12/21/2004

Executive Summary

Hazard Assessment for Munitions and Explosives of Concern
Workgroup Meeting

December 16-17, 2004

The Technical Work Group for Hazard Assessment met on December 16-17, 2004 in Salt Lake City Utah. The following action items, consensus items and schedule were agreed upon at that meeting.

ACTION ITEMS:

- *Kevin*: Will incorporate his changes into the minutes from the November meeting in redline strikeout version to be passed along to Versar.
- *Versar Staff*: To create a list of items that are to be included in the guidance as footnotes.
- *Versar Staff*: To create a summary-level matrix of items from the Outreach Plan that can be periodically updated. This matrix should include the target audience, venues, date and status and will be updated as items are completed or planned or changed.
- *All Group Members*: To brief their steering committee members and determine potential dates of availability for a meeting in March (dates to Versar by week of 1/3/05).
- *Clem Rastatter:* Will prepare an abstract and send it to Vic for possible inclusion on the JSEM Agenda.
- *Versar Staff*: Include on agenda for January meeting a discussion of any remaining questions about input factor definitions
    - *All Group Members*: come to the next meeting with, or send in advance, questions about input factor definitions and terms.
- *Kevin:* Will set up ad hoc group meeting to review MEC HA in March as he has previously discussed with Roger Young.
- *Kevin*: Will contact Camp Buckner and Tobyhanna to gauge their applicability and interest in participating in the pilot.
- *Kevin Oates:* Will call Bill Veith and Doug Murray to get their input on the pilot test participants and options, by the next meeting.
- *Dick*: Will call Fort Ord and explore whether they are interested in participating in the pilot, by next meeting
- *Versar*: Will perform a dry run with data from 5-10 MRSs from Adak with various land uses.
- *Versar*: An updated annotated outline will be sent out for the TWG HA to review and comment on. *Work group members* should begin sending their comments by email even before the next meeting so we can be prepared to discuss and address any concerns at that time.

CONSENSUS ITEMS:

- We will put together/participate in three meetings in the Spring:
    - Executive Steering Committee to meet in March
    - Ad Hoc Group meeting in March
    - Framework will be sent to ASTSWMO work groups by March 11 to be forwarded to the Board for their meeting April 20.
- The Outreach Plan will be finalized and the summary matrix will be developed (see action items) to be a living document.
- In terms of Duration of Use:
    - Change the name of the factor to "Total Exposure Hours"
    - Issue 1: What types of land use activities should be included in duration of use? The group agreed option 1 of issue 1, in the duration of use paper. The MEC HA will focus on outdoor activities that lead to exposure. The write-up will be linked to traditional land use descriptions and will show that the same activities (e.g. construction) may show up under a variety of land uses

  - Issue 2: How should duration of use be addressed in the MEC HA? Agreed to a modification of option 1. We will develop a pick list of outdoor activities that may cause exposure (see issue 1 above), with suggested durations. Project teams will be encouraged to use project specific durations wherever they are available. The suggested durations are available if there is no better project specific information.
- Remove the input factor "Intensity of Activity," as it duplicates other factors (e.g. places where people congregate, and intrusive depth). Make sure the explanation of Minimum MEC Depth/Maximum Intrusive Depth factor is clear that this includes all activities that break ground.
- The proximity factors related to Ecological and Cultural Resources and Critical Infrastructure will be removed as separate factors. They are to some degree included in "places where people congregate." However, when the site is scored, there will be three questions that must be addressed with a yes or no answer – Is there a presence of: a significant cultural resource? A significant ecological resource? Or critical Infrastructure? A yes answer to any of these questions will include the notion that protection of these resources must be addressed in the nine criteria analysis and the hazard management decision-making. Any scoring of a site with one of these factors present will always include the notation that it scored XXX with significant cultural resources present.
- The human proximity input factor will use the categories: Within Hazardous Fragmentation Distance, and Outside Hazardous Fragmentation Distance. It is unnecessary and confusing to also include within the MRS, since that will always be inside or outside an HFD.
- The group agreed that the subsurface designation should be removed and the categories changed to simply "small" and "large" in the MEC Size input factor.
- Inert will be removed as a category in the Filler Type factor, however an explanation will be included that says if there is sufficient evidence from the investigation to know that only inert materials are present at a site, then no further action is required and the site need not be ranked.
- There will be four output categories as described below:
  - Most Hazardous: Sites which pose an immediate threat if not treated.
  - Very Hazardous: Sites which pose a threat under current land use conditions.
  - Hazardous: Sites which pose a threat under future land use conditions.
  - Less Hazardous: Sites which are suitable for their current or future land use.
- Pilot Test: We will move ahead with a project team based pilot test in the (by late April), but preferably with more than one project team, with multiple sites. Requirements for participation include:
  - Project team has multiple sites
  - Team has RI-level data (could be EE/CA, the quality of the data is the concern)
  - The team is interested in participating
  - The team is functional (not dysfunctional)
  - At least one of the participating teams should have EPA involvement
  - Team members should be prepared to brainstorm remedy options to compare options, or already have some remedy options in mind.
  - The whole team, including the regulators will participate in the ranking.
  - Sites should involve multiple re-uses.

SCHEDULE:

- January 11-12, 2005: Work Group Meeting. Agenda Items to include:
  - Input Factor definitions—any revisions or concerns
  - Pilot Test
  - Munitions Pick List
  - Annotated Outline of the Framework
  - Upcoming events (focus groups, etc).
- February 24, 2005—Focus Group Meeting in Denver, Colorado.
- February 28, 2005—Work Group gets revised, draft framework document for review
- March 2005—Meeting of MEC HA Executive Steering Committee

- March 11, 2005—Detailed Framework provided to ASTSWMO for distribution to working groups and then their Board.
- April 20, 2005—ASTSWMO Board meeting.

Hazard Assessment for Munitions and Explosives of Concern
Workgroup Meeting
Salt Lake City, Utah
December 16-17, 2004

ATTENDEES:

Dwight Hempel, Bureau of Land Management
Doug Maddox, EPA
Kevin Oates, EPA
Syed Rizvi, TASWER
Jennifer Roberts, State of Alaska
Dick Wright, Mitretek
Vic Weiszek, DoD

Versar, Inc.
- Laura Wrench
- Clem Rastatter
- Norrell Lantzer
- Holly Riester

INTRODUCTION AND OPENING REMARKS

Dwight Hempel welcomed the group to the Bureau of Land Management offices in Salt Lake City. Kevin Oates welcomed Syed Rizvi to the work group and asked everyone to introduce themselves.

Minutes From Previous Meeting

The group started with a discussion of the minutes from the previous meeting (held November 4-5, in Washington, D.C. There were some suggestions about adding in more background from the meeting materials, as well as copies of the slides that had been presented, as the discussions at the meeting had been based on the presentations.

Kevin said that he would make changes to the minutes in redline/strikeout and circulate them again for the work group. The group also asked for a summary of items that were discussed for inclusion as footnotes in the framework guidance.

ACTION ITEM: Kevin Oates to revise the minutes of the November meeting and circulate them to the group.

ACTION ITEM: Versar Staff to create a list of potential items to be included as footnotes in the framework guidance.

Someone asked the group what the role of the Executive Steering Committee was, and whether those people knew who they were and what their role was. Kevin responded that the people on the Executive Steering Committee were those who had received the initial invitation letters to participate in the project and choose representatives on the work group. TWG HA members are to be briefing their steering committee members as the project moves along so that they understand the progress being made and the future plans.

The group discussed the role of the steering committee and expressed a desire to have those people get together for a briefing by the TWG HA, possibly in the March time frame.

Kevin gave a report on his briefing at the Huntsville Stand-Down. It went well and was well received. There were no negative comments on the progress. There was also a presentation about some things that the Navy is working on that fit very well with what the TWG HA group is doing. It is important to keep doing these kinds of briefings and keep building the momentum for the project.

OLD BUSINESS

Outreach Plan:

The Outreach Plan has been revised to reflect various changes that arose as a result of decisions made at previous meetings. The work group discussed those changes as well as any other suggested changes they might have.

Jennifer Roberts explained that three ASTSWMO focus groups are going to be meeting in the Spring to make recommendations to the board for their April 20th meeting. This would be very good outreach opportunity for the MECHA. The group would need to get the framework to those focus groups so that they could make recommendations to the board and so that the board could consider endorsing it for public comment at their meeting. These focus groups would be looking at the nuts and bolts, the technical aspects, so we would need to get it to them no later than Mid-March, preferably earlier.

Kevin mentioned that one way of briefing some people within DoD is a one-day meeting held in conjunction with the EPA/DoD Ad Hoc group that he and Roger Young chair. He has discussed the potential for such a meeting with Roger, to be held in the February/March timeframe.

The group agreed that this was a valuable opportunity and also discussed additional meetings and briefings we would need to schedule and prepare for. Three meetings were discussed:

- Executive Steering Committee—March 2005
- An Ad Hoc group—as discussed by Kevin with Roger Young
- ASTSWMO groups—technical focus groups and Board

CONSENSUS: The group agreed to scheduling and preparing for the three meetings as proposed above.

ACTION ITEM: TWG HA members will brief their Executive Steering Committee members and find dates in March that they are available for a briefing and meeting with the TWG HA. These dates need to be in to Versar staff by the week of January 3, 2005.

In order to be able to meet the ASTSWMO deadline, the framework paper will need to be through the review process and ready to send out to the groups by March 11th.

Vic Weiszek asked whether we were on the agenda for JSEM. Clem Rastatter had been unable to get an abstract in before the deadline. Vic said that he might be able to help, and to send him an abstract.

ACTION ITEM: Clem will prepare an abstract and send it to Vic for possible inclusion on the JSEM Agenda.

Clem presented information to the group about plans for a focus group meeting in February 2005. Versar received a list of suggested participants from Aimée Houghton and Lenny Siegel of the

Center for Public Environmental Oversight. Of those people, eight were contacted, seven of whom are available and interested in participating. The focus group will most likely meet in Denver, on February 24, 2005. They will be presented with information about the framework and how it works, and then will be asked to give feedback on their impressions, reaction, and suggestions.

Aimée Houghton had also suggested having a briefing for the Lowry RAB the evening before the focus group meeting to get their reaction. The group discussed this suggestion, but felt that it was premature to have a briefing of a RAB, particularly before the focus group had given their input, and before adjustments had been made to the framework due to those comments and also from pilot testing.

The TWG HA felt that those that had agreed to participate in the focus group represented a good mix of backgrounds and experience and would provide valuable feedback on the MEC HA. They discussed how many TWG HA observers should participate and concluded that it should be no more than two. Both Vic and Dwight volunteered (with Dick as a back-up for Vic). In addition to the TWG HA observers, Kevin, Laura and a facilitator will be present.

Kevin noted that the group had never finalized the Outreach Plan and he requested that they do it at this time. The group pointed out that there will continue to be changes and that it should be considered a dynamic document. A suggestion was made to go ahead and finalize the Outreach Plan, but then also create a matrix that would be updated as changes were made, and make it a living document. The matrix would include the target audiences, venues, and planned dates, as well as a field to enter and update the status of individual items.

CONSENSUS: The group reached consensus on finalizing the outreach plan and adding the summary matrix as described above.

ACTION ITEM: Versar Staff will create a summary-level matrix of items from the Outreach Plan that can be periodically updated. This matrix should include the target audience, venues, date and status and will be updated as items are completed or planned or changed.

FFRRO Website:

Doug Maddox reported that the MEC HA section of the FFRRO website has been delayed by technical issues, but will be up and running in the near future. It will be linked to from the main FFRRO page.

A fact sheet has been drafted as an introduction to the public website on the FFRRO website. TWG HA members are asked to review this fact sheet and get comments back to Versar staff.

OUTPUT CATEGORY DEVELOPMENT

Clem lead the work group in a ranking exercise to help gauge their opinions and priorities for the hazard assessment. TWG HA members were given ten scenarios and asked to rank them from 1 to 10—most hazardous to least hazardous (see attachment). After taking some time to review the scenarios and make their choices, the group reported out on their rankings.

The purpose of the exercise was to:

- Generate discussion of how the TWG HA weighted (valued) different input factors.
- Compare the weighting to the current scores being used by the technical staff.
- Assess the differences and begin a dialogue concerning the appropriate weights for different variables.

The outcome of the comparative ranking was significant variation in which scenarios ranked at the top. There was not as much variation in the lower ranked scenarios. Several participants explained that the untreated sites immediately rose to the top, and then they sorted the treated and untreated separately.

	Rank	Scenario ranking based on December Scoring	Scenario ranking per work group member						
			Kevin	Doug	Vic	Dick	Dwight	Syed	Jennifer
Most Hazardous	**1**	**2 (815)**	4	7	2	3	4	2	7
↓	**2**	**3 (805)**	1	1	7	4	1	1	3
↓	**3**	**6 (755)**	7	4	3	1	3	4	1/4
↓	**4**	**1 (750)**	3	8	1	7	7	7	4/1
↓	**5**	**4 (730)**	8	3	4	6	2	9	6
↓	**6**	**7 (700)**	6	2	8	8	8	8	2
↓	**7**	**5 (600)**	10	6	5	2	6	3	8
↓	**8**	**8 (510)**	2	10	9	10	5	10	10
↓	**9**	**9 (450)**	5	5	6	5	10	5	5
Least Hazardous	**10**	**10 (365)**	9	9	10	9	9	6	9

The discussion following the ranking focused on areas where there were differences. For the highest ranked sites:

- If #3 ranked highest hazard, reasons for the ranking:
  - OB area
  - Intrusive depth overlaps
  - Full accessibility

- If #4 ranked highest hazard, reasons for the ranking:

  - Sensitivity
  - Moderate accessibility
  - The interplay between the different elements is what was important

- If #7 ranked highest hazard, reasons for the ranking:
  - Didn't realize that it was OB/OD buffer, they thought it was just OB/OD and so ranked it based on that hazard.
  - Other issues, particularly accessibility were key to their ranking.

- If #2 ranked highest hazard, reasons for the ranking:
  - One person didn't notice that it was DMM, assumed UXO
  - Full accessibility
  - HE
  - MEC on surface
  - Accessibility and traffic overrode other factors.

At the lower level, there was a lot of similarity and overlap.

- If #10 ranked lowest hazard, reasons for the ranking:
  - Limited access
  - Short duration
  - Subsurface
  - No overlap
  - QA function test range

- If #9 ranked lowest hazard, reasons for the ranking:
  - DMM
  - Subsurface clearance below intrusion depth
  - Unfuzed
  - Large items
  - Remedial action has taken place

- If #5 ranked at or near lowest hazard, reasons for the ranking:
  - Subsurface clearance to or below intrusion depth
  - Incendiary, not HE
  - Very difficult to decide between #5 and #10, but swayed by the HE versus incendiary

Results for site #2 were scattered throughout. Some comments about the placement were as follows:
Ranked high because:

- Full accessibility
- Site traffic

Ranked low because:

- DMM, unarmed category 1
- Maneuver area
- Would have to be picked up and something done to it (pull pin)

Results for site #3 were also scattered. Some comments on the placement include:
Ranked high because:

- Armed Sensitive
- Untreated
- Accessibility
- Activity breaks ground

Ranked in the middle because:

- Subsurface—distinction from surface items.

Ranked at the bottom:

- Person mistakenly placed it there.

Laura explained the ranking based on the scoring of the framework (included in summary table above). Only one of the work group participants scored scenario 6 in the top 3. In the scored ranking number 6 came up higher, probably because it is a target area. Even with clearance, the hazard score remains high. In addition, the duration of activity is long, also contributing to a high hazard ranking. On the other hand it is not an armed-sensitive fuze.

This exercise helps point out differences in priorities and the current limitations in the sensitivity of the scoring. The results may indicate that some items need to be weighted differently. We need to determine to what extent the factors that do not change with treatment are driving the scoring to be so high.

The group discussed treating some types of situations as "special sites" so that they just automatically jump out as having a high hazard level. For example, if you have 40 mm on the surface, regardless of the other factors at the site, there would be a very high hazard. These "special cases" would be first response sites.

We haven't looked at the back-end with bin sorting, the specific score may be irrelevant, and we should keep an eye on linking up the scores with the bins. Laura explained that she has initially been working on five categories of hazard level for the bins. The important thing is to focus on helping teams pick a remedy and be able to compare different scenarios of clean up and/or land use.

INPUT FACTORS

Options for Duration of Use

Clem explained to the group that staff had spent some time researching available information for duration of use for a variety of different land uses and related activities. An issue paper was presented as well as raw data tables that summarized information found on duration of activities.

Activities to be included in Duration of Use

The first issue discussed was what types of land use activities should be included in the Duration of Use input factor. Two options were presented in the issue paper:

1. Include a wide range of indoor and outdoor activities, of the traditional type used in exposure assessment.
2. Focus duration of use on outdoor activities that are most likely to bring a receptor into contact with MEC.

The group felt that it was important to focus more on outdoor activities, rather than all the indoor activities, since the concern is for activities that can expose a receptor to MEC and secondary receptors (those who may be nearby an explosion) are addressed in the severity factors.

The group discussed ways that tribal activities should be characterized for duration of use. Duration of tribal activities can fall in a wide range of durations, and can be difficult to pinpoint. The participation in tribal ceremonies could range from 50 people to 1500 people participating in ceremonies that take place anywhere from once a year to seasonally or monthly. Some large gatherings could last a few days, where others could last only a few hours. It will be extremely site-specific and will need to be determined on a case-by-case basis by the project team.

Land use determines the duration of use, accessibility and intensity of activity, but the question is: what is it about the use (i.e. residential) that contributes to the hazard? This input factor should be presented in such a way as to explain the relationship between use and hazard level. For example, residential use gets a particular score because of these particular characteristics.

It was suggested that maybe changing the name of the category would help clarify what its relationship is in the hazard assessment. Perhaps it could be called "Land Use Weighting" and be grouped by the land use groupings. It could still be a relative ranking based on activities, but the title would be less obtuse.

One problem with that approach is that the nature of the hazard is so different from a traditional chemical risk assessment and using the traditional land use categories might have different implications for those who are used to the chemical risk assessment approach. It is not the land use categories that are relevant, it is the activities that bring people into contact with MEC. Everything centers around the quality of the exposure.

All of the activities that we would need to consider fall into the major land use categories; however, using the traditional land use categories has implications that may not be relevant to the hazard assessment. For example, residential use has the immediate connotation of being the most intense or needing the most protection, however in a munitions situation, it is the outdoor activities that are the most likely to bring people into contact with the hazard. That brings us back to type of activity, rather than land use categories.

The group had more discussion about what to call this category, in particular whether the title should include a reference to land use. The group felt that the land use relationship should be outlined in the explanation, but not necessarily in the title.

CONSENSUS: The group agreed to focus the activities list on outdoor activities and include a link to land use in the guidance.

Options for Dealing with Duration of Use in the MEC HA

Three options for dealing with the duration of use were outlined in the option paper. Those three options are (see the option paper for more detailed descriptions):

1. Develop a pick list of activities (long or short) with identified duration of activities. This will be a default number to use in the absence of site-specific numbers, which are encouraged.
2. Do not attempt to identify duration of activities. In guidance identify lists of activities (as an assistance to project teams) that they may want to consider, but ask the project teams to come up with site-specific estimates of durations of use.
3. Do not ask for durations of use of specific activities. Instead, adopt a two to three part calculation to establish a weighted estimate of people hours.

A concern was raised that option number three was too "black box" and not transparent enough for project teams to be able to explain critical factors to others. It is also important for them to understand how the final result is arrived at, which may be difficult with this option.

The group expressed a preference for something between option one and option two, but perhaps with a stronger urging for site-specificity. The data provided to project teams should be used as a back up to site-specific data, rather than as a default. They should always use site-specific information first. An exhaustive list is not required, rather it should just be a sampling of potential activities—a starting point for teams, but they are strongly urged to use their own information.

The guidance needs to be very clear in the assumptions behind the duration of use, so that the project team can make adjustments if the assumptions in the guidance don't match their specific situation.

CONSENSUS: The group came to consensus on using the modified version of option one to incorporate duration of use into the framework. We will also use a limited list of durations of use for outdoor activities with a strong push for them to use site-specific information.

CONSENSUS: The group discussed what this input factor should be called and agreed on Total Exposure Hours. It will consist of people time duration of activity per year.

Intensity of Activity

Laura asked the work group to discuss whether there is enough difference between Intensity of Activity and Minimum Munitions Depth/Maximum Intrusive Depth to keep both in the framework, or whether they provide overlapping information.

The group discussed the issue and felt that the information in the category of Intensity of Activity was adequately covered under the Intrusive Depth factor and that having the two factors would double count the same information.

Several questions were raised in this discussion:

- Would vehicular traffic, or heavy-duty vehicular traffic, be enough to set of an MEC item?
- Is breaking ground versus foot traffic expressed explicitly enough in Intensity of activity to make people think about it?

The group felt that the Intensity of Activity input factor should be deleted and an expanded explanation included in the Intrusive Depth factor, including an explanation that the intrusive depth includes incidental intrusion as well as intentional or planned intrusion.

CONSENSUS: The group came to consensus on removing the Intensity of Activity factor and increasing the explanation for the Intrusive Depth factor.

Critical Infrastructure, Cultural Resources, and Ecological Resources

The group discussed several options for dealing with these input factors as outlined below:

Option 1: Keep them all in the model

a. Score very low, so as not to have undue influence on the outcome.
b. Not score if there is a score for proximity to places where people congregate (so as not to double count)
c. Not score, but allow project teams to elevate the hazard category if they feel it is necessary due to any of these factors.

Option 2: Take out of model scoring completely.
But still keep explanations in the framework, such as "protection of these resources is a valuable goal to be addressed as a part of the hazard management process."

Several issues were raised in this discussion:

- We would never risk people's health (i.e. the clean-up team) to clean up a site if there were no people at risk—people at risk are covered in the other input factors.
- In some situations you risk further damage to a culturally or ecologically sensitive site in the clean-up process than might be the case if you leave it as is.
- Option 1.c could be difficult from the Tribal point of view as the feeling is that EPA is driven by the score and so the site won't get elevated purely on the resources issue unless it is somehow accounted for in the score, or if it is a totally different approach from the Hazard Ranking System.
- The question is how to incorporate these elements into the MEC HA in a different way than used in other ranking systems. The purpose of the MEC HA is different from the Hazard Ranking System and the MRSPP (prioritization).
- Some sites are used for tribal activities (ceremonies etc) but the tribes do not want to tell people that they are using the sites, or even where they are.

Someone asked if it works to bring in cultural/ecological issues in the 9 Criteria? Will teams actually do it? The response was that project teams do it all the time, for these issues and others.

Someone suggested keeping these factors explicitly in the model but as an add-on to the scoring category. As part of the scoring process, the team would be asked "Are Ecological Resources present? Are Cultural Resources present? Is Critical Infrastructure present?" With a Yes/No check box for each question. If any question is answered "Yes", then the MEC HA guidance will say it must be addressed in the Hazard Management Decision Process. The final hazard category would then be appended to include the status of the relevant item. For example, an item could score as a category 3, with cultural resources, or a category 2, with ecological resources (whatever the categories end up being).

With this approach, it would not be a part of the numbered, weighted score, but would be a part of the hazard assessment output description.

CONSENSUS: The group agreed to include Cultural Resources, Ecological Resources and Critical Infrastructure as add-ons to the final output category through the yes/no questions and added to the final category description.

Distance of Additional Potential Receptors to Explosive Hazard

The specific values for evaluating the hazard severity associated with the "Distance of Additional Potential Receptors to Explosive Hazard" were raised. At the time of the meeting this input factor included three values:

- Within MRS;
- Within HFD, outside of MRS Boundary; and
- Outside of HFD

The discussion centered around whether to include "within the MRS" as a separate category or whether the MRS is inside the Hazardous Fragmentation Distance (HFD) and therefore the separate designation is not needed.

The group concluded that the MRS would always be within one or more HFDs so there should only be 2 values—one for Within the HFD and one for Outside the HFD.

CONSENSUS: The group came to consensus on using only the two categories, "Within HFD" and "Outside HFD" for the scoring for the Proximity input factor.

Minimum MEC Depth/Maximum Intrusive Depth
In the Intrusive Depth input factor, the question was raised as to whether there is a difference between "MEC subsurface, intrusive depth overlaps, active construction support" and the category "MEC subsurface, intrusive depth overlaps"—does the active construction support make a difference in the hazard level? Likewise, is there a difference between "MEC subsurface, intrusive depth overlaps, active construction support" and "MEC subsurface, intrusive depth does not overlap"?

The group discussed the role of construction support and whether it should be part of the scoring categories. They were concerned that construction support is really more a part of the response alternatives, rather than a scoring category. They also felt that there are multiple types of construction support with different definitions and it is important to be clear that we are not talking about an institutional control in lieu of amore active remedy, but rather real anomaly avoidance.

An example of a situation where construction/safety support could be very important is if you have an area that has been surface cleared to be used as grazing land, but then later a fence needs to be installed and line of post-holes dug for the fencing posts. The remedy was consistent with the land use, but anomaly avoidance is still necessary. By using construction support for the fencing activity you would avoid the need for further, or full, clearance of the whole MRS. There are certain particular areas where construction support is appropriate and useful.

Migration Potential
Laura reported that the Migration Potential factor has been changed per the November meeting.

Fuzing Sensitivity
Laura reported that the Fuzing Sensitivity factor has been changed per the November meeting.

MEC Size
At the time of the December meeting, MEC Size included three categories:

- Small surface MEC
- Small subsurface MEC
- Large items

Laura asked the group to consider whether the subsurface designation within the MEC Size input factor should continue to be included in the categories.

CONSENSUS: The group agreed that the subsurface designation should be removed and the categories changed to simply "small" and "large".

Type of Filler
At the November meeting, the work group had discussed the issue of inert fillers and whether they should be included in the input factor scoring. Laura asked the work group to discuss the issue further to consider how it should be incorporated into the scoring.

The group discussed the issue of inert and whether and how it should be included in the framework. It was suggested that if a site has inert materials it should be considered as an off-ramp for further action, but project teams still need the weight of evidence to end the process in CERCLA.

If a team has done the investigation and all items are inert, then no further action is needed. It is something that they should pre-screen for in the Hazard Assessment.

CONSENSUS: The group agreed to leave out inert as an input factor category for Type of Filler, but include an explanation in the guidance that if a site only has inert material then no further action is required.

OUTPUT CATEGORIES
Laura presented five potential output categories for the hazard level, as listed below:

- Most Hazardous
- Very Hazardous
- Hazardous
- Somewhat Hazardous
- Less Hazardous

A number of questions were discussed:

- Should we have different categories for treated and untreated sites?
- How does land use fit into the categories?
- How do Land Use Controls fit into the categories?

At the conclusion of a far ranging discussion, the group concluded that it should keep the output structure simple and easy to understand. Output categories should work for both treated and untreated sites, since many site will be in different stages of treatment at different times (e.g. surface response as a quick removal and then subsurface response after the RI/FS).

The group identified four categories as outlined and described below:

- *Most Hazardous* sites are those that pose an immediate threat and need immediate action, most likely Time Critical Removal Action.

- *Very Hazardous* sites are those which pose a threat under current land use conditions.

- *Hazardous* sites are those which pose a threat under future land use conditions.

- *Less Hazardous* sites are those which are suitable for their current or future land use.

Identification of these four output categories will allow the project team to test the weights of scores and make sure that the scoring process puts appropriate scenarios into the right output categories.

CONSENSUS: The group agreed to use four output categories as outlined above.

RESPONSE ACTIONS IN RELATION TO THE FRAMEWORK

Kevin Oates presented the group with a list of potential response actions that he considered need to be addressed in some way in the MEC HA Framework. He asked the group to examine whether they are already addressed in the framework in some way, and if they aren't how they could or should be addressed.

Kevin's list is as follows:

- NOFA
- LUCS:
    - Engineering controls
        - Fences
        - Barriers
        - Signs
        - Guards
    - Enforceable Institutional Controls that define land use and activities
- Educational awareness programs
- Surface clearance
    - Supports land use
    - Stabilizes the site but does not support land use
- Clearance to depth
    - Supports land use
- Construction support (safety)
- Construction support (active)

To start the discussion, Laura explained which items were already addressed in the framework, and how.

- Land Use Controls and Engineering Controls—are addressed in the framework in the site accessibility factor.

  Questions/Issues:
    - A group member asked about what the definition of guards and guarded is that will be used for the MECHA.

      The group discussed using the definition from the MRSPP, however this raised the issue of definitions in general. This issue will be picked up again at the next meeting, in January.

      ACTION ITEM: Work group members are to look closely at the input factors and their categories and bring any questions or concerns about definitions to the next meeting.

- Educational Awareness Programs—involve human behavior, and therefore are outside the scope of the MEC HA framework.

- Institutional Controls—are addressed in the framework in the input factors related to Minimum MEC Depth/Maximum Intrusive Depth, and Total People Hours of activity.

  The intrusive depth category could also be affected by institutional controls—the IC's could affect the potential intrusive depth and whether it falls above or below the depth of munitions.

IC's could also affect total people hours by limiting the types of activities and access to the site.

Questions/Issues:

- A suggestion was made that it would be good to have more explicit explanation of how input factors related to specific response actions; in particular, a color-coded matrix should be created to associate the factors with particular response actions.

- Work group members expressed concern about some of the institutional controls included on the Kevin's list as legitimate controls—particularly Deed notices. The concern was that Deed notices have varying levels of strength and enforceability depending on the state and situation.

  Others responded that we have to assume that if a project team chooses a particular remedy, that it will be successful; we cannot assume failure of a response action.

- Surface Clearance and Clearance to Depth—are covered under the output categories and the Minimum MEC Depth/Maximum Intrusive Depth category.

- Active Construction Support and Safety Support—is a touchy subject and needs to be handled carefully. It is and should be addressed, and left in as it is (in the intrusive depth factor), but with the same scoring as the cleared category, rather than a score indicating a higher hazard.

SCORING AND WEIGHTING

Laura presented a table explaining the current scoring for the framework (see Table 6 from the Description of Weights 4 Schema, below) and explained the color-coded categories. Items in the Blue category are ones that are affected by clearance, items in the Yellow category could possibly be affected by response actions, but generally aren't. Items in the Orange category are affected by land use decisions and institutional controls and items in the Green category are related to the properties of the munitions and are not affected by clearance, land use, or other response actions.

The significance of the color-coding is that we want he scores to be sensitive to changes due to response action alternatives, and alternate future land uses. Therefore, for example, the factors that reflect the inherent hazard of the munitions item are not scored as heavily as one might otherwise think. This is because even after response occurs, the score for filler (for example) will not change dues to the inherent uncertainty of whether everything has been found.

Explosive Hazard Component		Input Factor	Maximum Scores	Weight
Potential Severity of the impact should an MEC item function		Type of Filler	50	5%
		Distance between additional receptors and explosive hazard	50	5%
		Proximity to Critical Infrastructure	0	0%
		Proximity to Cultural Resources	0	0%
		Proximity to Ecological Resources	0	0%
		Category total	100	10%
Likelihood that a receptor		Site Accessibility	60	6%

can interact with an MEC item	(	Duration of Use	170	17%
	Ł	Amount of MEC	220	22%
	Ł	Minimum MEC Depth/ Maximum Intrusive Depth	180	18%
	}	Migration Potential	30	3%
		Category total	660	66%
Likelihood that item will function should receptor interaction occur	(	MEC Category	50	5%
	(	Fuzing Sensitivity	30	3%
	(	MEC Size	40	4%
	(	Intensity of Activity	120	12%
		Category total	240	24%
		Total Score	1000	100%
	(	Green total	170	17%
	}	Yellow Total	80	8%
	Ł	Blue Total	400	40%
	(	Orange Total	350	35%

Questions/Issues:

- Some disagreed with the designation of the yellow categories as factors that don't change after response action or land use changes. Migration potential does have the potential to change if the site is cleared, dues to the fact that clearance below the frost line could eliminate that migration potential. In addition changes in future land use could change both the migration potential, and could change the distance between additional receptors and explosive hazard as well.

- Although the rationale for the low scores due to factors that will not change after cleanup is clear, there was concern expressed that the overall score in the green category is too low.

- Is the relationship weighted correctly between the blue and orange categories? It was weighted as it is currently so as to allow for a change in score with response action. We don't want to weight too heavily the factors that cannot be changed at all, however we also don't want to automatically drive the response to ICs by weighting those factors too heavily.

  The group suggested that since there are now some additional points to be distributed (due to removing two of the input factors) that perhaps they should be taken from the Orange category and placed in the green category. That would change the relationship between blue and orange without overweighing the blue factors.

- The points from the Intensity of Activity input factor that has been removed need to be spread out through the other input factors based on the priorities and suggestions of the work group.

- How do you deal with scoring when you have different responses in different parts of one Munitions Response Site?

  For example, one participant asked, if you have a nature preserve with a road through it, the major portion of the preserve may be surface cleared, since there will be no

subsurface intrusion, but the roadbed would need to be cleared to a deeper depth, how would you account for that?

The answer was that even though the intrusive depths and clearance depths were different, both parts of the site would score the same since they are both cleared to a depth of no overlap between the intrusive depth and munitions depth. This will often be the case with these multi-response sites.

Regardless of the situation above, this needs to be clearly addressed and explained in the guidance. The project team may need to do a multi-tiered response. This may require that a site be subdivided to allow for assessment of the various response alternatives.

- Should there be an element accounting for uncertainty if you get to "no overlap" through clearance?

  The group responded that every instance will have uncertainty, regardless of whether that is due to the uncertainty of clearance or just the uncertainty of the available information. That uncertainty flows and is equalized through the whole framework and does not need to be specifically called out in the individual input factors.

PILOT TEST
The work group discussed the scheduling and planning for a pilot test of the MEC HA framework. They agreed that it should be scheduled for the end of April 2005.

Options for Participants
Two options were described for conducting the pilot test with different types of participation.

Option 1 would involve identifying a specific project team to use the data from their own site to run through the Hazard Assessment. We would ask them to obtain and organize their own data and then have them conduct the assessment.

Option 2 would involve bringing together reviewers, from different project teams or backgrounds. We would provide them with data that we had obtained and organized from another site, and they would run the hazard assessment on that provided data.

The group felt that option 2 would not only require more time, money and effort from the work group, but would also be more difficult and time consuming for the reviewers.

They preferred option 1, but felt that it would be valuable to conduct the pilot test with more than one project team. In addition, each project team should have more than one site that they could analyze for the MEC HA.

Tobyhanna has already volunteered and is very interested in participating in a pilot test of the MEC HA. Fort Ord, Fort McClellan and Camp Buckner were all suggested as possible options. The work group identified several requirements for project teams to participate in the pilot test:

- Must have multiple sites available to run the MEC HA on.
- Must be a willing and functional team
- Must have RI-level data available (whether from an RI or an EE/CA)
- Must have identified, or be prepared to brainstorm, potential remedy options for comparison.

- Must include a full team, and at least one of the chosen project teams must have EPA involvement in the project.
- Must have multiple re-use options for comparison.

It was also suggested that we could use data from a real site, where a response has been completed, to do a before and after comparison of the MEC HA.

Another question about the pilot test is what level of involvement should the TWG HA have in the test. The group did not want to overwhelm the project teams conducting the test, but they do want to have some observers both to see how the process works as well as to be available to answer any questions that may arise from the project team.

Someone suggested that we contact Bill Veith and Doug Murray for their input on potential sites and project teams for the pilot test.

By the next meeting, the following action items are to be completed:

ACTION ITEM: Kevin Oates will contact Camp Buckner and Tobyhanna to gauge their applicability and interest in participating in the pilot.

ACTION ITEM: Kevin Oates will call Bill Veith and Doug Murray to get their input on the pilot test participants and options.

ACTION ITEM: Dick Wright will contact Fort Ord to determine their interest and applicability of participating in the pilot test.

There will be some cost involved for the participating project teams, not only in the time spent on the project, but also potentially the cost of contractor time to organize and prepare their site information for the analysis.

The work group will also need to develop criteria to evaluate the results of the pilot test, as well as select observers. As suggestion was also made that Versar staff should take data from existing sites and do a dry run to make sure that the framework works as it is supposed to and deal with any kinks that may be discovered before the framework is provided to project teams for the pilot test.

ACTION ITEM: Laura will use data from 5-10 sites at Adak, with various land uses, and conduct a dry run of the framework.

ACTION ITEM: An updated annotated outline will be sent out for the TWG HA to review and comment on. Work group members should begin sending their comments by email even before the next meeting so we can be prepared to discuss and address any concerns at that time.

NEXT MEETING
Topics to be discussed at the next meeting include:

- Pilot test details and logistics, including results of calls to potential participants
- Munitions Pick List
- Annotated Outline of the MEC HA
- Any issues or concerns about input factor definitions
- Number of People Hours

The "Number of People Hours" will require significant discussion at the January meeting. In particular, the way the categories break down and the specific outdoor activities to be included on the list will need to be discussed and finalized.

UPCOMING SCHEDULE

- January 11-12, 2005: Work Group Meeting. Agenda Items to include:
  - Input Factor definitions—any revisions or concerns
  - Pilot Test
  - Munitions Pick List
  - Annotated Outline of the Framework
  - Upcoming events (focus groups, etc).
- February 24, 2005—Focus Group Meeting in Denver, Colorado.
- February 28, 2005—Work Group gets revised, draft framework document for review
- March 2005—Meeting of MEC HA Executive Steering Committee
- March 11, 2005—Detailed Framework provided to ASTSWMO for distribution to working groups and then their Board.
- April 20, 2005—ASTSWMO Board meeting. Potential endorsement of the draft framework at this meeting (if earlier schedule is met).

DRAFT
1/3/2005

OPTIONS FOR ADDRESSING DURATION OF USE

Background:

At the last TWG-HA meeting, the group decided that it wished to use the total number of annual person-hours as the metric to replace frequency of entry. Use of this metric requires knowledge of the number of people likely to come on to the site and an estimate of the duration of their activity that may result in exposure to an MEC item in order to multiply people hours times durations of use.

Versar proceeded to examine whether there are existing sources of activity durations that could be identified as default durations for the use of project teams in calculating this number. The goal was to identify credible existing sources. The success of this activity was limited. Sound activity durations were identified for some activities; for a number of other activities, there are no durations available. Table 1, attached, presents the raw numbers gathered from extensive internet and phone research. This issue paper outlines several options for addressing duration of use.

In the course of the investigation into activity durations, a second issue surfaced – what are the appropriate activities that should be considered in this category. While it is easy to envision that the entire time that a person is hiking or camping, there is a potential exposure and therefore that duration of use input is perfectly appropriate, this is less apparent when one considers uses that take place primarily inside a building.

Two issues are addressed in this issue paper:

- What types of land use activities should be included in duration of use?
- How should duration of use be addressed in the MEC HA?

What Types of Land Use Activities Should be Included in Duration of Use?

The MEC HA is trying to measure the likelihood that a receptor will be able to interact with an MEC item. Should the duration of time spent in a building be accounted for in this factor? It could be argued that the risk of exposure would be related to comings and goings of industrial and commercial workers and consumers, as well as other outdoor activities. While the list of activities may be shorter if it is focused on outdoor activities, not indoor activities, default durations are still not easily available.

Options:

1. **Include a wide range of indoor and outdoor activities, of the traditional type used in exposure assessment.**

   In this option, we incorporate the duration of a wide range of indoor and outdoor activities that are traditionally considered in a risk assessment. These activities would include: residential use; industrial use; as well as activities such as

camping, hiking, etc. Table 1 contains a wide variety of activities, some of which should be combined, that could be used.

In this option, for example, the hours for commercial use would include the hours that workers are in a building, not just the hours that workers and customers are going into and out of a building. In this option residential use would, therefore, not be 24 hours, but would be the mean hours per day per person spent in a residence – 16.35 hours according to the EPA Exposure Factors Handbook.

2. **Focus duration of use on outdoor activities that are most likely to bring a receptor into contact with MEC.**

In this option, the activities for which duration of use would be important are those activities that are most likely to bring people into direct and intentional contact with MEC. These will largely be outdoor activities, including the process of going into and out of occupied commercial and industrial buildings. This option does not include the duration of use of the building. Examples of some activities that would be included are outlined below. Numbers in parentheses are the number of hours of duration per day or per week of outdoor activities, as extrapolated from Table 1.

- Agriculture (40.7 hrs./wk)
- Construction (38.1 hrs/wk)
- Natural Resources and mining (43.6 hrs/wk)
- Grounds Maintenance
- Facility maintenance
- Playground (6 hours per day – includes all outdoor activities)
- Day park/day use (5 hrs/day)
- Outdoor entertainment venue
- Wilderness camping
- Campground camping (31 hours per user)
- Fishing (7.8 hours per user, per day)
- Hunting (7.8 hours per user, per day)
- Specialized sporting (6.21 hrs per user/per day)
- Hiking/trail related activities (5.6 hrs per user/per day)
- Residential
  - Child Play (6 hours per day – includes all outdoor activities)
  - Gardening (1.69 hours per day)
- Walking to and from cars on sites where primary use is inside a building

While a higher proportion of default numbers are available for this shorter list of outdoor activities, a number of gaps remain.

How should duration of use be addressed in the MEC HA?

As noted in the introduction, and shown in Table 1, default information on duration of activities is not easily available. Research into this topic suggests that the resource management agencies are generally more concerned with the number of people using the resource than the duration of that use. In addition, EPA's risk assessment process is primarily concerned with exposure assumptions related to the mechanisms that cause a person to inhale or ingest a chemical. While there are some activity durations identified in EPA guidance, this is very limited.

Options:

1. **Develop a pick list of activities (long or short) with identified duration of activities. This will be a default number to use in the absence of site-specific numbers, which are encouraged.**

   In this approach we develop a list of durations by activity that can be used as a default, but encourage the use of site-specific numbers. Where direct information that will support the number is not available, we interpolate existing information (see Table 1) to make up a number that may be useful as a default. It should be noted, however, that the data that has been gathered does not provide specific information on a number of activities. For example, although there are decent statistics on the average hours per week that industrial workers work, there is no information on the amount of time they spend going into and out of the workplace. While there is some information on the duration of building use (developed for the Energy Information Administration), there is no information on the duration of time an average customer is in a commercial building, much less the average time a retail customer is going into and out of a building.

2. **Do not attempt to identify duration of activities. In guidance identify lists of activities (as an assistance to project teams) that they may want to consider, but ask the project teams to come up with site-specific estimates of durations of use.**

   In this approach we come up with a pick list of activities, but do not attempt to attribute any durations. Guidance may provide detail on factors to consider in developing site-specific information such as the groupings of types of activities together, or assumptions for appropriate durations.

3. **Do not ask for durations of use of specific activities. Instead, adopt a two to three part calculation to establish a weighted estimate of people hours.**

   In this option, two scores are established and combined. First, the average number of people visiting a site is given a score that reflects the number of people, and a separate score that reflects the difference in duration of the activity. For example:

I. Number of people	Score	Times	II. Activity	Score
a. 1-25	5		a. Recreational/ formal campground	10
b. 26-50	25		b. Recreational: Public Assembly	20
c. 51-100	55		c. Residential	50

In this example, the score for category b number of people will be multiplied by the score for category a, activity (Ib x IIa=weighted duration) to obtain a score of 250. (These numbers are currently not reflective of any judgment, but are instead meant to provide an example.) Depending on the results of various sensitivity analyses, it may be appropriate to add a third step of calculating a weighted total score that reflects a surrogate for this category. For example, total scores for weighted durations are compared relative to each other and assigned a score that is used in the calculation of the MEC HA score.