

November 2006, Draft Munitions and Explosives of Concern Hazard Assessment Guidance Document--Comment Form

Comments by: Consolidated DoD Comments Received on April 19, 2007.

Comment #	Section of Document	Page Number	Line Number	Comment	Response
1	Cover			[A – Administrative] There is no reference to the organization responsible for the document or a point-of-contact. (a)	This information is found at the acknowledgements inside the cover. As noted, this document is a consensus product from a multi-agency technical work group, not a single organization.
2	General			[S – substantive] Please use the term CERCLA term “response” rather than “cleanup” throughout the document. (OSD C)	Cleanup refers to specific actions within the overall response process. The document will continue to use this term when describing this specific action. See response to comment number 5 for additional discussion.
3	General			[S] The Army remains concerned that MEC HA is duplicative of the Protocol. For the most part, the two mirror each other. The exceptions are that some terms are change—should not have been because it confuses—in the MEC HA that address the same underlying concerns the Protocol addresses (e.g., differences in hazards associated with certain munition) addressed in the Protocol, the MEC HA addresses matters (portability, quantity) considered, but not addresses as being unimportant during development of the Protocol, and overstates the risk associated with recreational activities—another matter addressed during the Protocol’s development. The Protocol has been used successfully to help determine the impact of variations in response actions. The Army is also concerned that where the MEC HA and Protocol address the same issues (e.g., the sensitivity of certain munition, site	The TWG does not agree with the comment that the Protocol can be used for the same purposes as the MEC HA. The two tools were developed for different purposes. The two tools have a number of similarities. This was a conscious decision by the TWG in response to request from DoD that the two tools utilize the same or similar information as much as possible. The MEC HA serves functions that the Protocol was not designed to do. Specifically, the MEC HA can be used to evaluate the impacts of removal or remedial actions, including the effect of land use controls, and changes in land use activities. There is considerable discussion of these topics at the MEC HA website (www.epa.gov/fedfac) and in responses to the concern raised by some Army commentators about the MEC HA and Protocol overlap in the two technical reviews

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				<p>access, relationship of munitions-related activities to possibility of munitions being present), the MEC HA uses different terms. This will be confusing to the public and TPP. This is particularly problematic, given one of the stated purposes of the MEC HA is communication of site conditions and risk. (a)</p>	<p>prior to the Public Comment review that was recently completed. The TWG also discussed this concern during several face to face discussions with Army personnel. Based on those conversations, there appears to be agreement on the unique aspects of the MEC HA and the Protocol. There also appears to be a common understanding of the different uses that each tool was developed to address.</p> <p>During the early development of the MEC HA, the Department of Defense (DoD) provided very strong comments to the effect that the Protocol and MEC HA should use consistent terminology and approaches. The TWG agreed with those comments and built on the Protocol foundation. The MEC HA goes further in its analyses by evaluating reductions in explosive safety hazards associated with changes in land use, changes in land use activities, and through cleanup actions under removal or remedial actions. The TWG will continue to refine the MEC HA Guidance to ensure consistency in the use and application of terminology. Specific examples of inconsistency would be helpful.</p>
4	General			<p>[S – substantive] The term munitions response site and its acronym (MRS) are established at the beginning of the Executive Summary; however, references are made to sites, MEC sites, land base sites, DoD sites, Defense sites, and munitions sites. Recommend, unless there</p>	<p>Agree with the comment. Text has been edited and MRS has been used to replace other terms where appropriate.</p>

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				is specific reason for not doing so (e.g., underwater sites where military munitions exist, OB sites). Recommend, once the acronym is established that, where reference is being made to a munitions response site or munitions response sites, that MRS be used. (a)	
5	General			[S] Throughout the document reference is made to removal or remedial action. The Army (DoD) has previously recommended using the broader term (response) to address. Recommend on first use, both in the Executive Summary and in Chapter One using response (removal or remedial) action.(a)	The term “response” under CERCLA has very broad meaning. It includes activities ranging from initial site assessment, remedial investigation, removal and remedial actions, long-term monitoring etc. An analogous broad meaning has been given to the term “munitions response”. The term response action is used in the document when referring to the broad process aspects. The term cleanup and other specific terminology will be used when discussing specific aspects of the response process. The terms removal action and remedial action are used when referring to CERCLA action taken under either the removal authorities or remedial authorities of the statute.

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6	General			[S] The MEC HA refers to chemical risk assessment. Is this referring to risk associated with chemical agents or environmental contaminants (e.g., MC, lead). Recommend revising to “human health and environmental risk assessment,” “risk assessments for environmental contaminants,” or “environmental risk assessment.” (a)	The MEC HA does not address chemical agents. This is discussed in the Executive Summary and in Section 1.3. The discussions regarding chemical risk do not refer to chemical agents. Document has been edited with the term “environmental contaminant risk” used in place of “chemical risk”. In addition, text has been added to Section 1 that acknowledges existing methods that are used to address CWM.
7	General			[S] Munitions response is a defined term that is used throughout the document. A munitions response to MEC, specifically addresses the explosive hazards associated with MEC. However, other terms (e.g., cleanup of MEC) are used. Recommend using munitions response to MEC through out the document to avoid confusion.(a)	See response to General Comment # 5.
8	General			[C – critical] The MEC HA specifically excludes “explosive or other hazards associated with stockpile or non-stockpile chemical warfare material.” This is not consistent with the total munitions response process. The term military munition includes chemical munitions, and UXO and DMM can be chemical munitions. During development of the Munitions Response Site Prioritization Protocol (Protocol) care was taken to ensure munitions response sites that were known or suspected to contain chemical warfare material were equally considered in determination of an MRS’s relative priority. Categorically, excluding MRS	The purpose of the MEC HA is to address explosive hazards of MEC. There are existing methods to address munitions constituents and chemical agents. The TWG has noted since the inception of the MEC HA effort that chemical agents would not be considered and is outside of the scope of the guidance. This approach was agreed to by all of the participating organizations since the initial kickoff in May 2004. Furthermore, this direction has been supported by the Executive Sponsor group of senior managers from DoD, EPA, DOI, and States.

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				that are known or suspected to contain CWM (CWM sites) will be viewed as making them significantly different. In addition, most CWM sites are mixed sites (include explosive and chemical agent hazards). Such sites should be address by the MEC HA. The difficulty of doing so should be limited, as the primary issues are related to worker protection, which should not be of concern to the MEC HA, and consideration of the potential downwind hazards. The downwind hazard can be calculated and in many ways can be addressed in the same manner as ESQD. (a)	
9	General			[C] The MEC HA refers to MEC known or suspected to be present. At the point at which the MEC HA is applied, the presence of MEC should have been determined. Earlier version of the MEC HA had the MEC HA being applied in much the same manner as the Protocol. If the MEC HA is being applied to determine the risk reduction afforded by variations in design of a munitions response of land uses, then the MEC HA should only be considered where MEC has been determined present. (a)	Agree that at the point where the MEC HA is applied, the presence of MEC should have been determined. However, there are projects that have proceeded to cleanups based on forensic information (munitions debris, etc) regarding the presence of MEC. The text has been edited and the term determined is used. At the point of the first use, a footnote has been added to acknowledge that under some circumstances MEC may be suspected to be present based on historical information, and that definitive information may not yet be available. The most likely scenario for this is under a removal action.
10	General			The potential risk or hazard posed by a site depends on three factors – the hazard/contaminant, the exposure route, and the receptor. If any of these three are absent, the	The TWG disagrees with the comment that the MEC HA ignores the completeness of exposure routes. Input factors such as Site Accessibility directly address the completeness of exposure

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				<p>site does not pose a risk. This basic risk assessment logic has been used widely under the IRP to assess potential site risks, and also applies to munitions sites. By assigning relatively low scores to site accessibility and high scores to other factors such as MEC characteristics and prevalence, the MEC-HA ignores the requirement that a complete exposure route has to exist for a risk to be present. While the MEC-HA logic may be appropriate for sites accessible to the public (such as FUDS), it cannot be applied correctly to sites located within military installations where site accessibility can be effectively eliminated. (af)</p>	<p>routes. The presence of MEC presents a potential explosive safety hazard. The MEC HA allows project teams the capability to assess various approaches to managing this potential, including <u>managing</u> exposure pathways.</p> <p>The TWG understands that at an “other than operational range” on an active installation with military security, the base installation security provisions may be capable of <u>managing</u> potential explosive hazard exposure routes. Therefore, these considerations and MRS-specific and installation-specific aspects should be used in the MEC HA evaluations.</p>
11	General			<p>The text indicates at several places that the results of the MEC-HA would not direct a project team to implement a specific removal or remedial alternative, and that a response action can also include LUCs alone. However, the scoring tables only present three alternatives: no action, surface cleanup, and subsurface cleanup, and the biased scoring system ensures that LUCs alone would rarely be the recommended response action. If the AF were to select the LUCs only alternative at a munitions site, it is not clear how that alternative could be evaluated using the existing MEC-HA tables. (af)</p>	<p>Please re-read the instruction in the MEC HA. Chapter Four describes how changes to the Input Factor categories affect land use controls. The vertical columns in the Scoring table reflect scoring changes associated with Baseline conditions, Surface cleanup, and subsurface cleanup. The Horizontal rows reflect changes associated with LUCs. Also, please see Appendix B, Camp Sample Example for an example of how these work based on example conditions. As noted in other responses, the MEC HA does not make the decision between removal or remedial action alternatives. Recommendations to decision making officials by project teams should be based on site administrative records, including CERCLA</p>

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					removal or remedial alternative evaluations.
12	General			<p>The guidance points out that, for MEC, no established level exists below which the explosive hazard is considered acceptable. While this assertion is true, it is misleading and useless. DoD has conducted response actions at munitions sites and received approval from state regulators for various land uses, including residential. At the former Lowery Training Annex, USACE conducted the munitions response using currently available technology. Post-removal verification was conducted using a statistical model developed by SERDP confirming a 99% confidence that 99.5% of the site would contain no UXO, releasing the site for a high-density residential land use with no further munitions response actions required. The AF would greatly benefit from incorporation of similar concepts of acceptable probability into MEC-HA that are practical and useful. (af)</p>	<p>The MEC HA guidance does not state that there is no established level below which the explosive hazard is considered acceptable. The closest statement in the text of the MEC HA on this topic is in Section 1.6 that “No accepted method exists for establishing the probability of an incremental potential for death or injury resulting from an encounter with MEC.” That text has been amended to “No accepted method exists for establishing the incremental probability for injury or death from an encounter with MEC.”</p> <p>The TWG has no comment on the experience on the Lowery example cited. The issue of quality assurance and quality control is central to the effective planning, execution, and long-term management of MMRP sites. The MEC HA text recognizes this fact, and states that this is a site-specific and project team specific determination on the appropriate level of QA/QC for site-specific activities. This approach is also consistent with the Uniform Federal Policy for Quality Assurance Project Plans (UFP QAPP) and the EPA and DoD instructions to implement the UFP QAPP provisions. A key concept within the UFP QAPP is to use a graded approach that is reflective of site conditions. The confidence intervals for various data elements and decisions</p>

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					can be highly variable due to site conditions, and should be developed on a site-specific basis.
13	Acronyms	ix	N/A	The use of capitalization in this section is inconsistent. (n)	Editorial. Acronyms have been reformatted to be consistent.
14	Exec Summary	xi	62–66	[C] Change to, “This guidance document describes the munitions and explosives of concern hazard assessment (MEC HA) methodology for assessing potential explosive hazards to human receptors at munitions response sites (MRSs). The MEC HA allows a project team to compare and evaluate the expected effect of variations in the design of a munitions response to MEC, and changes of land use or activities on potential on risk reduction at an MRS ” There is an effect on risk reduction, not explosive hazard. The comparison, if understood correctly, is on variations of response and land use alternatives, prior to selecting the response or finalizing the design of the munitions response. (a)	The MEC HA will continue to use the term “hazard” when describing explosive safety, and use “risk” when describes exposure to chemical contaminants. TWG will incorporate recommendation to insert the word “potential”. TWG does not agree with second recommendation on text changes. As the commentor notes, finalization of the design does not take place until after a decision is made.
15	Exec Summary	xi	81	[S] Change to “will facilitate evaluation of response (removal or remedial) alternatives and evaluation of current , determined or” It is possible that the land will continue to be used in the current manner. Throughout the document, the three conditions (current, determined or reasonably anticipated. (a)	Editorial. word “current” added to text.

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16	Exec Summary	xi	93-94	[C] Change to, "If the potential for an encounter with MEC exists, the potential that the encounter may result in injury or death also exists. " As written it is a statement of certainty, when this is not the case. If there is an encounter and an interaction, then the statement would be more correct, but still overstated. (a)	Editorial. Agree. Text changed from "will" to "may".
17		xi, 1, 3	64, 58?, 221	[S – substantive] The document should state up front that the guidance only applies to non-operational ranges. (OSD C)	Both the executive summary and section 1.3 now contain statements that the MEC HA "...does not address operational ranges."
18		xii, 5	138, 299	[S – substantive] It is incorrect to state that the MEC HA provides input on protection of the environment and compliance with ARARs, and these statements should be deleted. The MEC HA does not address ecological concerns. While page 52 explains that the process of the MEC HA may identify location and action-specific ARARs (which is an acceptable statement), ARARs are a separate process from the MEC HA. (OSD C)	The TWG agrees that compliance with ARARs is a separate process from the MEC HA. That does not preclude information from the MEC HA from being used to help in the ARARs evaluation process. Furthermore, it can also be used to provide input to the Threshold Criteria of Protection of Human Health and the Environment, as stated in the text on line 138 and 298. The text in Chapter 5 clearly states how information can be used in this manner.
19	Exec Summary	xi 7	94-95 326-327	[C] Change to, " If MEC is determined to be present, the MRS will be investigated to determine if a response action is required. " It may be that the MEC does not present an unacceptable risk given MRS specific factors (e.g., current and reasonably anticipated land use). (a)	See response to General Comment #5 regarding use of the word "response". See response to General Comment #9 regarding the use of "known or suspected" rather than "determined". No change needed.

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20		xi, 7	94, 326	[C – critical] Please delete “If MEC is known or suspected to be present, a munitions response will be required.” And replace with “If MEC is determined to be present, the MRS will be investigated to see if a removal or remedial action is required. (OSD C)	See response to General Comment #5 regarding use of the word “response”. See response to General Comment #9 regarding the use of “known or suspected” rather than “determined”. No change needed.
21	Executive Summary	xi	95	“That may include...” is not a complete sentence. (n)	Editorial. Text has been changed to “The munitions response may include...”
22	Exec Summary	xi	95–95	[C] Change to, “. . . This may include additional munitions response actions (e.g., investigation, surface removal, implementation of land use controls (LUC)). In some cases, LUC’s may be determined to be protective of the public. See definition of munitions response. Land use controls are a munitions response action. (a)	The first recommendation requests re-wording the same information that is presented in the text. This is a matter of style. The second recommendation is not accepted since the MEC HA does not make determination of whether LUCs are protective. Therefore, it would not be appropriate to discuss such determinations in this document.
23	Exec Summary	xi 3	101–102 223–224	[C] Change to, “It does not address locations where military munitions are known or suspected to be present underwater , nor does it address hazards associated with stockpile chemical warfare material (CWM) . If EPA incorrectly elects not to address chemical agent hazards associated with CWM sites, it can add “ or the CWM hazards associated with MRS where CWM is known or suspected to be present (CWM sites) .” (See above.) From a public perspective, the document should indicate when guidance is expected to be available regarding underwater sites, as well as	1. Editorial. Text changed to “The MEC HA does not address locations where military munitions are known or suspected to be present underwater, nor does it address chemical warfare materiel (CWM).” 2. The draft MECHA Guidance document is not an “EPA” document. It is a consensus product from efforts by DoD, EPA, DOI, and States. As noted in earlier responses, the exclusion of CWM from the MEC HA was a fundamental decision by the sponsoring agencies and organizations.

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				environmental or ecological concerns, together with the responsible organizations for such guidance. (a)	3. To date no agreements have been made for additional guidance on underwater sites.
24	Exec Summary	xi	102	Add "... or activities on operational ranges".	See response to Comment # 17.
25	Exec Summary	xii	111	[C/A] Change to, "• Severity, which is the potential consequences (e.g., death, injury , property damage) of a MEC item functioning. Injury is injury. The severity depends on the person injured. (a)	Editorial. Bullet now reads: "Severity, which is the potential consequences (e.g., death, injury, property damage) of an MEC item functioning."
26	Exec Summary	xii	126–128	[C] Change to, "current MRS conditions and the conditions expected after completion of different or variations of munitions response alternatives. It can also be used to assess the above in combination with various land use and land use controls. " The MEC HA, if understood correctly, can be used for what if drills. Such drills should allow for variations of multiple factors. If EPA needs to address the fact that MEC HA can be used after completion of a munitions response to MEC, it can add language. That capability, however, is not very important, as when you're done, you're done. (a)	Editorial. Text changed to: "current MRS conditions and the conditions expected after completion of different removal or remedial actions. It can also be used to evaluate different types of determined or reasonably anticipated future land use activities."
27	Executive Summary	xii, xiii	142, 146	"how clean is clean?" should be capitalized as it is later in the document. (n)	Editorial. Changed to "How clean is clean?"
28	CHAP 1	1	Def of MEC	The definition of MEC published in the Protocol rule (32 CFR 179) is "distinguishes specific categories of military munitions that may pose a	Editorial. Changed call out box to the MEC language in the Glossary without the USC

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				unique explosives safety risk, such as UXO, DMM or munitions constituents present in high enough concentrations to pose an explosive hazard.” See Table 1-1. Recommend these definitions be reconciled.(af)	citations.
29	CHAP 1	1	Text Box	[C] Change to, “Important Terms in This Chapter” (See Glossary) The EPA, DOD and states have spent considerable time trying to agree on terms and specific definitions (some now in statute) to avoid confusion and help ensure all were addressing the same issue, consistently. Truncating terms, as in this text box make little sense, as the truncated terms will take on meaning. Recommend that key terms, alone, or with their proper definitions be included. (a)	See response to Comment # 28.
30	CHAP 1	1	179	[C] Change to, “maintain an inventory of locations (called munitions response sites (MRS)) other than operational ranges that contain or are suspected to contain . . .” (a)	Editorial. Accepted.
31	CHAP 1	1	182–184	[C/A] Change to, “required DoD to develop an approach for assigning a relative priority to each MRS in its inventory for response actions . This effort resulted in the October 5, 2005 finalization of the Munitions Response Site Prioritization Protocol (Protocol). As stated, the language is misleading and incorrect. The Protocol is generally used to refer to the Munitions	Editorial. Accepted.

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				Response Site Prioritization Protocol, although MRSPP is also used. (a)	
32	CHAP 1	1	185	[S – substantive] Add “and pollutants or contaminants” after “hazardous substances.” (OSD C)	Editorial. Accepted
33	CHAP 1	2	191	[C] Change to, “risk assessment was not designed to address the acute hazards (explosive and chemical agent) potentially associated with MEC at an MRS. (a)	Editorial. Text changed to: “address the acute explosive safety hazards associated with MEC at an MRS.”
34	CHAP 1	3	222–223	[S] Change to, “The MEC HA is designed to be used as the CERCLA hazard assessment methodology for MRSs where MEC has been determined to present an explosive hazard. (a)	See response to comment # 9.
35	CHAP 1	3	221	Recommend adding a sentence stating where use of MEC HA is not appropriate. This will avoid projects applying it, when not warranted. (a)	The appropriate application of the MEC HA is discussed in Section 1.3 and illustrated in Figure 1-1.
36	CHAP 1	3	223	[S] Change to, “HA addresses the hazards from military munitions. . . .” (See above.) The MEC HA addresses hazards associated with military munitions (conventional, if you want to differentiate from nuclear), but the term military munitions does not include nuclear munitions. (a)	Sentences now read: “The MEC HA does not address locations where military munitions are known or suspected to be present underwater, nor does it address chemical warfare material (CWM). It does not directly address environmental or ecological concerns that might be associated with MEC.” Reference to “conventional weapons” has been removed.

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37	CHAP 1	3	229	This section describes the benefits of the MEC HA rather well. The corresponding section "1.7 Limitations of the MEC HA" should be expanded to adequately describe the limitations of the MEC HA, which it currently does not (n)	Section 1.7 has been deleted, and information in it moved to section 1.3, "Scope and Applicability".
38	CHAP 1	3	229	The MEC HA will be applied at numerous DoD sites. Since this is going to be a significant expenditure of resources, should some type of cost/benefit analysis be performed to support the use of the MEC HA? (n)	The MEC HA should not be a significant expenditure of resources. The process and product has been refined through a series of pilot tests with existing project teams to ensure ease of usability. Furthermore, as discussed in the background information at the MEC HA website, one of the goals of the MEC HA is to provide a consistent methodology for assessing explosive hazards at munitions response sites. In the absence of an accepted methodology, some project teams (e.g. Adak Island, Fort Ord) have spent hundreds of thousands of dollars in the development of site-specific tools to assess explosive hazards. The MEC HA and its automated workbook should significantly reduce the amount of resources project teams would spend on future assessments.
39	CHAP 1	3	239	[A] Change to, "• Provide a consistent format and process for multiple MRS. Repeated use of the process by"(a)	Editorial. Accepted. Bullet now reads: "Provide a consistent format and process for multiple MRSs."

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40	CHAP 1, Section 1.5	4		[C –critical] This section should include a statement that the MRS Prioritization Protocol could be used rather than the MEC HA. I remain confused over why another tool (MEC HA) was created that appears to look at the same factors as the MRS PP. (OSD C)	See response to General Comment # 3.
41	CHAP 1	4	206	[C –critical] This section should include a statement indicating that the Protocol could be used as an alternative to the MEC HA. Recommend adding a sentence to Line 264 to the effect that the Protocol is intended for use to determine the relative prioritization between MRS, while the MEC HA is intended for use to develop information about the impact of response alternatives and variations of such on risk reductions. (a)	Disagree that Protocol can be used as an alternative to the MEC HA. See response to comment #3. 2. Editorial. Already covered in Lines 261-263.
42	CHAP 1	4	260	It isn't clear how the process would apply to sites that have already progressed through most or all of the CERCLA process - say beyond the FS - prior to issuance of the guidance document. Is it necessary to do a MEC HA at sites where a remedy has already been selected? (n)	No, it would not be necessary to conduct the MEC HA after a remedy has been selected. There may be value to apply the MEC HA at a CERCLA Five Year review or other recurring reviews.
43	CHAP 1	4	261–262	[A] Change to, “The relative priority assigned to response activities at MRS is to be based on the overall conditions at each MRS . . .” Correct the statement. (a)	Editorial. Text changed to “The relative priority assigned to response activities is to be based on the overall conditions at each MRS and take into consideration various factors related to safety and environmental hazards.”
44	CHAP 1	4	263–264	This statement is incorrect. 32 CFR 179 requires the MRSPP to be applied annually;	Text changed to “The Protocol is designed to first be applied when sufficient information is

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				upon completion of a response action; upon further delineation and characterization; for example. Recommend deletion of the entire sentence.(af)	available is to populate the data elements in any or all of the modules. For the EHE module this information is collected by DoD at the Site Inspection step.”
45	Chapter 1	4	264	Footnote 6 should reference the finalized rulemaking of 5 October 2005 if the verbiage still exists. (n)	Editorial. Agree. Footnote has been corrected and sentence edited to reflect the final rule..

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46	CHAP 1	4	Table 1-1	<p>[C] Change to, “Description and Purpose:</p> <ul style="list-style-type: none"> – Is a prioritization tool used to assign a relative priority to MRS for response actions.” As written, the statement is factually incorrect. <p>[S] Change to, “• Description and Purpose:</p> <ul style="list-style-type: none"> – Is a tool used to compare and evaluate the expected effect of variations in the design of a munitions response to MEC, and changes of land use or activities on potential on risk reduction at an MRS” There is an effect on risk reduction, not explosive hazard. The comparison, if understood correctly, is on variations of response and land use alternatives, prior to selecting the response or finalizing the design of the munitions response. <p>[C] Change to • May be reapplied:</p> <ul style="list-style-type: none"> – Upon completion of a response – At the five-year review – Before the conduct of a subsequent munitions response at an MRS for which the selected remedy failed <p>Not sure the reason that it “is” applied at the completion of a response. If to be applied “when new information becomes available,” the statement should be caveated “before completion of the munitions response.” (a)</p>	<p>Editorials.</p> <p>1. Text changed to. “Is a prioritization tool used to assign each MRS in the inventory a relative priority for response actions.”</p> <p>2. Disagree with recommended changes. No changes made.</p> <p>3. Disagree with recommended changes. No changes made.</p> <p>New information can become available at any time in the overall response action process.</p>

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47	CHAP 1	4	Table 1-1	<p>Revise the table to more accurately reflect MRSP requirements as follows:</p> <p>The MRSP is annually reviewed and reapplied:</p> <ul style="list-style-type: none"> - Upon completion of a response action - When new information is available to update a previous evaluation at an MRS or a priority that was assigned based on one or two modules - Upon further delineation of an MRA into MRSs. - To categorize any MRS classified as "evaluation pending". (n) 	Editorial. Accepted.
48	CHAP 1	4	Table 1-1	<p>The output of the MRSP is an MRS Priority from 1 to 8. The final output of the MEC HA is a Hazard Level from 1 to 4. In order to reduce confusion between the two, could the MEC HA use an alphabetical Hazard Level from A to D as the final output? (n)</p>	<p>The final output from the MRSP is 1 to 8; the intermediate output of the Explosives Hazard Evaluation module of the MRSP is A through G – numeric levels were originally selected to reduce confusion with the EHE module. Therefore, the Hazard Levels will continue to be numeric expressions.</p>
49	Chapter 1	6	Figure 1-1	<p>This flowchart does not reflect how sites move through the CERCLA process. Sites are not identified as MRSs at the EE/CA phase. The beginning of this flowchart should not be the EE/CA process although it is one point where the MEC HA can be used. (n)</p>	<p>The flowchart is not meant to be representative of the entire CERCLA process. It identifies phases in the CERCLA process where the MEC HA can be applied. Hence the title: "Application of the MEC HA During the CERCLA Process".</p>
50	Chapter 1	6	Figure 1-	<p>This flowchart when printed in black and white</p>	<p>Agree. This is an issue for final editing &</p>

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			1	does not clearly indicate where the MEC HA is applied. This should be changed because black and white copies are used extensively. (n)	production.
51	CHAP 1	7	313	This discussion does not reflect the fact that chemical risk assessments require significant and rigorous scientific studies to determine risk levels, based upon reference doses etc. This discussion should acknowledge that this level of detail will never be supported by the MEC HA. (n)	Comment noted. The MEC HA acknowledges the technical framework is a qualitative tool. This is noted throughout the guidance document.
52	CHAP 1	7	313–350	Simplify this section. Make briefer and tighten. (a)	Comment noted. Section 1.6. will be reviewed during technical editing for clarity.

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53	CHAP 1	7	314–320	[S] Change to, “The MEC HA has been developed to address the NCP direction to assess site-specific risks to human health and the environment. The MEC HA focuses on the explosives hazards potentially posed by MEC to human receptors. Risk assessments of environmental contaminants , including those to assess MC, and the MEC HA require the similar site information . However, project teams should recognize the fundamental difference between assessing the potential risks associated with chronic exposure to environmental contaminants and the potential risks associated with MEC. The MEC HA’s design recognizes these differences. ” As written, the MEC HA overstates the potential risks and is not clear in its intent. (a)	Editorial. Some changes accepted. See revised text in Chapter 1.
54	CHAP 1	7	321–327	[C] Change to, “The very nature of an explosives hazard is the potential for an encounter to result in immediate injury or death. This is particularly true when the encounter also involves some direct contact (e.g., handling, moving) with MEC. Because of this the potential, explosive hazards associated with MEC are evaluated as either being present or not present. If MEC is determined to be present, some action may be required to address the MEC. ” (a)	Editorial. Text changes for first three sentences as follows. “An encounter with MEC has the potential to result in injury or death. Direct contact (i.e. handling) increases the likelihood that an encounter will result in injury or death. No accepted method exists for establishing the incremental probability for injury or death from an encounter with MEC.” The remainder of the text on lines 323-327 are not changed.

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55	CHAP 1	7	336	The text points out that “MEC items are generally stationary and typically require action by a receptor to complete the explosive hazard pathway.” The text should acknowledge that this characteristic of MEC makes the use of LUCs (alone or in combination) an appropriate remedy because the explosive hazard pathway can be eliminated through the use of appropriate LUCs. (af)	The applicability of LUCs as a remedy is discussed in the MEC HA Guidance. Also, see response to comment #11.
56	CHAP 1	7	337–342	[C] Change to, “the explosive hazard pathway. The land use activities that present the highest potential risks are those that take place outdoors and involve activities in which people can encounter and potentially interact with MEC, causing an unintentional detonation. Intrusive activities in areas known or suspected to contain MEC present the greatest potential exposure. MRS where intrusive activities (e.g., farming, camping, gardening) occur potentially provide a complete exposure pathway to MEC. At an MRS where MEC has been determined to be present, such intrusive activities, when coupled with other MRS-specific conditions, may result in a relatively “high” hazard assessments when weighing alternative response actions.” at an MRS where MEC has been determined to be The MEC HA is evaluating risk reduction under variations in the design of a munitions response and variations in land use. As written, it read more like assessing	Text changed to “The land use activities that present the highest potential hazard are those that take place outdoors and involve activities in which people can come in contact with MEC items and cause an unintentional detonation. A major cause of potential exposure at MEC sites is intrusive activities. MEC at an MRS with recreational or agricultural uses involving intrusive activities, such as camping or tilling soil, may provide a complete MEC exposure pathway and a may result in a relatively “high” hazard assessment.

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				the potential risk, which is what the Protocol does. The statement as written is also an overstatement of risk. Although a hazard (MEC) that poses a risk may be present, it is not certain. (a)	
57		7	340–342	[S –substantive] Does DoD agree that camping or tilling soil may result in a high hazard assessment? (OSD C)	Comment noted. No response required.
58		7	345–346	“...play a major role the conclusion as to which...” reads awkwardly. Uncertain if a word(s) is missing. Recommend review of wording. (af)	Text changed to “Assumptions about durations of exposure for chemical risk assessments are tied to specific land uses and play a major role in determining which land uses present the greatest risk.”
59	CHAP 1, Section 1.6; CHAP 2, Section 2.2.2.1	7, 11	General	A major difference between MEC HA and risk assessments associated with environmental contaminants is the inclusion of risk management elements in MEC HA. This should be included in this discussion. Risk assessors are very careful to not consider or include risk management in risk assessments associated with environmental contaminants. The risk assessment process is unbiased and is used with other factors to inform risk management. MEC HA, as discussed in Section 2.2.2.1, includes weighting factors that introduce risk management considerations into the hazard assessment. (a)	<p>The TWG disagrees with the premise of the comment. The MEC HA technical framework includes input factors that include scores and weighting considerations. The Superfund Human Health Risk Assessment (HHRA) technical framework includes input factors into equations where some have a linear relationship with respect to the outcome, and others have non-linear relationships. The inputs to the mathematical expression of risk do not all have equal weights within the equation. The HHRA equations and relationships are considered to be reflective of the importance of the contributions of the input factors to the overall risk assessment output.</p> <p>The MEC HA Guidance is very explicit that the</p>

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					output is not “the decision” rather the information from the MEC HA can be used to support site decisions on how to manage explosive hazards. This is directly parallel to how HHRA information is used to support decisions at site on how to manage risks to human health.
60	CHAP 2	9	Text Box General	[C] Subsequent uses of “surface cleanup” should be changed to “surface removal,” with “subsurface removal” used in place of subsurface cleanup. (a)	As noted in the response to comment #2 on CERCLA terminology, and in the MEC HA text, the term “cleanup” is used to differentiate between LUCs and other actions taken under removal or remedial authorities under CERCLA.
61	CHAP 2	11	Table 2-4	MEC-HA considers certain characteristics unchangeable (Energetic Material Type, MEC Classification, and MEC Size) and, consequently, shows no decrease in the scoring for these characteristics in response to removal actions. With a total weight of 32 percent (320 points) this can potentially result in a Category 2 site being incorrectly classified as a Category 1 site. This also contradicts the basic logic of the risk assessment process, i.e., for a risk to be present, there has to be a complete exposure pathway connecting the receptor to the hazardous substance. When a landfill cap is placed on a landfill, the toxicity of the contents of the landfill does not change, but becomes irrelevant because the exposure pathway no longer exists. Similarly, appropriate LUCs can be used to eliminate the exposure pathway to	The landfill analogy, which has been responded to in previous comments and in previous comment resolution discussion remains flawed. The “cap” analogy breaks a direct exposure pathway for soil contact only. It is only as good as the life and integrity, long-term maintenance and other considerations. There are costs associated with all of these. There may be other considerations such as migration to groundwater or surface water. LUCs do not “eliminate” exposure pathways, rather they are one means to manage them. There are costs associated with these activities. As noted in the MEC HA, it does not consider costs. Costs are addressed through the CERCLA removal and remedial evaluations. Lastly in response to this comment, the LUC factors within the MEC HA are given a slightly lower overall weighting than active

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				MEC. Response actions can also reduce the probability of exposure to MEC. Although, the 'Amount of MEC' input factor takes this into account, the scoring for MEC characteristics should also be reduced accordingly.(af)	cleanup measures. Input factors that can be changed by LUCs represent 47% of score; those that can be changed by cleanup represent 54%. This is reflective of the NCP 300.430 (a)(1)(iii)(D) that gives the lowest preference to LUCs alone. It is important to note that the MEC HA technical framework does give significant recognition to the effects of LUCs on explosive safety hazards.
62	CHAP 2	11	Table 2-4	The MEC-HA scoring is biased against the efficacy of site accessibility in controlling exposure to MEC. For example, in Table 2-4, a scoring weight of 8 percent is given to site accessibility as compared to Contact Hours (12 percent), Amount of MEC (18 percent), and MEC Depth (24 percent). MEC-HA should recognize that the last three factors are all dependent on the level of site accessibility and, therefore, the scoring weights should be adjusted accordingly.(af)	The TWG disagrees that the MEC HA is biased in the manner described in the comment. See response to comments 11, 22, 55 and 61. Also see Appendix D for the complete discussion of the development of the scores and weighting.
63	CHAP 2, 2.2.2.1	11	445-453	[C – critical] I disagree that the NCP requires treatment of principal threat wastes in this circumstance and the lowest consideration to Institutional Controls. EPA guidance states that the principal threat treatment applies to highly toxic or mobile constituents (e.g., 10-3 cancer risk). This has no direct correlation to explosive hazards (although it would to MCs). Additionally, the active response versus Institutional Control expectation is non-binding, and even includes the caveat 'unless determined	Treatment of the principal threat is a CERCLA Statutory preference (See CERCLA 121(b)). The language in the call out box and text are direct from the National Contingency Plan. The weighting approach and basis is discussed in the response to previous comments, and is presented in detail in the MEC HA guidance document. As noted in responses to other comments, it is important to remember that the MEC HA scoring framework is not the remedy selection mechanism. Remedy selections are

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				not to be practicable.” Explosives hazards are an example of where active measures may not be practicable. The “weighting” in the MEC HA incorporates a bias against LUCs. This bias should be removed. Instead, the 9 NCP remedy selection criteria should be used to make remedial decisions. They are “weighted” as threshold, balancing, and modifying criteria. (OSD C)	arrived at through the CERCLA removal and remedial criteria analysis. This aspect is discussed directly and clearly at several points throughout the document.
64	CHAP 2	12	Table 2-5	[C] Change Location of Additional Human Receptors to, “ Inside the ESQD ” [If need to differentiate between inside the ESQD and insides the MRS, then add another row, with same numbers—makes no sense to do so.] The discussion here and in other places about the ESQD and the MRS is confusing. To ensure safety, the ESQD of the munition with the greatest ESQD expected to be encountered is used, and normally applied from the boundary of the MRS. The ESQD also includes the MRS. A person is either inside the ESQD or outside the ESQD. Where a person is inside or outside the ESQD has no meaning from an explosives safety perspective; therefore. How ESQD is determined and what it means should be discussed. (a)	<p>1. Text changed to “Inside the MRS or the ESQD arc surrounding the MRS.”</p> <p>2. Discussion on the calculation and derivation of ESQD was removed from the draft MEC HA Guidance at the request of DoD. Specifically Dr. Michelle Crull made this request. The point of the ESQD in the discussion here is specific for the “Distance to Additional Receptors” input factor.</p>
65	CHAP 2	12	Table 2-5, Amount of MEC	Should OB/OD Areas be rated over Test Ranges or Burial Pits? Is there empirical data showing that OB/OD Areas historically have more MEC than Test Ranges or Burial Pits? Residue contamination levels at OB/OD sites may be	The TWG disagrees with the comment. See the TWG meeting minutes at the MEC HA website for summaries of TWG deliberations on the scoring.

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				equivalent to a range target area; but not explosive safety hazards. In my experience, OB/OD areas should be rated at a vastly lower score across the table columns. (af)	
66		13	Table 2-5	Migration Potential: there doesn't seem to be any logic for assigning 10 points to the unlikely potential to migrate. How does a project team differentiate between "possible" and "unlikely?" Doesn't giving an "unlikely" scenario 10 points make it possible? What the threshold between "possible" and "unlikely?" Section 4.7 doesn't clarify or specify.(af)	One of the primary goals of the MEC HA is to limit the information required to complete it to that which would ordinarily be available to a project team at the completion of an RI-level study. It is not normally expected that a munitions response RI would include detailed studies regarding the stability of a site, so the guidance directs project teams to select the category for Migration Potential based on local understanding of the prevalence of conditions that might lead to the migration of subsurface MEC to the surface. The information that would be required to provide the level of precision for this input factor requested by the reviewer is not warranted by the weight given it in the model.
67	CHAP 2	14	Table 2-6	Why were only four hazard levels identified? If sites are borderline on the high side, they will be perceived to have a much higher risk than the next lower level even if they are only 5 points higher. (n)	See Appendix D for discussion and analysis of output levels. Also see TWG meeting minutes posted on the MEC HA website for summary of discussions on the use of "bands" between levels that directly relates to this comment. This concept was given significant deliberation during the MEC HA development, but was not adopted.
68	CHAP 3	15	Table 3-1	Is BRAC project team membership same regardless of NPL status? If so, recommend	Table 3.1 is provided for illustration. It is not stated to be an all inclusive list.

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				adding "(NPL and Non-NPL)" after "Base Realignment and Closure." If not, need to break out into BRAC NPL and BRAC Non-NPL teams.(af)	
69	CHAP 3	15	491-496	[A] Change to, "The make-up of a project team varies, but it often includes the lead Agency's Project Manager, with support staff; regulatory authorities (e.g., federal, state or Tribal); land owners or managers; technical experts; supporting contractors and consultants. Clarity. Do stakeholders get a seat? (a)	Comment noted. The requested changes present the same information as written in the text. No change required. All of the personnel listed in the text are stakeholders.
70	CHAP 3	16	504	[S] Change "Land users" to "land owners." (a)	Bullet changed to: "Others. Current and prospective land owners and land users will ensure that the MEC HA accurately reflects the current and determined or reasonably anticipated future land use activities."
71	CHAP 3	16	513-519	[S] Change to, "The project team should keep stakeholders (e.g., the Restoration Advisory Board, local government officials, affected community members, to include property owners, and other parties informed of the MEC HA deliberations and results. Stakeholders should be provided opportunities to learn about the overall hazard assessment process.	Comment noted. The requested changes present the same information as written in the text. No change required.
72	CHAP 3	16	527	[A] Change to, "(e.g., the lead and support agencies, stakeholders) (a)	The requested change is the same as the text as written. No change required.

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73	CHAP 3	18	554	[S] Change to, “Boundaries should outline an area (e.g., target area, opening burning (OB)/open detonation (OD) site) where munitions-related activities (e.g., live-fire, demilitarization) occurred. Boundaries should, when feasible, separate areas in which different types of munitions-related activities were conducted and, if possible, where different types of military munitions were used. ” Clarity. (a)	Comment noted. The requested changes present the same information as written in the text. No change required.
74	CHAP 3	19	582	[C] Change to, “Past munitions response activities (e.g., time critical removal actions, surface removal) or explosives or munitions emergency responses performed by explosive ordnance disposal (EOD) personnel.” EOD do not normally support munitions responses, and a munitions response does not include explosives or munitions emergencies. (a)	Text changed to “Past munitions response activities (e.g., time critical removal actions, surface removals) or explosives or munitions emergency responses performed by explosive ordnance disposal (EOD) personnel”.
75	CHAP 3	20	Table 3-2	Environmental baseline surveys is the old terminology that the BRAC program formerly used. The current terminology is Environmental Condition of Property. (n)	Text changed to Environmental Condition of Property or Environmental Baseline Survey reports
76	CHAP 3	21	616	[A/S] Change to, “ The basis for the selected category selection (e.g., the Department of Defense Identification Code (DODIC), if known, or the type military munition that is used to determine Energetic Material Type). ”	UXO workers use Mk and Mod nomenclature. DODIC is used for munitions acquisitions. The comment is noted. No changes are required.

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				More correct. (a)	
77	CHAP 3		Table 3-3	[A] Change to, (e.g., Certificate of Munitions Response to MEC , Certificates of Clearance). (a)	Comment noted. The text in parenthesis was removed.
78	CHAP 3	22	Table 3.3	[S/C] Change to, “• Completeness of any munitions response removal activities conducted • Accuracy of information about removal (surface or subsurface) actions • Detection technology used and the quality control (geophysical prove out) processed used • Design of munitions response removal activities--targeted munition, type removal action (surface, subsurface) • QA/QC associated with the munitions response • For surface removals, site conditions that may expose of subsurface MEC • For subsurface removals, selection criteria used to identify anomalies for investigation (a)	No change required. Text refers to investigation phase. <ul style="list-style-type: none"> • Text changed to “Accuracy of information about past clearances.” • No change required • Accepted change • No change required • Line deleted • No change required.
79	CHAP 3	23	646	The sentence is not grammatically correct	Text changed to MRS-2 is assessed in its entirety, because the past military uses, the current use, and the future use are all uniform throughout the MRS.

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80	CHAP 3	23	674	The sentence should include the fact that LUCs may change the site accessibility factor. (n)	Comment noted. No change required. The text referred to is in the introduction to Chapter Four. LUCs and accessibility is discussed under the specific input factor. The TWG has worked to streamline the text by discussing information in the location where it has the most bearing. Previous versions were considered to be “too wordy” and repetitious, with the same or similar information being repeated at several points in the text. Providing this information at the point in the text where the input factor is discussed is in keeping with efforts to streamline the document.
81	CHAP 4	25	Footnote 10	SUBSTANTIVE - Why would it ever be contemplated that a realistic remedial response alternative is to remove all soil beyond the maximum depth for MEC or down to bedrock when such a response action does not reduce your MEC HA score any more than a typical subsurface removal? The premise of this footnote also assumes that any replacement fill dirt that is brought in is absolutely free of MEC, which might not be the case and is very difficult (and expensive) to prove. Since executing the “max depth” response option rather than a normal subsurface removal provides no benefit or value in terms of reducing the MEC HA score, and since the footnote is potentially misleading in regard to whether there might still be residual risk from MEC in any fill dirt that is used at the site, the footnote should be deleted.	DoD has undertaken such actions in the past. As noted in the footnote, this is the exception.

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				(D)	
82	CHAP 4	25	675–677	[S] Change to, “ Removal ” column is selected when evaluating a response alternative involving only surface removal of MEC . If the alternative under evaluation also or only involves subsurface removal , then scores are selected from the “Subsurface Removal ” column.” Correctness. (a)	See response to General comment # 5. No change required.
83	CHAP 4	25	678–685	[S] Change to, “The MEC HA addresses the residual uncertainty inherent in a munitions response to MEC that involves surface or subsurface removal . Current methods for detecting, discriminating and removing MEC cannot ensure that all MEC are removed during a response. Detection of MEC is a function of size, depth, and orientation of a munition and the selected technologies’ capability to detect MEC of varying sizes, at varying depths, under differing geological conditions . In general, small MEC is more difficult to detect at depth than larger MEC. The MEC HA scores address this residual uncertainty by not reducing scores in several of the input factor categories in the “Surface Removal ” and “Subsurface Removal ” columns. Project teams must determine the type and amount of QA/QC measures required to ensure that these munitions response actions are being carried out per site-specific requirements. Correctness. (a)	<p>1. No change required.</p> <p>2. Text changed to “Current methods for detecting, discriminating, and removing MEC cannot ensure that all MEC are removed during a cleanup.”</p> <p>3. No changed required.</p> <p>4. No change required. See response to Comment #5.</p>

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84	CHAP 4	25	681	The sentence addressing input factors not being reduced should be further expanded to explain which factors are not reduced and why. (n)	Comment noted. No change required. The text at line 681 is the introduction to the Chapter. The specific input factors and reductions are discussed in the subsections of the Chapter for each input factor.

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85	CHAP 4	26	Table 4-1	<p>[C] Change to,</p> <p>“Munitions with high explosives fills and fragmenting munitions with low explosive fills” (Clarity)</p> <p>“High explosive (HE) fillers (e.g., TNT, tetryl, RDX, and HMX.) (The type fill is the issue)</p> <p>“Low explosive fillers (generally black powder) used in older fragmenting munitions (e.g., X, X, X).” (The type fill is the issue)</p> <p>Bulk explosives (Not sure the reason this is included. Would not normally find, and has no initiator.) (a)</p> <ul style="list-style-type: none"> • DODIC (Provides everything needed. Munitions people on team can identify, if not, they will know what to provide.) • Type of filler • Type of explosive (bulk explosives)” (Same as above) <p>“A bursting smoke filler that burns rapidly when exposed to oxygen. Skin contact will most likely cause severe burns.” (Not certain you will get severe burns, but you will get burnt.) (a)</p>	<p>Comment noted. Table contains correct information and is clear as written. No change required.</p>
86	CHAP 4	27	Table 4-2	<p>Believe munitions with a WP fill should be given a higher score (e.g., 85 or 90). (a)</p>	<p>Comment noted. No change required.</p>

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87	CHAP 4	27	Table 4-2	What is the reason that a spotting charge is rated higher than incendiary material. Believe they should be the same. Are thermite filled munitions (such as incendiary bombs) treated as incendiary or pyrotechnic? (a)	The rationale for the rating of the energetic material types is presented in the text box on page 26. Thermite is an incendiary.
88	CHAP 4	27	719–723	[C] Change to, “within the ESQD arc. To ensure the protection of the public and address uncertainties about the MEC locations, the explosives safety quantity distance (ESQD) is calculated based on the most hazardous munition expected to be encountered from the edge of the MRS. (The ESQD is recalculated upon discovery of a more hazardous munition.) The ESDQ can be found in Health and Safety Plans and in the Explosive Safety Submission for a munitions response to MEC. Related ESQD may also be found in the explosive site plan. More correct statement. The explosive site plan will not have this for the purpose stated. (a)	Comment noted. No change required. Recommended edits will alter the intent of the text.
89	CHAP 4	27	728	The words "with input from project team members," should be removed from the sentence. The SAR and the ESS are developed by the lead agent and approved by DDESB. (n)	Text changed to “Two sources for the ESDQ arc are the Explosive Siting Plan or the Explosives Safety Submission.”, deleting references to the preparation and approval processes.
90	CHAP 4		Figure 4-2 841, 842,	[C] Change to, Expected Minimum MEC Depth Relative to the Expected Maximum Intrusive Depth Should be consistently made throughout the	Comment noted. No change required.

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			848	document. (a)	
91	CHAP 4	28	Table 4-3, Table 4-4	Seems as if the likelihood of people congregating at “places” is not taken into consideration. It is also asking a lot of project teams to predict human behavior. Does it take a ball field to cause people to congregate? Also, doesn't the location of the munition in relation to the “congregation place” have an effect? Being just outside the QD arc, if there are UXO just inside the QD arc is more dangerous than being inside the QD arc but further from the UXO or behind a barrier, say a berm. The logic throughout section 4.2 is flawed.(af)	This comment touches on several topics. Project teams need to use site-specific information to make informed judgments about site conditions. Section 4.2 discusses places where people might congregate, provides examples of such places, and discusses the relationship between the location of munitions, the ESQD arc, and public safety considerations.
92	CHAP 4	28	Table 4-3 734 750-755 Figure 4-1 Table 4-4	[C] Change to, “Inside the ESQD.” Previously discussed, same change need to be made in a number of places. In addition, lines 749 – 755 should be revised completely and figure 4-1 should show that the ESQD, although measured from the edge of the MRS, actually includes the MRS—can use a line from the center to the outer edges of the ESQD that is labeled ESQD. (a)	See response to Comment # 64.
93	CHAP 4	28	Table 4-8	This does not seem to make much sense. Assuming that a surface clearance should get all surface MEC, shouldn't you just subtract the surface only contact hours and see which category it is now and assign the score as in the baseline. Then if you also do a subsurface clearance you could apply a % reduction. It does not seem to make sense that the %	1. The automated workbook makes re-running the MEC HA with different Contact Hours, or other input factor changes very easy. 2. There is not an absolute relationship between the MEC HA scoring numbers. This is clearly stated in the guidance.

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				reductions between the surface clearance and subsurface clearance cleanup are different between the categories. (a)	
94	CHAP 4	30	757-758	[C] Change to, “The Site Accessibility input factor describes the ease with which casual unauthorized users (e.g., people taking short cuts) can access an MRS. This differs from the Potential Contact Hours input factor that describes the total number of hours associated with authorized users’ participation in” Correct the statement. People taking short cuts are trespassers, unless authorized to do so by the property owner.	Text changed to: “describes the ease with which people can access an MRS.” Definition for Site Accessibility also changed in the Glossary.
95	CHAP 4	30	Table 4-5	[C] This should mirror the Protocol, as both address the same issue. (a)	Comment noted. Table 4-5 correctly presents the required information for the MEC HA. It does not need to mirror the Protocol. No change required.
96	CHAP 4	32	Table 4-8	Why are the Potential Contact Hour categories reduced at different rates from the baseline to surface MEC cleanup? This reduction appears to be inconsistent with that from the baseline to the subsurface MEC cleanup values. (n)	See response to #93 above. Reductions are reasonably consistent.
97	CHAP 4	33	Section 4.5.1. Table 4-10	[C] During the development of the Protocol, quantity of MEC was determined not to be overly important. It impacted costs and planning, more than hazard—either MEC exists or it does not. This table seems to over simply the determination of quantity and overstates its	The TWG concluded that quantity is important. The TWG chose this approach as the best way to represent the relative quantities of MEC in the MEC HA. For additional discussion on this topic, see TWG Issue Paper #6 at the MEC HA website.

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				importance. By the stage at which the MEC HA is applied, the team should have a fairly good understanding of the quantity potentially present, developed by statistical analysis, given other data or investigation. (a)	
98	CHAP 4	33	Table 4-10	[C] Target area and OB/OD areas should not be assigned the same baseline. A target area is more likely to contain a larger amount of the most hazardous of munitions (UXO) than an OB/OD site. An OB/OD site more mirrors a functional test. There will be difference based on MRS specific conditions. Recommend this be re-looked.(a)	TWG disagrees with the comment and believes the baselines are appropriate. No change required.
99	CHAP 4	33	Table 4-10	The basis for the baseline scoring and cleanup reductions should be explained or at least addressed, in the text. For example, if they have the same baseline score, why would the surface MEC cleanup reduce one category more than another? (n)	The reviewer seems to be addressing the difference in the surface cleanup scores for Target Areas and OB/ODs. The OB/OD surface cleanup score is lower than that for the Target Area score because the TWG concluded that a higher proportion of MEC would be located in the surface of an OB/OD area, as compared to a Target Area. The basis for scoring is discussed in the guidance.

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100	CHAP 4	36	Table 4-12	<p>[C] How can these baseline conditions be the same score 240?</p> <p>Baseline Condition: MEC located surface and subsurface After Cleanup: Intrusive depth <i>overlaps</i> with subsurface</p> <p>MEC 240 150 95</p> <p>Baseline Condition: MEC located surface and subsurface</p> <p>After Cleanup: Intrusive depth <i>does not overlap</i> with subsurface MEC (a)</p>	<p>These baseline conditions are the same – MEC is located both surface and subsurface – hence the scores are the same. The two categories diverge after cleanup is applied. In one the intrusive depths overlap, in the other they do not overlap.</p>
101	CHAP 4	36	848 863	<p>[C] Change to, “4.6.2 Category Changes for Expected Minimum MEC Depth Relative to the Expected Maximum Intrusive Depth</p> <p>This category will change when the relationship between the expected minimum MEC depth and the expected maximum intrusive depth changes. The expected minimum MEC depth may change upon discovery of a different munition than expected, geological (soil) changes or when a subsurface removal is evaluated. Generally, subsurface removals to a depth that exceeds the expected maximum intrusive depth will be among evaluated alternatives. After completion of a munitions response, the MEC HA can also be used to score alternatives to evaluate future potential changes in land use or intrusive activities that may occur where the expected maximum intrusive depth would exceed the minimum</p>	<p>The TWG does not agree the use of the word “expected” adds clarity to the text. No change required.</p> <p>The TWG does not agree with the recommended edits. They would change the intent of the text. Therefore, no changes are required.</p>

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				<p>MEC depth. (a)</p> <p>After completion of a munitions response, the expected maximum intrusive depth may change when land use activity change. Before such changes are allowed, the MEC HA should be applied to determine the impact on safety. Examples of scenarios that should be considered when determining whether a change in land use or allowed intrusive activities are:</p> <ul style="list-style-type: none"> • Allowing camping in an area where it was previously prohibited or restricted. • Converting open space to cattle grazing, requiring the installation of fencing and water stations. • Developing an undeveloped area, which may involve extensive grading and excavations for the construction of building foundations.” <p>This discussion is confusing, as a munitions response should be designed to address the current, determined or reasonable anticipated land use and activities before it is conducted. Once conducted, any land use restrictions necessary for the response to remain protective should be implemented and enforced. As written, it could apply to an interim response, but not to the final. If it applies to interim actions, it needs to be clarified. If it applies after completion of the selected alternative, it</p>	

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				needs to be revised along the lines indicated. (a)	
102	CHAP 4	37	877	This section should address DMM, such as OB/OD kick-outs, at the beginning of the section after the UXO discussion. (n)	Comment noted. DMM is first addressed in the second paragraph of this section. DMM from OB/OD kickouts is addressed in this section.
103	CHAP 4	37	883	[C] Change to, “designed gives UXO the greatest potential hazard.” (a)	Text changed to “The failure of a military munition to function as designed presents the greatest hazard.”.
104	CHAP 4	38	922 Entire discussion	[C] The MEC Classifications should mirror the Protocol’s classifications, otherwise addressing the same issue in two different ways. At a minimum, a relationship between the two should be established. This does not categorize a number of munitions (e.g., small arms, chemical munitions (explosively configured or not). (a)	It is not necessary for the MEC HA to mirror the Protocol. See response to comment #3. Small arms and CWM are excluded from the MEC HA.
105	CHAP 4	39	Figure 4-3	Although the figure addresses OB/OD sites, it does not clearly address the fact that OB/OD kick-outs can be sensitive. Recommend that the table be modified to address these items. (n)	The flow chart does address this issue. By following the second row, both UXO and DMM from OB/OD or other site types can lead to technical assessments and evaluation of “Special Case” munitions. Also, see the text at lines 912-914 regarding DMM at OB/OD that have experienced abnormal environments. The figure has been moved to after the text on page 40 to better introduce the concepts.
106	CHAP 4	40	919	DMM found on an OB/OD site should only be classified as DMM if it was discovered in a burial site. Unless documented otherwise, all other DMM should be handled as if it	Agree. That is the purpose of the technical assessment step in the flow chart. Also, see response to comment # 105 above for changes

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				experienced an abnormal environment (i.e. as UXO). (n)	to the text.
107	CHAP 4		Table 4-14	[S/A] Change to, “ Surface MEC Removal ” and “ Subsurface MEC Removal. ” Do not really need items after MEC. (a)	Comment noted. Will continue to use “cleanup”. See response to General Comment #5.
108	CHAP 4	40		<p>[C] Change to, “UXO: Unless there is evidence to the contrary, the Project teams should assume that UXO are present in target areas. UXO may also be present on QA function test ranges, and within a range’s safety buffers zones. UXO may also be considered to be present in OB/OD areas when:</p> <ul style="list-style-type: none"> • The OB/OD area was located within a range’s impact area. <p>Statement as written is not exactly wrong or correct, but misleading. (a)</p>	<p>1. Text changed to: “Unless there is evidence to the contrary, the Project teams should assume that UXO are present in target areas and may also be present in safety buffer zones. UXO may also be present on QA function test ranges. UXO may also be present in OB/OD areas when:”</p> <p>2. Comment noted. No change required to text.</p>
109	CHAP 4	40	903–921	As stated in section 1.5, the MEC HA is supposed to be applied after the RI, why would project teams need to make assumptions about what type of MEC is found at the MRS? Since the HA to start with only provide a relative hazard indication, it would seem that factual data only should be used for the factors otherwise the relative assessment becomes even less of a representation of the site.(af)	Section 1.5 states that the MEC HA is designed to be applied at the end of a removal or remedial investigation. The text in Chapter 4 is concerned within providing instructions to MEC HA users on the correct selection of input factors.
110	CHAP 4	40	917, 921	[S] How can hand grenades be in two places?	The distinction in the text is between UXO and DMM. In the first case munitions types

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				(a)	(including hand grenades) are discussed. In the second instance DMM munitions (including hand grenades) are discussed. The distinction is between fuzed and fired, versus dropped or abandoned without fuze activation.
111	CHAP 4	41	928	[C] The discussion on size is very misleading and overly simplified. The size (90 pounds) established as portable is arbitrary. Portability depends on the size and strength of an individual, the number of individuals, and the desire to move an item. For these reasons, the Protocol did not address this factor. The example in 930 and 931 is not a good one--people have sat on bombs, even carried them away by truck. Recommend this whole factor be reconsidered and the language revised, or the factor abandoned. (a)	The TWG included MEC Size category as part of the overall description of explosive safety hazard. The size of cutoff of 90lbs (155mm projectile) was concluded to be the appropriate break point.
112	CHAP 4	44 General	Table 4-19	USACE still has problems with the numbers. USACE can understand that the contact hours for the following cases will be reduced for case 1 and not case 2 (sort-of, see above comment for table 4.8), why is the amount of MEC greater for Case 2 baseline than that of Case 1 after response? Case 1: HE MEC. Receptors inside the EQSD. Site is fully acceptable. Contact hours are high. The site is a target area. MEC is potentially on the surface. Response is a surface Cleanup. Migration potential is unlikely. MEC classification Is UXO. MEC size is large.	In Case 2, the reviewer has applied a surface cleanup to a site where MEC is located only in the subsurface. It is not that the score for the second case does not change for the surface cleanup of Case 2, but rather that a surface cleanup would not be applied to a site where the project team has reasonable assurance that there is no MEC on the surface. It should be noted that the Automated Workbook has been constructed to prevent the misapplication of surface clearance options for a site where subsurface only munitions have been entered into the Workbook.

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				<p>Case 2: HE MEC. Receptors inside the EQSD. Site is fully acceptable. Contact hours are high. The site is a target area. MEC is subsurface, all MD removed. Response is a surface Cleanup. Migration potential is unlikely. MEC classification Is UXO. MEC size is large.</p> <p>Case 1: Baseline is 870 HL 1, After response is 690 HL 3</p> <p>Case 1: Baseline is 780 HL 2, After response is 780 HL 2 (or NA). (if amount of MEC score was 120, score would have been 720 HL 2) (a)</p>	<p>The reviewer has also neglected to indicate whether receptor activities after cleanup at the site will be intrusive, or limited only to the surface.</p> <p>Using the automated workbook, the two cases score out as follows:</p> <p>Case 1: Baseline – 870, HL 1; Surface cleanup, intrusive depth overlaps with MEC depth – 690, HL 3; Surface cleanup, intrusive depth does not overlap with MEC depth – 590 – HL 3; Subsurface cleanup, intrusive depth overlaps – 485, HL 4; Subsurface cleanup, intrusive depth does not overlap – 415, HL 4.</p> <p>Case 2: Baseline – 780, HL 2; Subsurface cleanup, intrusive depth overlaps – 485, HL 4; Subsurface cleanup, intrusive depth does not overlap – 415, HL 4.</p> <p>The lower scores and hazard levels for the Case 2 baselines are a direct result of the assumption that MEC was located subsurface. The scores for the two cased after subsurface cleanup are equal.</p>
113	CHAP 5	47	1033	<p>This section should provide more detail as to the intent and meaning of the four MEC HA Hazard Levels. For example, Level 2 meaning, unlike the other levels, is not defined. In addition, since Level 4 is defined as compatible with current and determined and reasonably</p>	<p>1. Comment noted. DoD requested the TWG to streamline text. Therefore, expanding text at this point in the document would be contrary to previous requests and changes.</p> <p>2. The TWG is continuing to work on clarifying</p>

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				anticipated use, the appropriateness of the “no action” alternative should be discussed.	the Hazard Level descriptions. 3. No action alternative is a product of the CERCLA criteria analysis and subsequent decisions. It is not a product of the MEC HA.
114	CHAP 5	47	1035	The broad statement that all MRSs scoring within a particular level be treated the same is misleading and should be deleted. (n)	The text at the paragraph introducing section 5.1 now reads: “Table 5-1 presents the four MEC HA Hazard Levels. The Hazard Levels, not the total score, should be considered the final MEC HA result. As noted elsewhere in the document, the scores have meaning only with respect to one another. The score ranges for the Hazard Levels were based on sensitivity runs that are documented in Appendix D.”
115	CHAP 5	47	1042	Recommend adding clarification that the referenced “obvious hazards” require an emergency response conducted according to RCRA (or state) emergency response parameters, not munitions response criteria. Clarity of response actions.(af)	The text discusses the fact that under certain site conditions, an emergency response may be needed, and that under such conditions applying the MEC HA would not be necessary.
116	CHAP 5	48	1043	Add “In cases” to the beginning of the sentence starting with “Where.” Completes the sentence.(af)	Accept changes to text.
117	CHAP 5	48	1059, 1060	Example in previous comment (Table 4-19) contradicts this since a surface response seems to lower it to a HL 3. (a)	See response to comment 112. There is no contradiction.

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118	CHAP 5	48	1062, 1063, 1064	Example above (Table 4-19) becomes critical if this is the case. In Case 1 after a surface cleanup no additional response is required for current use. In Case 2 would require a response even though the actual risk is actually close to the after response on Case 1. (a)	See response to comment #112. The score for the reviewer's Case 2 was incorrectly calculated.
119	CHAP 5	48-49	Hazard level 3 and 4	This guidance appears to be setting cleanup standards with out proper promulgation by drawing the conclusions as "safe for current land use" and "compatible with current land use." Recommend these sentences be deleted.(af)	The term "safe" will be deleted. As discussed in the response to comment #113, the TWG will further refine the descriptions of the Hazard Levels.
120	CHAP 5	49	1093	[S] Change to, "The known presence of MEC at an MRS means that a potential explosive hazard may exist. This means that MEC may still pose a hazard in MRSs in Hazard Level 4 ." It is interesting to note that in the specific case of Munitions Debris, the FUDS program will, in most cases, initiate an RI on an MRS with only munitions debris whereas the MEC HA would likely score a Hazard Level 4 and result in no action. This discrepancy should be discussed. (a)	1. Comment noted. No change required since may and potential convey the same message. 2. The execution of the FUDS program is beyond the scope of the MEC HA. 3. Hazard Level Four should not be given a blanket consideration that no action is required. It may be that a site is scored in Hazard Level 4 due to the presence of LUCs, which are a form of response action.
121	CHAP 5	49	1086	[S] Change to, "• Either a munitions response to MEC was performed or the type of munitions activity and subsequent (a)	Comment noted. See response to General Comment # 5. No change required.

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122	CHAP 5		1096–1104	<p>[C] Recommend moving this text box to first use of response (removal or remedial).</p> <p>Distinctions Between Removal and Remedial Actions</p> <p>“Removals are distinct from remedial actions in that they may mitigate or stabilize the threat rather than comprehensively address all threats at . . .” (a)</p>	Comment noted. Text box is appropriate where it is located in the text. The text here discusses removal and remedial actions.
123	CHAP 5	50	Call out box Treatment Under CERCLA	The first sentence is confusing and should be revised. (n)	Text revised for clarity.
124	CHAP 5	50	1126–1134	[C] CERCLA is not a direct fit for munitions-related issues, other than MC. This discussion should clarify that point. (a)	The text in section 5.2.2. describes the CERCLA Remedial Process. It is of note that DoD and EPA issued the UXO Management Principles in 2000 that states a strong preference on the use of the CERCLA process for military munitions sites.
125	CHAP 5	52–55	Table 5-3. Heading entitled “Description from EPA Guidance	<p>EPA guidance is expressly not binding. The descriptions may or may not be consistent with statutory or promulgated text.</p> <p>Place a footnote at the end of the heading as follows: “According to EPA, EPA guidance is not binding; see the National Contingency Plan for promulgated descriptions of the CERCLA</p>	<p>1. The language is direct from guidance as referenced.</p> <p>2. The requested footnote is not required since the referenced guidance contains disclaimer.</p>

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			”	“Nine Criteria.”(af)	
126	CHAP 5	53, 54	Table 5-3	Although MEC-HA provides data (filler type, MEC classification) that could be useful in evaluating the implement ability and short-term effectiveness criterion for the CERCLA removal and remedial processes, MEC-HA’s preference for removal actions appears to ignore risks to workers and the local community during a proposed response action at a site. In reality, LUCs (alone or in combination) will often provide more safety for site workers than attempting to remove highly sensitive, high explosives. (af)	The MEC HA does not make remedial decisions. It can be used to provide input to those decisions, and to the CERCLA removal and remedial criteria. Short-term effectiveness, which is one of the CERCLA remedial evaluation criteria, does take into account worker safety. Chapter Five describes how information from the MEC HA can be used in the short-term effectiveness evaluations, as well as evaluation under the other CERCLA evaluation criteria.
127	CHAP 5	54	Table 5-3	The text incorrectly identifies ‘Distance between additional receptors’ and ‘Site Accessibility’ as input factors that can help evaluate short-term effectiveness. Short-term effectiveness (or risks to site workers and time needed to complete a response action) only depend on the MEC/site characteristics. Higher the explosive risk posed by MEC, lower is the short-term effectiveness of conducting a response action. In other words, short-term risks to workers (or community) are increased, not lowered, by recommending the removal of all explosives at all sites as MEC-HA appears to do.(af)	Evaluation of the CERCLA remedial criteria is to recognize and take into account both the benefits and the limitations of candidate remedial action alternatives. In a situation where there is a high explosive risk as described in the comment, several aspects can be considered to mitigate those risks. As part of this process, the steps include identification of potential short term effects, and ways to mitigate adverse effects. This is a fundamental aspect of the FS process. As noted in the response to previous comments, the MEC HA is not the decision step.
128	Glossary	57	1145	This section should have footnotes like the body of the document. Endnotes are harder for the reader to use. (n)	Comment noted. No change required.

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129	Glossary	57	1147–1150	The description of the sources for the many definitions is not entirely clear; one or more descriptions may be inconsistent with statutory or promulgated definitions Add at the end of this text, at line 50, the following: “To the extent if any that any definition conflicts in any way with a statutory or promulgated definition, the statutory or promulgated definition controls.”(af)	Editorial. Requested sentence added along with a statement that definitions reflect what is current at the time of publication.
130	Glossary	58	1216	SUBSTANTIVE - Change to “ Department of Defense Explosives Safety Board (DDESB) . The Department of Defense organization that’s Chairman serves as the principal corporate manager and overseer of explosives safety and is charged with maintaining effective DoD explosives safety management (ESM) and annually reporting on the DoD ESM posture. ⁷ ” RATIONALE: This description incorporates citations from DoD Directive 6055.9E which superseded the directive dated July 29, 1996. (D)	Text change accepted.
131	Sources	67	1564	SUBSTANTIVE - Change reference 7 to “Department of Defense Directive 6055.9E. Explosives Safety Management and the DoD Explosives Safety Board, August 19, 2005. RATIONALE: This DoD issuance superseded the July 29, 1996 version of the directive. (D)	Text change accepted.