARCCS.
79	5.3.2	Please write out 1,4-dioxane, instead of just "Dioxane."
79	5.3.2	The LSPA suggests adding "additives" to the subsection title and last paragraph.
79	5.3.2	Please change dioxane "is present" to "may be present".



Page	Section	LSPA Comment
79	5.3.2	The LSPA suggests adding Gasoline to this list, with potential additives being alcohols and tetraethyl lead.
79	5.3.2	Fifth bullet: Check spelling of "chlorobenzenenes".
79	5.4	Last paragraph: consider replacing this sentence: "The risk assessor should work with the project manager and an analytical chemist to make a prudent decision about the need for follow-up analysis." With "Practitioners should use professional judgment in considering whether results for TICs should be included in the risk assessment."
79	5.4.1	First paragraph: sentence: states TICs "are detected"; the LSPA suggests using "may be identified"
79	5.4.1	First paragraph: after identification, please add "and quantitation"
80	5.4.2	The phrase "includes a number of samples" seems off; should it read "includes a number of constituents"?
80	5.4.2	The LSPA suggests a title called "Levels Below the Analytical Reporting Limit (Non-Detects)"
80	5.4.2	First paragraph: sentence: change "It is not uncommon" to "The risk assessor is often presented with analytical data....."
80	5.4.2	First bullet - add "Method" to detection limit, and "M" to the acronym
81	5.4.2	The two sentences starting with "For each specific analytical method...." are repeated on both page 80 and 81 – please remove one.
81	5.4.2	In the final paragraph, there is a mention of both "lower limit of detection or quantitation" and a reference to 'one- half of the lower limit'. Since Massachusetts recommends reporting to the RL (not the MDL), this section should specify using 1/2 the RL not 1/2 the MDL.



Page	Section	LSPA Comment
84	5.6	<p>Section 5.6 states that "the risk assessment should contain summary tables which clearly indicate which oil or hazardous materials at or from the disposal site have been identified in each medium at the disposal site and in the surrounding environment" and that "[t]hese tables should also present the range of reported concentrations for each OHM detected at the disposal site and in the surrounding environment." It is unclear what is meant by concentrations "in the surrounding environment." If the sample results are not considered to represent the disposal site, then they would not be included in the site data set by definition. If this is referring to background, the vast majority of MCP sites do not have site-specific background data sets (for soil or other media), so it would seem unlikely that these data would be available in most cases. In addition, MassDEP has a Technical Update for background levels in soil which would seem to be the most applicable levels to use as a reference for non-site- related chemical concentrations. There are unlikely to be data that could be reported as concentrations "in the surrounding environment" for other media such as groundwater, sediment, or surface water, unless local conditions sample(s) was/were collected. The LSPA suggests deleting the text "and in the surrounding environment" from these statements. If necessary, a separate statement could be made about including background data, if that is what was intended by these statements.</p>
84	5.6	<p>First paragraph, last sentence: "Finally, laboratory data reports should be appended to the risk assessment and should include the chain of custody and any notes or narrative comments that were provided by the laboratory and are relevant to data interpretation and analysis." Many submitted risk characterization reports do not include lab reports because these were provided in previous submittals or are included in another appendix of the same BWSC submittal report to which the M3RC is appended. The LSPA suggests that this sentence be deleted or revised to clarify that data can be appended or the location(s) of the lab reports can be referenced.</p> <p>Last sentence: "and are relevant to data interpretation and analysis." Replace "top" with "to."</p>

End of LSPA comments on Chapters 1 through 5