

**Impact Area Review Team  
Bourne Best Western  
June 27, 2006  
6:00 – 9:00 p.m.**

**Meeting Minutes**

<b><u>Members:</u></b>	<b><u>Organization:</u></b>	<b><u>Attendees:</u></b>	<b><u>Organization:</u></b>
Ben Gregson	IAGWSP	Kris Curley	IAGWSP
Mike Minior	AFCEE/MMR	John McDonagh	IAGWSP
Lynne Jennings	US EPA	Lori Boghdan	IAGWSP
Bill Walsh-Rogalski	US EPA	Pam Richardson	IAGWSP
Ron Fein	US EPA	Bill Sullivan	E&RC
Len Pinaud	MassDEP	Jane Dolan	US EPA
Ellie Grillo	MassDEP	Mark Panni	MassDEP
Tom Cambareri	IART/CCC	Mark Begley	EMC
Bob Mullennix	IART/Bourne	Deborah Hyland	Citizen
<b><u>Facilitator:</u></b>	<b><u>Organization:</u></b>	Scott Michaud	Cape Cod Commission
Angela Bonarrigo	US EPA	Amanda Lehmert	Cape Cod Times
(sitting in for Jim Murphy)		Diane Short	Ellis/DSA
		Jane Moran	e <sup>2</sup> M

**Agenda Item #1. Welcome, Agenda Review**

Ms. Bonarrigo convened the meeting at 6:03 p.m., the Impact Area Review Team (IART) members introduced themselves, and Ms. Bonarrigo reviewed the agenda.

**Agenda Item #2. Late-Breaking News, Responses to Action Items, Approval of 5/30/06 IART Meeting Minutes**

Mr. Gregson confirmed that there was no late-breaking news to report. He then asked if there were any questions or comments on the responses to action items from the May 30, 2006 IART meeting.

Mr. Walsh-Rogalski noted that as a response to his action item request at the May 30, 2006 IART meeting, he'd expected a presentation on lead azide sampling at the J-1 Range. Mr. Gregson replied that there isn't a lot of information on this topic, although he believes that some lead azide sampling was conducted in the past. He also noted that information pertaining to that type of activity would be included in the Remedial Investigation (RI) reports for each of the Southeast Ranges sites. Mr. Walsh-Rogalski said that he doesn't think a presentation is needed, but would like the Impact Area Groundwater Study Program (IAGWSP) to provide a handout on the lead azide sampling results. Mr. Gregson agreed to provide that handout.

Ms. Bonarrigo asked if there were any comments on the May 30, 2006 IART minutes. No comments were offered and the minutes were approved as written.

**Agenda Item #3. Overview of J-1, J-2, J-3 and L Range Plumes: Nature, Extent, and Source**

***J-1 North***

Mr. Gregson showed a map of the Southeast Ranges and pointed out the base boundary and the J-1 North, J-2 North, J-2 East, J-1 Southeast, L Range, and J-3 Range plumes. He then displayed a figure entitled "J-1 Composite Plume with Longitudinal Lines of Cross-Section," and noted that RDX and perchlorate levels in this plume are both in the 20 to 30 ppb range, well above the health advisory (HA) of 2 ppb for RDX and the proposed Massachusetts MCL of 2 ppb for perchlorate. He also pointed out the lines depicting zone of contributions (ZOCs) for one of the Upper Cape Water Cooperative supply wells, and the likely source area for the plume – the

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interberm area where activities such as disposal and burning of munitions is believed to have occurred, and where a variety of buried items have been found, including a Korean War vintage tank, paint buckets, and munitions items.

Mr. Gregson then showed a figure entitled “J-1 Plume Cross-Section C-C' Illustrating RDX Distributions,” and pointed out the ground surface, the water table, bedrock, and the monitoring wells, each of which was profile sampled at 10-foot intervals as it was being installed. He also pointed out the lower layer of contamination, which is believed to be either from a separate unknown source area, or the result of shifting in the water table. Ms. Jennings asked if the known source area is located between monitoring well 189 (MW-189) and MW-191 and Mr. Gregson confirmed that it is.

Mr. Walsh-Rogalski asked if the ZOCs on the figure were drawn according to the state’s Wellhead Protection Program. Mr. Gregson replied that the IAGWSP used its groundwater model to arrive at the ZOCs – one representing the current pumping rate and the other representing the permanent maximum pumping rate of 1 million gallons per day (MGD). He also said that the ZOC representing the state’s Zone 2 would be larger. Mr. Pinaud added that his recollection is that the IAGWSP would try to include the Zone 2 depictions in its graphics, and Mr. Walsh-Rogalski requested that the IAGWSP do so. Mr. Gregson then showed a figure entitled “J-1 Plume Cross-Section D-D' Illustrating RDX Distributions,” pointed out that the deeper portion is more pronounced than the RDX, and also mentioned that the highest concentrations (greater than 10 ppb) are in MW-303.

Ms. Jennings asked if it’s correct that the deeper contamination might be from an upgradient source. Mr. Gregson replied that that’s a possible explanation, but he favors the explanation that it’s caused by shifting in the mound, as a similar situation exists with the J-2 North plume. Ms. Jennings asked if the back-track would point to a particular source. Mr. Gregson replied that he doesn’t think it does, but pointed out the area where a back-track would lead.

Mr. Gregson also showed a figure entitled “J-1 Plume Cross-Section C-C' Illustrating Perchlorate Distributions” and pointed out the apparent discontinuous nature of that part of the plume. He then showed a figure entitled “J-1 Plume Cross-Section D-D' Illustrating Perchlorate Distributions” and noted that the cross-section runs more through the heart of the plume.

Ms. Jennings observed that the perchlorate contamination seems to track back to a source upgradient of MW-191, while the RDX seems to track back to a source downgradient of that well. Mr. Gregson agreed that that’s the case, and said that this might be due to different disposal activities that occurred, but still in the same general vicinity of the interberm area.

Mr. Mullennix referred to MW-346 in cross-section D-D' and inquired about the sampling results pertaining to the second well screen down. Mr. Gregson confirmed that the results shown on the figure were 66 ppb, 1.6 ppb, and nondetect (ND). He also said that he believes those are profile results and added that he would double-check on whether those numbers are correct.

### ***J-2 North***

Mr. Gregson continued with his presentation by showing a figure entitled “J-2 North Plume RDX Distribution, Line of Cross-Section Location, and RRA Treatment System Location,” pointed out the ZOCs for the water supply well to the north, and noted that a Rapid Response Action (RRA) groundwater treatment system is currently being installed. He also pointed out the source area of the J-2 North plume, an area on the J-2 Range known as Disposal Area 2, where an RRA soil removal, believed to have removed the bulk of the J-2 North plume source area, was previously conducted. He also noted that the IAGWSP is in the process of taking a comprehensive look at data from that area to ensure that nothing was missed before proceeding with the J-2 Range RI report.

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Mr. Gregson showed a figure entitled “J-2 North Cross-Section A-A' RDX Distribution” and noted that it’s quite clear that the RDX contamination is within the ZOC for the water supply well and, as long as the concentrations are high enough, could eventually reach that well (were there no intervention). He also pointed out the deeper RDX contamination and said that the question is whether it’s the result of a different groundwater flow regime or another source yet to be found. He then showed “J-2 North Cross-Section B-B' RDX Distribution,” a transverse cross-section, pointed out the RDX contamination near the water table, and then showed “J-2 North Cross-Section C-C' RDX Distribution” and pointed out the clean water on top of the RDX contamination.

Ms. Jennings inquired about the “projected wells” notation on top of the cross-section A-A' figure. Mr. Gregson explained that this refers to monitoring wells that are not within that line of section, but the data from them is projected onto the figure.

Mr. Gregson then showed a figure entitled “J-2 North Plume Perchlorate Distribution and Lines of Cross-Section Locations” and noted that while it’s believed that the perchlorate and RDX were released to the environment at approximately the same time, because perchlorate dissolves much faster, it reached the water table faster and has traveled farther than the RDX.

Mr. Gregson showed a figure entitled “J-2 North Cross-Section A-A' Perchlorate Distribution,” noted that the cross-section runs down the center of the plume, and pointed out the area of deeper contamination hung up in the silty deposits near the bottom of the aquifer. He also mentioned that maximum concentrations in the perchlorate plume are in the greater-than-100-ppb range. He then showed: “J-2 North Cross-Section B-B' Perchlorate Distribution,” a transverse cross-section, and pointed out the perchlorate contamination near the water table close to the source area; “J-2 North Cross-Section C-C' Perchlorate Distribution,” and pointed out the clean water on top of the plume; and “J-2 North Cross-Section D-D' Perchlorate Distribution” and noted that it’s near the toe of the plume, where concentrations are somewhat lower.

### ***J-2 East***

Mr. Gregson showed a figure entitled “J-2 Range East Plume RDX Distribution and Lines of Cross-Section Locations,” pointed out the water table contours, and noted that groundwater flows perpendicular to them. He also mentioned the challenge of investigating plumes near the top of groundwater mound in that they flow in varying directions and the contamination splays as it moves downgradient. Mr. Gregson then noted that although some RRA source removal work was conducted in this area, the sources of the J-2 East plumes are not that well defined and it remains to be seen whether additional work needs to be done. He pointed out potential source areas for the three J-2 East plumes (main plume in the center, and one smaller plume flanking each side) and said that contractor testing facilities on the J-2 Range involved activities (which differ from disposal or firing of munitions) that could have contributed to the plumes.

Mr. Gregson showed a figure entitled “J-2 Range East Plume Cross Section A-A' Illustrating RDX Distribution,” noted that the cross-section runs through the center of the plume, and pointed out that the higher concentrations are farther downgradient, which indicates that the source area is probably depleting. He also showed “J-2 Range East Plume Cross-Section B-B' Illustrating RDX Distribution,” which cuts through the western edge of the plume, as well as “J-2 Range East Plume Cross- Section E-E' Illustrating RDX Distribution.” Mr. Gregson then displayed “J-2 Range East Plume Cross-Section D-D' Illustrating RDX Distributions,” a transverse cross-section that shows all three J-2 East plumes, and “J-2 Range East Plume Cross-Section C-C' Illustrating RDX Distributions,” which shows the main plume and clean water on top of and below it.

Mr. Gregson also showed a figure entitled “J-2 Range East Plume Perchlorate Distribution and Lines of Cross-Section Locations,” and another entitled “J-2 Range East Plume Cross-Section A-A' Illustrating Perchlorate Distributions,” noting that it seems that a stronger pulse of perchlorate

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contamination has gone by, but there are still relatively high concentrations in the groundwater near the source area. He also showed “J-2 Range East Plume Cross-Section B-B' Illustrating Perchlorate Distributions” and “J-2 Range East Plume Cross-Section E-E' Illustrating Perchlorate Distributions.” Mr. Gregson then displayed transverse cross-section figures entitled “J-2 East Plume Cross-Section D-D' Illustrating Perchlorate Distributions,” and “J-2 East Plume Cross-Section C-C' Illustrating Perchlorate Distributions.”

### ***J-1 Southeast***

Mr. Gregson showed a figure entitled “Proposed Drilling Locations Southeast of the J-1 Range and J-1 Southeast RDX Plume” and reminded the group that based on some drive-point work a year or two ago, a fairly high concentration of RDX was detected that led to investigation of the area southeast of the J-1 Range. He also noted that this plume doesn't contain perchlorate, only RDX, as well as some HMX, but at levels well below the HA.

Mr. Gregson then showed a figure entitled “RDX J-1 Southeast Plume Cross-Section A-A” and pointed out the relatively short distance between the source area and MW-360, the limited amount of clean water on top of the plume, and the higher RDX levels in the center. He also reminded the group of the IAGWSP's ongoing effort to obtain access to drill additional monitoring wells off base, on Windsong Lane, in order to define the downgradient extent of the plume, and mentioned being close to obtaining that access. He further noted that the off-base wells that were drilled farther downgradient, on Little Acorn Lane, showed ND results.

Mr. Walsh-Rogalski asked if the depiction of silt layers in some of the cross-sections are inferred from the data in areas where there aren't monitoring wells. Mr. Gregson confirmed that the IAGWSP interpreted what the silt layers might look like based on the wells where they were found and those where they were not. Mr. Walsh-Rogalski also observed that none of the plumes seem to have reached bedrock. Mr. Gregson clarified that because none of them are dense solvent plumes, they wouldn't reach bedrock on their own via gravity. Instead they basically mimic groundwater flow and become relatively deeper in the section as rainwater enters the aquifer from above.

### ***L Range***

Mr. Gregson showed a figure entitled “L Range RDX Plumes and Lines of Cross-Section” and noted that contaminant levels in the plume are relatively low, with only a couple wells with concentrations greater than 2 ppb. He then showed “L Range Plume Cross-Section H-H' Illustrating RDX Distributions,” which cuts through the larger area of RDX contamination, and noted that the source of this plume appears to be detached. He also displayed “L Range Perchlorate Plumes and Lines of Cross-Section” and noted that perchlorate detections are also low, with only a couple of areas with detections above 1 ppb.

Ms. Jennings pointed out that MW-29 is shown within the RDX plume in plan view, but outside of the plume in the cross-section figure. Mr. Gregson acknowledged that that is an inconsistency that needs to be fixed. Ms. Jennings also mentioned that it might be helpful to have another well between MW-153 and MW-238.

Mr. Gregson then showed two more figures: “L Range Perchlorate Plumes and Lines of Cross-Section” and “L Range Plume Cross-Section G-G' Illustrating Perchlorate Distributions.” Mr. Minior remarked that he finds these figures misleading in that the state's proposed drinking water standard for perchlorate is 2 ppb, which means that none of the L Range perchlorate contamination should even be mappable.

Mr. Mullennix referred to Mr. Minior's comment and said that the plume depictions he's seen appear to be based on raw data, not on any standard such as an MCL or an HA. Mr. Gregson agreed that the plume depictions are based on all detections, which has helped guide investigations and

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determine additional drilling locations. Once the IAGWSP starts making cleanup decisions on the plumes, however, it will be important to look at which detections are above any particular standard.

### ***J-3 Plume***

Mr. Gregson showed a figure entitled “J-3 Plume RDX Distribution and Lines of Cross-Section” and pointed out the base boundary, Snake Pond to the south, Camp Good News, and Air Force Center for Environmental Excellence (AFCEE) wells associated with the Fuel Spill 12 (FS-12) plume. He also mentioned that the L Range contamination is upgradient of the FS-12 extraction wells, which, coupled with the low concentrations there, has made the L Range plume a lower priority for the IAGWSP. The J-3 plume, however, bypasses the FS-12 system and is heading toward Snake Pond, which is why the IAGWSP is currently building an RRA groundwater treatment system. Mr. Gregson also pointed out the J-3 plume primary source area, in the middle of the J-3 Range, and another potential source area in the vicinity of the melt/pour building.

Mr. Gregson then showed a figure entitled “J-3 Plume Cross-Section D-D' Illustrating RDX Distributions,” mentioned the RRA soil removal that was conducted, and pointed out the relatively high concentrations that migrate off toward Snake Pond. He also showed “J-3 Plume Cross-Section E-E' Illustrating RDX Distributions” and “J-3 and L Range Plume Cross-Section F-F' Illustrating RDX Distributions.”

Mr. Mullennix referred to MW-343 in cross-section D-D' and inquired about the data shown there. Mr. Gregson noted that the monitoring well screen sampling result is shown on the left (35 ppb), while the data on the right pertain to profile sampling results (0.94, 5.8, 32, 0.98, and 2.8 ppb).

Mr. Cambareri asked Mr. Gregson to compare cross-section D-D' with cross-section E-E' and discuss the difference in the trajectory of flow between the two. Mr. Gregson replied that the IAGWSP has been trying to understand whether the plume underflows Snake Pond completely or enters the pond through the pond-bottom sediments. RDX was detected in a monitoring well drilled on a spit in the pond, which indicated that that area may be a little shallower and the plume may actually be upwelling into the pond. The drive-points installed south of Snake Pond, however, had no RDX detections, but the cross-section shows the plume getting shallower as it gets closer to the pond. Mr. Cambareri said that he finds it interesting that the rise in bedrock seen in cross-section E-E' isn't seen in cross-section D-D'. Mr. Gregson replied that although bedrock is often thought of as being flat, it probably has its own topography and changes significantly from place to place. He also referred to cross-section D-D' and said that he doesn't recall if the model simulation shows that part of the plume going off toward the east or continuing at depth along that trajectory. Mr. Cambareri mentioned the possibility that the upper part of Snake Pond is “exerting a fairly strong focusing gradient.” Mr. Gregson replied that that may be the case. He also showed two additional figures: “J-3 and L Range Plume Cross-Section A-A' Illustrating RDX Distributions” and “J-3 and L Range Plume Cross-Section B-B' Illustrating RDX Distributions.”

Mr. Gregson then showed a figure entitled “J-3 Plume Perchlorate Distribution and Lines of Cross Section” and another entitled “J-3 Plume Cross-Section D-D' Illustrating Perchlorate Distributions.” He noted that cross-section D-D' runs down the middle of the plume where the highest perchlorate concentrations seen at MMR exist, up to about 700 ppb. Mr. Gregson concluded his presentation by showing “J-3 Plume Cross-Section E-E' Illustrating Perchlorate Distributions” and pointed out some of the interpreted upwelling closer to the pond, and “J-3 and L Range Plume Cross-Section F-F' Illustrating Perchlorate Distributions,” a transverse cross-section showing the J-3 and L Range plumes.

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Mr. Mullennix inquired about the source of the J-3 Range plume. Mr. Gregson replied that the heart of the plume tracks back to a defense contractor testing disposal area in the center portion of the J-3 Range.

#### **Agenda Item #4. Remediation & Investigation Update**

##### ***J-2 and J-3 Range Rapid Response Action Construction***

Mr. Gregson reported that the extraction wells and infiltration trenches for the J-2 North RRA groundwater treatment system have been completed. The piping and utilities are in place, construction of the treatment plant building on Jefferson Road is under way, the containers for the granular activated carbon (GAC) and ion exchange have arrived on site and are being stored at the AFCEE FS-12 treatment plant building, and monitoring well development is ongoing.

Mr. Gregson reported that the wells, piping, and utility installation for the J-3 Range RRA groundwater treatment system have been completed, the mechanical piping inside the FS-12 facility is under way, and monitoring well development is ongoing. He also displayed a series of photos showing work in progress at the two RRA systems and noted that startup of the systems is expected to occur in early fall of this year.

##### ***Snake Pond Sampling***

Mr. Gregson stated that since 2000 surface water samples have been collected annually during the recreational season from Snake Pond to ensure that the J-3 Range plume isn't upwelling into the pond at detectable concentrations. Samples are collected off the public beach, off the Camp Good News beach, and near the spit in the northwestern portion of the pond, and have consistently been ND. Mr. Gregson noted that sampling is done twice a month from May through September, and once in April, October, and November. Sampling conducted so far this year has also been ND.

##### ***Central Impact Area Drive-Point Sampling***

Mr. Gregson stated that one aspect of the Central Impact Area study is a drive-point investigation to try to identify water table detections of explosives that might point to source areas above them. This line of evidence is being used to help define the extent of the Central Impact Area source, and provide additional information for the soil and groundwater remedial alternatives.

Mr. Gregson reported that the investigation involves 20 drive-points, most of which have been successful, except in some areas of rocky soil where the drive-points hit refusal. He also noted that there were a couple RDX detections (1.6 ppb and 1.1 ppb) and some perchlorate detections as well.

Mr. Gregson displayed a Central Impact Area map showing RDX detections in drive-points at the water table and noted that the area where RDX was detected at the water table is probably smaller than the plume contour lines shown on the map. Mr. Minior inquired about the depth of the drive-points. Mr. Gregson replied that they were installed five to ten feet into the water table.

Ms. Jennings asked about the concentrations detected at MW-91 and MW-90 and MW-01. Mr. Gregson replied that based on the contours, the detection at MW-91 was somewhere between 10 and 20 ppb, while the detections at MW-90 and MW-01 were somewhere between 2 and 10 ppb. Ms. Jennings then asked if the drive-point data would lead the IAGWSP "to basically draw this area much smaller than it is right now." Mr. Gregson replied yes, and pointed out on the map how the contours might look, which he described as "similar" but "maybe a little narrower."

Mr. Gregson then displayed a map showing perchlorate detections in drive-points at the water table and noted that perchlorate concentrations in the Central Impact Area plume are consistently quite low, with none above 5 ppb. He pointed out some drive-point locations and noted the perchlorate concentrations there: 0.6, 0.58, 0.67, and 0.36 ppb.

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Mr. Mullennix asked if the Central Impact Area was the central target area. Mr. Gregson confirmed that since the early 1900s targets have been set up at the Central Impact Area and fired on from artillery and mortar weapons systems to the south and northwest. Mr. Mullennix also asked if it's correct that the purpose behind the drive-point work was to try to identify a nearby source of contamination. Mr. Gregson confirmed that that's correct, and explained that the idea was to use water table data to refine the area where the source area continues to impact groundwater.

Mr. Mullennix observed that no real "hotspots" of contamination were found as a result of the drive-point investigation. Mr. Gregson agreed, but also noted that the data did help define those areas a little better, which will be helpful when going into the feasibility study (FS) stage. He noted that the highest perchlorate detection in the drive-points was less than 1 ppb, and the highest RDX detection was at about the HA (2 ppb).

Mr. Walsh-Rogalski inquired as to the  $10^{-6}$  excess cancer risk number for RDX. Mr. Gregson replied that it is 0.6 ppb. Mr. Walsh-Rogalski said that he thinks that 0.6 is the number of concern then, rather than 2 ppb, since from a regulatory standpoint  $10^{-6}$  is the significant number. He also said that he's not surprised that a source wasn't identified since most of the contamination at the Central Impact Area is the result of deposition from firing rather than from activities such as disposal. Mr. Gregson agreed that the source mechanism at the Central Impact Area differs from the disposal and burn pits at the Southeast Ranges. Mr. Walsh-Rogalski said that he views this "as not being good news" in that rather than finding a hotspot, it will be necessary to "determine what levels you need to clean up and then put a fairly large well fence in place." Mr. Gregson said that that type of alternative will be evaluated in the FS, as will a wide range of other alternatives.

#### **Agenda Item #5. Program Schedule Overview & Future IART Agenda Topics**

Mr. Gregson displayed a two-page summary chart of the 14-page Gant chart used to track the progress of the IAGWSP. He noted that the summary chart lists the sites being addressed by the IAGWSP, with blue time-line bars representing groundwater actions, yellow representing soil actions, and green representing a combination of both. He also noted that the chart spans the years 2006, 2007, and 2008, and utilizes abbreviations including: DD – decision document; RA – remedial action (construction, or operations); RS – remedy selection; RD – remedial design; and FSSR – feasibility study screening report.

Mr. Gregson then began reviewing the projected schedule for each of the sites, during which he noted that there would be IART presentations and opportunities for public comment associated with major documents such as RI and FS reports. He also mentioned the as-yet unresolved issue of deciding with the regulatory agencies how in the schedule process to handle unexploded ordnance (UXO) as a future source to groundwater, which applies to a number of sites, including the L Range, the J Ranges, the Central Impact Area, and the Former A and Former K Ranges.

Mr. Cambareri asked how the treatability study works into the Central Impact Area schedule, which includes one section for Central Impact Area soil, another for Central Impact Area groundwater, and another for Central Impact Area soil and groundwater (combined). Mr. Gregson replied that whatever treatability study the IAGWSP ends up doing will be worked into the FS, RS, and DD for both soil and groundwater. Based on that decision, the IAGWSP will move forward with the design phase for both soil and groundwater and toward the end of 2008 begin construction of the remedy.

Mr. Gregson then continued his review of site schedules, during which time he mentioned that the IAGWSP has approached the regulators about combining the RI and FS for the Demo 2 Groundwater site, which seems to have been received favorably. He also noted that the schedule assumes that nothing that would require an action will be found in groundwater at the Gun &

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Mortar positions, although some additional investigation there is forthcoming. Mr. Gregson then completed reviewing the schedules for sites listed on the chart.

Mr. Walsh-Rogalski asked how far out into the future these projects are funded, and what's being done to secure future funding. Mr. Gregson replied that all of the activities are funded, and added that actions must be executed within the particular timeframe or else the funding could be lost. He also said that O&M is envisioned to be funded until the projects are completed.

Mr. McDonagh clarified that nothing is really funded until Congress appropriates that money, which occurs once every fiscal year. The IAGWSP has planned for these projects, however, and in that sense they are in the budget. Nevertheless, "it's an uncertain world right now"; for example the U. S. Army Environmental Center (AEC) is currently enduring a shortfall in funds such that all travel has been canceled. Mr. McDonagh also said that the best way to secure funding for the IAGWSP projects is to stay on schedule and continue to show that the funding is needed. He further noted that "budgeted" is a loaded term in this case – rather, the projects are "planned for" but no one knows whether they will "survive" given the world situation.

Mr. Walsh-Rogalski requested that the IART be provided with an explanation of the POM (Program Objective Memorandum) process and the Congressional appropriation process and how they relate to each other. He also referred to the summary chart and noted that some of the projects (for example, the Western Boundary site) have nothing noted in the schedule beyond an RI. Mr. Gregson explained that those are the IAGWSP's best guesses as to what will happen with those sites in the future.

Mr. McDonagh said that he would convey to Mr. Gonser the request made by Mr. Walsh-Rogalski request for an explanation of the budgetary planning process, as he believes Mr. Gonser is the most appropriate person to address it. Mr. Walsh-Rogalski asked that a presentation on the budget include both an explanation of the process and a discussion of the kind of security associated with obtaining funds.

Ms. Jennings noted that many groundwater decisions are being made before the soil decision, which is atypical and an issue that still needs to be resolved. She also said that her understanding is that an effort is being made to accelerate the J Range RI/FS process because the IAGWSP indicated that funding had to be obligated for groundwater remedy construction to be done by September 2007, which doesn't necessarily fit with what Mr. McDonagh was saying. Rather, if an investigation takes longer, the decision-making takes longer, and she knows that her organization, the U.S. Environmental Protection Agency (EPA), would "bump back the budgetary monetary longer," by a year. Ms. Jennings further noted that the summary chart shows nine decision points in 2007 alone, and three in 2008, which concerns her given the track record in trying to write just one DD. She added that while EPA wants to encourage expeditious decision-making and construction in areas that make sense, she thinks the schedule might in some respects be "a little bit overly ambitious."

Mr. Gregson agreed that the schedule is "a little bit daunting" in terms of the number of activities that would occur simultaneously. He also noted, however, that it's also a tool to be used for planning and staffing, and to look at shifting resources in order to try to meet that kind of schedule. Mr. McDonagh added that he thinks this is an issue to be discussed with Mr. Gonser. He also said that on one hand, "if you don't plan for it, it's not going to happen" and on the other hand, "you don't want to be overly ambitious." He further noted that the IAGWSP also has some flexibility to push things back, but with the war situation, there's a trend to lose money in that case, as happened with the AEC recently. Therefore, "how that flexibility survives right now is very difficult to predict." Mr. McDonagh reiterated that he thinks it would be useful for EPA to have an offline discussion about this issue with Mr. Gonser.



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Mr. Mullennix said that he doesn't understand EPA's concern that the schedule is too aggressive, given that it's the IAGWSP's schedule, to which it is committed, and given that securing the needed funding seems to be somewhat dependent on the schedule's aggressiveness.

Mr. McDonagh said that he thinks Ms. Jennings' point is that a strong element of realism is needed in these situations. He explained that the IAGWSP and EPA have to work through some very difficult issues, such as land use controls (LUCs). He also said that he's hopeful that if some of those "cork-stopper in the bottle" type issues can be resolved, a template for DDs will result. He further noted that the cleanup is being conducted under the Safe Drinking Water Act (SDWA), which isn't typically used for these types of activities, so there isn't a lot of regulatory guidance on some of the issues being faced. Mr. McDonagh also said that while "there are obviously areas we wish EPA could move quicker on, there are some they wish we could move quicker on" that he thinks they "just have to come to work everyday to try to resolve."

Ms. Jennings said that she thinks it's in everyone's best interest to move quickly and EPA has offered up certain areas that are not that complex, for which an accelerated schedule seems to make sense. However, the sites that involve UXO as a future source are not going to be that "quick and easy" and she doesn't want to give the false impression that the schedule as it stands could be met. Rather, given some of the technical issues, she thinks a more reasonable schedule is required. She also said that some of the issues that need to be resolved are precedent-setting and therefore must be thought out carefully. Ms. Jennings further noted that while EPA isn't unwilling to accomplish a great deal in a short period of time, she thinks there's an "unreasonable component" to the present schedule that needs to be examined more closely.

Mr. Mullennix said that he can understand that the people in Washington would want to see a reasonable schedule, to which the IAGWSP is committed, and which can be funded and delivered. Otherwise, credibility is lost and "we run the risk of losing the whole thing to some degree." Mr. McDonagh added that if the IAGWSP can identify and target those areas where it can move forward, a momentum that builds on itself will be created, as has been demonstrated by AFCEE's Installation Restoration Program (IRP). He suggested that this approach leads to exactly the kind of credibility that Mr. Mullennix mentioned.

Mr. Mullennix said that he thinks a stage has been reached in the process where he hopes that everyone can work together. He said that he knows that "a lot of head-butting" has occurred in past, and in many cases those "who chose to butt heads carried the day." He then asked that everyone try to move the process forward and make the difficult decisions because the program has been going on "a long, long time" and he thinks it's important to "to begin to finish the play," as the schedule is attempting to do.

Mr. Walsh-Rogalski remarked that he thinks that EPA and the IAGWSP have worked well together on pushing the process along as quickly as possible. He mentioned the RRAs, which he described as a creature of the cleanup program whose purpose is to accomplish large, expensive projects in a condensed time, which can't be done under the Superfund program. He also said that at the same time, however, an overly ambitious schedule could be compared to family planning that involves having eight children in two years and makes one "realize when things start bumping up against reality."

Mr. Gregson referred to the Future IART Topics document and reviewed the agenda items planned for the July IART meeting: Gun & Mortar Positions RI Workplan & Groundwater Monitoring Plan; L Range Groundwater Risk Assessment; Small Arms Ranges Update; and Northwest Corner RI & Groundwater Monitoring Plan. He also noted that the IAGWSP is recommending canceling the August meeting and combining the November and December meetings into a single meeting in early December.

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Mr. Mullennix said that he is in favor of foregoing the August meeting. He also requested that the topic “Risk Assessment 101” under “Other Possible Agenda Topics” be moved to a near future IART meeting. Ms. Jennings suggested moving that topic to the July IART meeting and postponing the “Gun & Mortar RI Workplan” item to a later date. Mr. Gregson replied that that could be considered, or the “Risk Assessment 101” topic could be worked in as a preamble to the “L Range Groundwater Risk Assessment” item. Mr. Cambareri indicated that he would prefer the latter.

Mr. Walsh-Rogalski requested that any risk assessment presentation be billed and produced as a “non-value judgment presentation” as he doesn’t think it would benefit anyone to get into what kind of value is placed on human life or the risks that people are willing to assume as humans. Rather, he’d like to see a presentation about the way the numbers are calculated by the technical people and set by the regulators – not one that deals with the “fuzzier” issues.

Mr. Cambareri asked Mr. Gregson to identify the first project presentation that deals with a risk assessment, to which the “Risk Assessment 101” topic could be applied. Mr. Gregson referred to the L Range Groundwater Risk Assessment and also mentioned other upcoming risk assessments associated with the Northwest Corner RI and the Western Boundary RI.

Mr. Minior said that he disagrees with Mr. Walsh-Rogalski in that he thinks that any discussion of risk assessment has to include some discussion of risk management approaches. He mentioned, for example, EPA’s risk range of  $10^{-4}$  to  $10^{-6}$ , and said that risk management must be part of the dialogue if people are to understand what’s being done “as you get into risk assessment...and decision-making.” He said that he thinks it would be inappropriate to separate the two. Mr. Walsh-Rogalski clarified that he doesn’t disagree that risk management would be an appropriate part of the discussion; what he doesn’t think would be appropriate to the discussion is “what the emotional reaction to risk is.”

Mr. Mullennix suggested that it might be helpful if the risk assessment piece included a case study of a similar risk assessment done in a similar type of situation. Mr. Walsh-Rogalski noted that risk assessment and the objectives under the SDWA are not the same as under Superfund; therefore it’s important to keep in mind that one approach to risk assessment is not necessarily applicable to all. He then clarified that he agrees with Mr. Mullennix’s suggestion, but wants to ensure that “the assumptions that go into it are clear and obvious.”

Mr. Cambareri reiterated that he would prefer if the “Risk Assessment 101” topic were built into the L Range Groundwater Risk Assessment agenda item at the July IART meeting.

Ms. Bonarrigo confirmed that there were no objections from the team to canceling the August IART meeting.

#### **Agenda Item #6. Open Discussion – Massachusetts National Guard Tungsten Update**

Mr. Sullivan of the Environmental & Readiness Center (E&RC) noted that he is briefing the IART on COL FitzPatrick’s behalf, and that any technical questions he’s unable to answer will be forwarded to COL FitzPatrick or referred to Mr. Begley of the Environmental Management Commission (EMC), who is present at tonight’s meeting.

Mr. Sullivan then reported that the Massachusetts National Guard (the Guard) initiated an effort to move tungsten-contaminated soil in order to prevent further potential contamination from tungsten/nylon bullets. He also noted that existing O&M money from the state’s Guard system was used to fund the project, which means that other actions this year that were to take place elsewhere in the system will not occur.

Mr. Sullivan stated that the soil removal action began on May 22, 2006 and was completed on June 6, 2006. Soil was moved from the G, H, J, and K Ranges and consolidated at the KD Range,

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and soil was moved from the B, C, and T Ranges and consolidated at the C Range. More than 4,600 cubic yards, or about 6,900 tons, of soil was moved, placed on plastic, and covered, and is awaiting an additional geo-textile fabric cover that's being acquired to further reduce the potential for contamination as the process moves along. Mr. Sullivan also noted that a 150 parts per million (ppm) target level was used for the soil removal work. He further noted that the Senior Management Board (SMB) was briefed on the project on May 24, 2006 and the EMC was briefed on June 21, 2006. He also explained that tungsten-contaminated soil was removed from areas where the contamination was most concentrated on ranges that had berms. The soil piles will be managed until an eventual resolution is decided.

Mr. Sullivan then stated that, prior to any detection of tungsten in groundwater, the Guard initiated an action to obtain the STAPP bullet catcher system, which was initially planned for installation at B Range as a demonstration/validation (dem/val) effort to determine whether the system would be successful with respect to tungsten ammunition. He noted that the system has been used for lead ammunition, and also mentioned that the location of the dem/val system was moved to T Range because of the ongoing study at B Range.

Mr. Sullivan reported that 15 lanes of the STAPP system were installed at T Range over a six-day period beginning on June 17, 2006, and the plan is to conduct a four-month dem/val to begin sometime in July. He then showed a photograph of the system in the process of being installed, and another photograph that shows its current status. He also noted that while the contractor has completed installation of the system, the Massachusetts National Guard will be applying a covering to the soil along the top of the system to prevent erosion there and will be constructing a storm-water structure to divert rainwater away from the sides of the system to prevent further deterioration there.

Mr. Sullivan noted that the system is about 110 feet long, 30 feet wide, and 15 meters high. The berm that was built for the system is comprised of clean soil taken from the cantonment area of the base. Mr. Sullivan also reported that the system itself was funded by the National Defense Center for Environmental Excellence, for testing its performance with tungsten/nylon bullets.

Mr. Sullivan stated that before the system can be used, approval from the Governor's office must be obtained, which will require coordination with the state environmental agencies, the EMC, and the Executive Office of Public Safety, through which The Adjutant General's office reports to the Governor. The expectation is that in the near future the request will be initiated to go forward with using the system.

Mr. Sullivan also mentioned that a Record of Environmental Consideration was done as part of National Environmental Policy Act (NEPA) requirements, and it was determined that no thresholds were crossed that would require a NEPA action. Also, an Environmental Notification Form was filed with the state, and that information was published in the Environmental Monitor in February 2006. On March 24, 2006 the Executive Office of Environmental Affairs issued a certificate approving the range-upgrade proposals that the Guard had put forward, including the STAPP system.

Mr. Mullennix asked if it's correct that the STAPP system has been installed at other locations. Mr. Sullivan replied that a system has been tested at Fort A.P. Hill for lead, but the system hasn't been tested in the United States for tungsten ammunition. The plan is to proceed with that if the appropriate approvals are obtained. Mr. Mullennix asked if the plan is to use lead at the MMR system. Mr. Sullivan reiterated that the system would be tested for tungsten, although the Guard's goal is to try to eventually return to using lead ammunition, which will require all sorts of separate reviews and approvals, and will have to clear the Administrative Orders (AOs) issued by EPA. Mr. Mullennix asked if the Guard would have to repeat the same process it's going through

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now. Mr. Sullivan replied “most likely,” and added that on the federal side it may be even more time-consuming and procedural.

Mr. Mullennix asked for the opinion of the regulators with regard to whether it makes more sense to continue to use tungsten bullets, which are made out of powder and disintegrate on impact and the tungsten has been shown to be mobile, or to use lead bullets, for which the STAPP system already has been tested and proven effective. Ms. Jennings replied that it’s her understanding that the Guard was given the money to bring the STAPP system to MMR under the assumption that it would be a pilot test for tungsten. She noted that EPA had nothing to do with that decision. Mr. Mullennix replied that while he appreciates that, times have changed and the mobility of tungsten is now known, which was not the case when the funding for the STAPP system was granted. He then asked again whether it makes sense to simply go forward with using lead bullets, since that’s the direction the Guard wants to go anyway and the STAPP system has been proven effective in the capture of lead.

Mr. Walsh-Rogalski said that he thinks the history of the process indicates that “we ought to move consistent with the knowledge we have,” and he doesn’t think enough is known yet. He also said that he doesn’t think it hurts to understand the effects of tungsten and “to balance the usefulness and safety and long-term sensibility of various approaches.” Mr. Mullennix said that he disagrees with that and wants it to go on record that he thinks “it’s foolish to be continuing along the tungsten program when we know it’s problematic.” Ms. Jennings clarified that this is not EPA’s decision to make.

Mr. Mullennix redirected his comment to Mr. Sullivan and added that he doesn’t understand why the Guard isn’t moving forward with asking for approval to use lead bullets. Mr. Sullivan replied that the Guard’s intent is to eventually try to get lead reinstated; however, the process to do that is much more complicated and time-consuming. He also noted that his understanding is that the STAPP system has been used in Europe for years, but only recently in the United States. He further noted that Fort A.P. Hill received funding to install a system to test lead just as MMR received funding to install a system to test tungsten, so with the process moving forward on both avenues, eventually the system may be approved for use with lead and/or tungsten. In the meantime, however, only plastic ammunition can be fired at MMR, which is limiting in terms of distance and the types of weapons systems that can be used. Therefore, in order for soldiers to train on those other types of weapons, they have to do so at other installations, at an increase of cost and resources. Mr. Sullivan said that while he understands what Mr. Mullennix is saying, the Guard is still going to proceed with the test program that it’s been funded to test, assuming that the appropriate state approvals are obtained.

Mr. Cambareri said that he thinks the deployment of the STAPP systems is a great thing, and given the constraints of being between tungsten and lead, it still allows for training to occur at the base, and that training is consistent with the protection due to the base’s sensitivity as a water supply area. He also indicated an interest in the material that’s used in the systems, and inquired about the thickness of it.

Mr. Begley noted that the STAPP system has a liner at the base of it that’s similar to a liner under a landfill, such that if any liquid that enters the area where the bullets are trapped is contained. The material in which the bullets are trapped is a granular rubber, on top of which is an approximately ¼-inch thick beige material designed to have any water landing on it run off the face of it. He explained that the holes that the bullets cause in this material tend to seal themselves, and there are also patch materials to repair areas that become so “bullet-ridden” that small amounts of water get through.

Mr. Begley also noted that this dem/val is expected to show whether tungsten bullets, which disintegrate quite readily when they strike the sand and gravel berms at MMR, will do the same



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Western Boundary Remedial Investigation  
Natural Resources Discussion  
Wellhead Treatment vs. Aquifer Restoration  
Risk Assessment 101

**Handouts Distributed at the Meeting:**

1. Responses to Action Items from the May 30, 2006 IART Meeting
2. Maps/Cross-Sections to Accompany presentation: Overview of J-1, J02, J-3, and L Range Plumes – Nature, Extent, and Source
3. Presentation handout: Remediation & Investigation Update
4. Draft Program Schedule & Future IART Topics
5. Information sheet: STAPP Environmental Bullet Catcher
6. Photographs of installation of STAPP Environmental Bullet Catcher at MMR
7. UXO Discoveries/Dispositions Since Last IART (Ending 6/22/06)
8. Map Legends Sheet
9. News Releases, Neighborhood Notices, and Media Coverage (5/26/06 – 6/25/06)