

**Impact Area Review Team
Bourne Best Western
September 26, 2006
6:00 – 9:00 p.m.**

Meeting Minutes

<u>Members:</u>	<u>Organization:</u>	<u>Attendees:</u>	<u>Organization:</u>
Hap Gonser	IAGWSP	Bill Gallagher	IAGWSP
Ben Gregson	IAGWSP	Lori Boghdan	IAGWSP
Mike Minior	AFCEE/MMR	Pam Richardson	IAGWSP
Lynne Jennings	US EPA	COL Bill FitzPatrick	E&RC
Bill Walsh-Rogalski	US EPA	Bill Sullivan	E&RC
Len Pinaud	MassDEP	Jane Dolan	US EPA
Ellie Grillo	MassDEP	Mark Panni	MassDEP
Peter Schlesinger	IART/Sandwich	Mark Begley	EMC
Earl Lantery	IART/Sandwich	Kevin Hood	UCONN/TOSC
Edward Webb	IART/Sandwich	Mark Hutson	Weston Solutions
Richard Conron	IART/Bourne	David Dow	Sierra Club
Bob Mullennix	IART/Bourne	Matt Malin	
		Amanda Lehmert	Cape Cod Times
		Jane Shea Moran	e ² M
<u>Facilitator:</u>	<u>Organization:</u>		
Jim Murphy	US EPA		

Agenda Item #1. Welcome, Agenda Review, Approval of 7/25/06 IART Meeting Minutes

Mr. Murphy convened the meeting at 6:03 p.m., the Impact Area Review Team (IART) members introduced themselves, and Mr. Murphy announced that Jim Pierce, although not present at the meeting, had been approved as a new IART member. Mr. Murphy also reviewed the agenda, noted that the next IART meeting would occur on October 24, 2006, that there would be no IART meeting in November, and that the following meeting would take place on December 3, 2006. He then asked if there were any changes to the July 25, 2006 IART meeting minutes. No changes were offered and the minutes were approved as written.

Agenda Item #2. Late-Breaking News, Responses to Action Items from 7/25/06 IART

Mr. Schlesinger noted that last night the Town of Sandwich approved real estate actions that would allow access for the installation of Impact Area Groundwater Study Program (IAGWSP) monitoring wells, and potentially extraction wells, associated with the investigation of the J-1 South plume. Mr. Gregson added that the IAGWSP is looking at beginning installation of monitoring wells there in early November.

Mr. Schlesinger referred to Action Item #5 and asked whether a more specific timeline for completing the Northwest Corner Remedial Investigation (RI) report and Risk Assessment would be provided this evening. Mr. Gregson said that the IAGWSP has received regulator comments on the draft RI, expects to be submitting responses to comments next week, and after will undergo the comment resolution process and continue from there. He also mentioned that the IAGWSP plans to do a combined RI/Feasibility Study (FS), and added that the timeline will shift based on the amount of time needed for the comment resolution process.

Mr. Mullennix asked to be provided with a copy of the IAGWSP's responses to U.S. Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (MassDEP) comments. He also referred to Action Item #1, regarding the 560 part per billion (ppb) tungsten detection in a monitoring well at B Range, where the follow-up sampling result was in the 4.4 to 5.6 ppb range. He then asked that those doing the reporting be cautious

about highlighting a single sampling result that seems odd compared to what might be expected, given that errors can certainly occur in the laboratory or when sampling is being conducted. He said that he's "just very sensitive to a single number making a headline when it shouldn't happen."

Ms. Grillo inquired about the timeline for publishing the plume booklet and fact sheets mentioned in the response to Action Item #3, a request that the IAGWSP develop a "measuring stick" for communicating to the public about the cleanup progress to date. Mr. Gonser replied that while he doesn't know the exact plan that his community involvement person, Kris Curley, has in terms of the timeline for the draft fact sheets she's provided so far, they are on his desk for preliminary review.

Mr. Minior asked for confirmation that IART members would receive copies of the IAGWSP's response to regulator comments on the Northwest Corner RI. He also asked about the timing of comment resolution. Mr. Gregson confirmed that copies would be provided to anyone who wants them. He also said that a comment resolution meeting usually occurs a couple weeks after the response to comments is submitted. Mr. Gonser added that the IAGWSP has already begun the FS such that the RI and FS are in a sense being blended. He also said that it's uncertain whether it will be necessary to go through the full comment resolution process, which can be sorted out in the end, and that such "back and forth" will not impede moving forward to determine what the remedy should be.

Mr. Schlesinger referred to Mr. Mullennix's comment regarding releasing information about the relatively high tungsten detection and said that he thinks that information about all detections, whether high or low, should be released to the public. He also mentioned the high RDX concentration detected along the base boundary near the J-1 Range, which led to the IAGWSP securing property access for additional investigation. Mr. Gonser replied that the IAGWSP does and will release all the information. He also said, however, that Mr. Mullennix makes a good point in that the tungsten result was a little confusing, was based on just one data point, and might have been due to error. Mr. Gonser then noted that additional downgradient wells are being installed at the Small Arms Ranges, which should provide a better picture of what's happening there.

Mr. Dow said that in his opinion anything that can be done to expedite progress at the Northwest Corner "would be good."

Agenda Item #3. Remediation & Investigation Update

J-2 Range and J-3 Range Groundwater Treatment Systems

Mr. Gregson stated that the IAGWSP is interested in receiving feedback from those who attended last Thursday's J-2 North and J-3 Ranges system startup event.

Mr. Conron said that he found both this event and another similar one he attended in the past, which was hosted by the Air Force Center for Environment Excellence (AFCEE), very valuable and enjoyable. He also asked whether the Bourne selectmen were notified of the recent event. Mr. Gregson confirmed that they were. Mr. Conron said that he'd hoped that the selectmen would have mentioned it at their meeting, but they had not.

Mr. Murphy said that any other comments could be directed to Mr. Gregson directly or written down on the meeting evaluation form. Mr. Gregson added that the IAGWSP would like to know what individuals thought about the timing of the event (time of day, day of the week).

Mr. Gregson then reported that startup of the J-2 North and J-3 Ranges Rapid Response Action (RRA) treatment systems has tripled the amount of groundwater being treated by the IAGWSP, from 460,000 gallons per day to 1.2 million gallons per day. He also noted that IAGWSP now has

systems operating on three of its most troubling plumes: the Demolition Area 1 (Demo 1) plume; the J-2 North plume, which is heading toward the Upper Cape Water Cooperative's water supply well #2; and the J-3 Range plume, which is heading toward Snake Pond.

Mr. Gregson noted that the RRAs are estimated to have provided a two-year head-start over the standard FS/Remedial Design/Remedial Action process, such that more than 500 million gallons of water will have been treated before the final systems are in place. He also said, however, that the IAGWSP will continue the FS process, the focus of which will be a detailed look at what other actions might be necessary for these plumes.

Mr. Gregson then showed a photograph of the J-3 Range plume system that was installed in the existing Fuel Spill 12 (FS-12) treatment plant and a photograph of a J-2 North system extraction well vault. He noted that there are three extraction wells associated with each of the plumes, with the J-3 Range system pumping at 175 gpm and the J-2 North system pumping at 375 gpm. He also showed a photograph of the treatment plant installed in the northern part of the J-2 North plume.

Mr. Schlesinger inquired about the possibility that the systems could be made mobile. Mr. Gregson said that the plant in the northern part of the J-2 North plume is fairly permanent; however, portable treatment units make up the other part of the J-2 North system, and while they're expected to become part of the permanent remedy, similar units operating at the Demo 1 plume will become available for use elsewhere once the permanent treatment plant there has been completed, probably in summer of 2007. He also noted that the portable units could be used for additional capacity at permanent treatment plants. Mr. Schlesinger voiced his approval of the use of mobile treatment units, as they can be used again at the Massachusetts Military Reservation (MMR) or at other bases.

Mr. Gregson then stated that the total volume of the J-2 North and J-3 Range systems is about 300 million gallons per year. He also showed a photograph of the inside of one of the portable treatment units.

Mr. Gonser mentioned that the contractor was able to run the same amount of water through two of the three Demo 1 portable treatment units as had been running through the three units, thereby freeing up enough capacity to treat water from recently installed extraction wells that are going to be part of the permanent remedy for that plume.

Small Arms Ranges Investigation

Mr. Gregson stated that previous investigations at T Range, which was used in the past as a 50-caliber machinegun range and also as a pistol range, found lead at the firing line that coincided with pistol firing. He showed an aerial photo/figure of the range and pointed out the various soil sampling areas: Area 1, where machineguns were fired; Area 2, where the Massachusetts Army National Guard (the Guard) recently set up its STAPP bullet catching system; and Area 3, the downrange area. Composite samples were collected at each of the ten sub-areas and then analyzed – some for metals, tungsten, semi-volatile organic compounds (SVOCs), explosives, and perchlorate, and some just for metals and tungsten. Mr. Gregson reported that one of the samples from along the firing line showed lead at 467 ppb, above the state cleanup standard of 300 ppb. He also noted that tungsten was detected at about 77 parts per million (ppm) in Area 2, and that the soil there was excavated and consolidated at C Range. He then showed a photo of the STAPP bullet catching system.

Mr. Schlesinger asked why lead was found at the firing point and whether there'd been any movement of the soil over the years as part of range maintenance. Mr. Gregson replied that the lead at the firing point may have been from the primer or from rifling that caused some lead from

unjacketed bullets to be shaved off. He also said that based on the vegetation at the range it doesn't appear that there was much movement of soil over the years.

Mr. Mullennix inquired about the amount of time the range has been used. COL FitzPatrick replied that the range was constructed sometime around 1986 to 1988. Mr. Mullennix inquired about other lead findings throughout the range. Mr. Gregson said that while he doesn't have those specific data, all other lead detections were below 300 ppb. Mr. Mullennix said that he'd be interested to know whether lead is detected in groundwater in that area. Mr. Gregson replied that a critical part of the entire Small Arms Ranges investigation is the installation of monitoring wells to determine whether there are any potential or existing impacts to the groundwater from lead.

Mr. Schlesinger asked why all samples aren't being tested for perchlorate and how it's decided which samples will and will not be. Mr. Gregson explained that the decision is made based on whether an activity occurred that could introduce perchlorate into the environment. Mr. Schlesinger contended that that approach assumes that everything about the environment is already known, and would prevent learning anything new. Mr. Gregson replied that every environmental investigation goes on some premise of what activities occurred at a particular site in order to fine-tune the data set. The investigators make their best professional estimate of what to seek and adjust the sampling program accordingly. Mr. Schlesinger said that he would argue for testing for perchlorate wherever sampling is conducted at the base, as it's been found in many places where it wasn't expected.

Mr. Dow asked if the IAGWSP had looked at the possibility of detecting explosives near the firing point. Mr. Gregson replied that explosives testing was done at Area 1, at the firing point, and at Area 2, a little farther downrange. He also noted that the compounds being detected in that suite of analyses are nitroglycerin and 2,4-DNT, which are propellant components.

Mr. Gregson then discussed soil sampling at E Range, which was an active pistol range with 15 firing points and five rows of pop-up targets arranged at varying distance, earthen mounds in front of each target, and a natural hill that provided a backstop. He also noted that as part of the 1988 berm maintenance project those areas were treated with a compound called mectite. Mr. Gregson reported that previous investigations at E Range found lead and arsenic at the firing line. He then showed an aerial photo/figure of the range and pointed out Areas 1 and 2, which were analyzed for metals, tungsten, explosives, and SVOCs, and Areas 3, 4, and 5, which were analyzed for metals and tungsten.

Mr. Gregson noted that lead was detected at 555 ppm at Area 4, where copper and tungsten were also detected. At the firing line lead was detected at about 70 ppm, tungsten at 2 ppm, and nitroglycerin at 9.3 ppm. Low levels of lead (34 ppm) were detected at the pop-up target area, as was some tungsten. The highest level of tungsten was detected in Area 3 and lead was detected at 5.1 ppm at the backstop berm. Lead was also detected at 264 ppm and tungsten at 1.8 ppm in samples taken from a couple of soil piles from construction activities on the range. Mr. Gregson also mentioned that at this time there is no soil standard for tungsten.

Mr. Schlesinger inquired about the tungsten work being conducted by the U.S. Center for Health Promotion and Preventive Medicine (CHPPM). Mr. Gonser replied that CHPPM was doing a 90-day toxicology study on rats, which he believes is currently under staff review. He also said that he was advised not to have too high expectations of the study as it is a single 90-day study and it's not anticipated to result in a standard of any kind, but would provide another piece of data that the risk assessors can use. Mr. Gonser further noted that sodium tungstate was used in the rat study, but there's some question as to whether the tungsten being found in the groundwater is sodium tungstate or metal tungsten. Mr. Schlesinger inquired about the report's availability to the IART. Mr. Gonser replied that distribution of the report would be up to the ammunition manufacturer who generated the study.

Mr. Walsh-Rogalski asked if the IAGWSP follows the Massachusetts Contingency Plan (MCP) formal reporting mechanism when these types of detections occur. Mr. Gregson replied that such detections were reported formally in the past, but more recently that has not been the case. He noted that MassDEP representatives involved with the cleanup program are informed about detections as quickly as everyone else is, but over the past few years the IAGWSP hasn't been filling out the formal paperwork for a release notification form. Mr. Walsh-Rogalski asked if this was based on some sort of legal or policy theory. Mr. Gregson indicated that it got to a point where it didn't make sense to formally report every detection, as it's well understood that the site is one where actions had to be taken. Mr. Walsh-Rogalski then inquired about the MCP requirement pertaining to the timeframe for completing cleanup.

Mr. McDonagh said it's well known that the IAGWSP and EPA have very different views on MCP applicability, and he thinks that any discussion of the issue should occur off line. He also said that he thinks it's more logical and rational to continue to work with MassDEP and EPA "through the very difficult issues that arise between the interface of the state and federal program," rather than "continue to argue over MCP applicability..."

Mr. Pinaud said that while he doesn't want to enter into an argument over MCP applicability, he will note that there's not yet any reporting standard for tungsten and therefore no requirement for the IAGWSP to report those detections. However, the IAGWSP has been keeping MassDEP informed about tungsten detections. He also agreed that lately the IAGWSP has not been formally reporting other metals detections, and added that because of the dispute over MCP applicability MassDEP letters include a paragraph that notes that the state reserves its rights under the MCP to enforce at a later date. Mr. Pinaud further noted, however, that MassDEP is fairly satisfied with the progress and pace of the cleanup and is part of the process. He also said that in answer to one of Mr. Walsh-Rogalski's questions a site is supposed to be cleaned up within five years of notification.

Mr. Walsh-Rogalski said that he hadn't meant to raise the issue of applicability, but was curious as to whether or not the IAGWSP was following the process strictly. Mr. Minior said that he doesn't think the question would have been raised had the media not been at the meeting. He also said that MCP applicability is a longstanding issue, discussion of which in this forum wastes the time of IART members.

Mr. Schlesinger noted that he likes to hear about interagency issues, as they are the type that cause problems, and occasional discussion about them allows newer IART members to become aware of these issues and what's gone on in the past. He then asked if there's some timeline requirement associated with the tungsten issue, which isn't being met. Mr. Gonser replied that there is no state or federal standard for tungsten, nor does he believe that any state has a standard for tungsten. There is therefore no requirement to do any tungsten investigation; however, this work is being undertaken in order to be proactive and help the Army overall in terms of better understanding the fate and transport of tungsten so that informed decisions can be made on future ammo production and use of tungsten at other ranges. Mr. Gonser also mentioned being involved in a meeting today with people from Washington about whether tungsten should be allowed to be used at various ranges across the country.

Mr. Schlesinger questioned the meaning behind Mr. Gregson's initial response to Mr. Walsh-Rogalski's inquiry about the MCP requirement for formal reporting of detections. Mr. Gonser replied that he thinks Mr. Gregson was saying that because it's clear to everyone that the site needs to be cleaned up, there isn't necessarily much value added by doing a lot of paperwork.

Mr. Pinaud added that for chemicals that have standards there's clearly an obligation to report if that standard is exceeded. And if there's a cleanup number, there's an obligation to clean up to

that number or to background, if possible. And if there's no cleanup number, it's up to the responsible party to generate a risk-based cleanup number. The tungsten situation is not that straightforward, however, as it is an emerging contaminant about which there's very little usable literature or data. Consequently it's incumbent on both the Army and MassDEP to pool their resources and determine whether tungsten poses a risk and what the associated cleanup number should be. Mr. Pinaud said that MassDEP is in fact working with the Army, is receiving the data generated from the U.S. Army Environmental Center (AEC) study at B Range, has taken split samples for groundwater analysis for tungsten, and is involved in scoping the Small Arms Ranges investigations. He further noted that he thinks that both MassDEP and the Army are doing all they can at this point, and he believes that MassDEP is involved to the extent it should be with respect to the tungsten issue.

Mr. Dow asked for clarification on the chemical form of tungsten being measured in the groundwater and the form used in CHPPM's toxicology study. Mr. Gonser replied that the CHPPM study is looking at the soluble form of tungsten, sodium tungstate, which is the form most likely to be taken up by an organism. The question is whether the elemental tungsten associated with weapons is reacting in the environment and reaching groundwater as sodium tungstate, or whether the small fibers of elemental tungsten are reaching the groundwater as they are, without undergoing that reaction. Mr. Gonser also said that he believes that part of AEC's work will be a speciation study to determine the form of tungsten being detected. Mr. Dow noted that he has a vague recollection that AFCEE at one time detected lead in groundwater believed to be methylated lead from gasoline, as opposed to inorganic lead, which is not very mobile in soil.

Mr. Schlesinger suggested that it would seem logical to add sodium tungstate to the list of analytes. Mr. Gonser replied that although he's outside his field of expertise on this, he believes that the lab equipment can test for various elements, but not for compounds (i.e. for sodium and for chloride, but not for salt). He said that this is why he thinks the speciation study will be needed. Mr. Schlesinger said that he is unconvinced and would like an expert opinion on whether it's possible to test for tungstate versus tungsten. Mr. Mullennix said that he thinks it would be fairly easy for a lab to test for something that's soluble (tungstate) versus something that's insoluble (tungsten).

Mr. Gregson continued with his presentation by discussing soil sampling at the Sierra East/Sierra West Ranges, which were active rifle/machine gun ranges with pop-up targets and target berms but no backstop berms, and where construction is under way to upgrade the pop-up targets. He showed an aerial photo/figure of the ranges, noted that they were designed for long-range shooting, and said that previous investigations there found 2,4-DNT at the firing points, probably related to propellants used in some of the rounds.

Mr. Gregson pointed out Area 1, Area 2, Area 3 and Areas 4A and 4B and reported that lead was detected in samples collected from the target berms, as expected. He also noted that nitroglycerin was detected at the firing line, as was copper. Copper was also found in the target areas and berms, and lead was found in the target area and berms at Area 3. Mr. Gregson further noted that the tungsten was detected at the target berms in Areas 4A and 4B, with the highest concentration being 9.2 ppm. He then said that the IAGWSP is developing an additional soil investigation workplan that will be part of the RI workplan for the Small Arms Ranges.

Mr. Conron asked how the soil at the ranges would be characterized. Mr. Gregson replied that the investigation didn't really reveal any surprises; it was expected that tungsten and lead would be found in the target berms, although the lead concentrations were a little lower than anticipated (right around the residential standard). Mr. Conron asked if the ranges were considered a high priority in terms of need for cleanup. Mr. Gregson replied that the groundwater data should help make that determination. Mr. Conron asked if the soil would be characterized as "highly

polluted,” although there’s no standard for tungsten. Mr. Gregson replied that he wouldn’t say so, given that few lead sampling results exceeded the 300 ppm residential cleanup number.

Mr. Gonser added that this means that a house could be located on that soil and pose no risk. He also noted, however, that the two main concerns associated with the Small Arms Ranges are the lead in the berms and propellants at the firing points, neither of which are believed to readily travel to groundwater. Therefore while he thinks the soil sampling results provide good information, the key part of the Small Arms Ranges investigation will be the groundwater.

Mr. Conron asked if what he’s hearing is that it would be safe to build a house on these ranges. Mr. Gregson replied that there are a few spots of lead contamination that exceed the 300 ppm residential standard. Mr. Pinaud indicated that it’s important to keep in mind that there are no houses on the Small Arms Ranges, and if there were, the lead would first have to be cleaned up. Mr. Conron said that he wants to know what percentage of the soil is contaminated. Mr. Pinaud replied that each range is different, and he doesn’t think that those kinds of percentages have been determined yet.

Ms. Jennings said that Mr. Conron is asking good questions, but the answers to them aren’t yet known. She explained that the investigation hasn’t been completed, and the normal process is to collect data, determine whether there’s a risk being posed, develop cleanup options if it’s determined that there is risk, and then arrive at estimates for what needs to be cleaned up. Mr. Conron asked when this is going to be done. Ms. Jennings replied that she would have to look at the overall schedule. She also noted that the soil data don’t provide all the information that’s needed. The next key step is to determine impacts to groundwater and then move into the risk assessment phase, and if warranted, develop cleanup options and estimates of how much needs to be cleaned up. Ms. Jennings further noted that while she understands Mr. Conron’s desire to have answers right now, there is a process to follow “and we’re trying to step through that process.”

Mr. Conron asked how long the process takes. Ms. Jennings said that it depends, and noted that with the number of Small Arms Ranges to be investigated it’s going to take some time. She also said that the first Small Arms Range to be addressed will be T Range, which the Guard is anxious to use and where it has set up the bullet catching system. She added that over the next six months to a year the IART will begin hearing about plans for other specific ranges, but it will probably be a couple years before all the investigations have been completed.

Mr. Conron said that while he’s sure it’s due to his ignorance of the process, when data are presented he expects to hear conclusions or observations about those data. He also said that there seems to be a disconnect between the investigation and the conclusion, but perhaps that’s because his expectations are unrealistic. Mr. Walsh-Rogalski said that he thinks one has to go through the process once in order to understand how “the data piles up to establish conclusions.”

Mr. Schlesinger noted that an RDX fate and transport study was conducted years ago, before investigation into RDX at MMR was completed. He then said that some work was done after the mectite action at the ranges and he would like to know if any of that information is available. He also requested that a lead fate and transport study be undertaken so that what happens to lead in soil can finally be understood. Mr. Gonser confirmed that information from the berm removal program is available. He also noted that the Guard is currently working with the U.S. Geological Survey (USGS) to develop a plan to look at lead fate and transport. Mr. Schlesinger said that at the next IART meeting he wants to be provided with an update on the status of that study. Ms. Jennings stressed the importance of the groundwater data in terms of answering questions about lead. She noted that once that information has been collected, a plan will be devised.

COL FitzPatrick clarified that the Guard and USGS are not conducting a lead fate and transport study, but instead are collecting all the existing lead data (soil and groundwater) from the two

MMR cleanup programs and encapsulating them into one document from which an assessment about lead will be made. Mr. Schlesinger said that he doesn't think that's enough, and wants a study on the fate and transport of lead. COL FitzPatrick explained that the Guard wants to first look at the information that's available and ensure that the money that's being spent is being spent wisely. He said that he thinks there's a sufficient amount of information to begin forming an opinion so that smart decisions can be made in the future. Mr. Mullennix requested that this information be shared with the IART once it's been assembled and some preliminary conclusions have been proposed.

Mr. Dow stated that like mercury, lead can become methylated, which might cause it to be more mobile than it would normally be, such that it could be transported to groundwater. Ms. Jennings noted that the lead would then be detectable in groundwater, and added that while it's certainly known that there's lead in the soil, the big question is whether it's in groundwater. And if it's not, the question is "what is it really doing in the soil column." The current objective is to determine whether there's lead in groundwater, and part of the Guard/USGS project is to see whether there's any correlation between lead in soil and lead in groundwater. Ms. Jennings also noted that some additional monitoring wells have been proposed for locations at the range boundaries to see if lead is detected in groundwater there. Mr. Dow said that as he'd mentioned, he recalls that AFCEE actually detected lead in groundwater at one site, but the theory was that it was methyl-lead from gasoline and not the result of bacterial action. Mr. Schlesinger reiterated his belief in the need for a lead fate and transport study.

Mr. Mullennix suggested to COL FitzPatrick that the Guard/USGS study include a thorough literature review of lead in soil, the migration of lead in soil, and whether it might become transformed into a methyl-lead. COL FitzPatrick said that he believes that that type of research is being conducted as part of the study. He also said that he would talk to Mr. Mullennix off line to learn more specifics about this recommendation.

Mr. Gregson continued his presentation by discussing the groundwater investigation plan for the Small Arms Ranges, which is focused on those with higher lead use: Sierra East/West, E, T, B, C, G, and K & J Ranges. He reported that a series of drive-points installed at Sierra East/West had marginal success (a low level of tungsten was detected in drive-point 2 [DP-2]), and so three monitoring wells are going to be installed to determine whether there's any contamination coming off the main portion of the range. He also reported that one monitoring well has been proposed at E Range and one at T Range, each located downgradient of the center of the range. Mr. Gregson then noted that a well (BP-1) was recently drilled at B Range, where the relatively high level of tungsten was previously detected. Depending on the results at BP-1, a contingent location will also be drilled.

Ms. Lehmert asked if samples from the ranges are being analyzed for lead, and Mr. Gregson confirmed that they are. Mr. Schlesinger asked if all the samples are also being analyzed for perchlorate and explosives. Mr. Gregson replied that he believes so, but couldn't say definitively that every single sample will be analyzed for perchlorate, and would have to check the workplan. Mr. Gonser clarified that the drive-point data for tungsten are available, but not all of the lead results have come back yet. Mr. Mullennix asked if the lead analysis is for both soluble and insoluble lead. Mr. Gregson said that he thinks the samples are being analyzed for soluble lead.

Mr. Gregson then reported that a monitoring well is being installed downgradient of the central portion of G Range and that four wells are being installed at K & J Ranges. He also said that he hopes to have groundwater data to report at the October IART meeting.

Central Impact Area Recent Results

Mr. Gregson stated that the IAGWSP is conducting some additional investigation to fill in the data gap between the plumes emanating from the Central Impact Area plume and the groundwater contamination identified at the Northwest Corner. He referred to a map of that area and pointed out some drive-point locations as well as a monitoring well where RDX was detected. He also noted that it appears that the deeper detections of RDX at the Northwest Corner track back to the Central Impact Area. He then pointed out the recently installed monitoring well 442 (MW-442), which had tested nondetect.

Mr. Schlesinger asked if any drilling is being done along the power line that runs east/west. Mr. Gregson replied that although some drive-point work was done there, the topography is such that it's impossible to get in a drill rig to install permanent monitoring wells. He also noted, however, that the drive-points had provided some good information.

Mr. Walsh-Rogalski inquired about the RDX detections that track back to the Central Impact Area. Mr. Gregson referred to a well where RDX was detected at 1.4 ppb and pointed out its location in relation to the Northwest Corner plumes. Mr. Walsh-Rogalski asked if the new data changed Mr. Gregson's thinking about the relationship between the Northwest Corner and the Central Impact Area. Mr. Gregson replied that he'd always thought that the RDX at the Northwest Corner came from the Central Impact Area, and his opinion on the perchlorate contamination has not changed.

Mr. Gregson also mentioned the drive-point work conducted in the Central Impact Area itself in order to collect some water table information and see whether there are ongoing sources of RDX and perchlorate there. He noted that there were a couple of detections that have been helpful in terms of "fine-tuning that picture." Mr. Dow inquired about RDX levels detected at the area designated in red on the map. Mr. Gregson spoke of a 1.4 ppb RDX detection, a 0.79 ppb RDX detection, and a 0.78 ppb HMX detection. Mr. Dow noted that the color-coding should have been yellow rather than red. Mr. Gregson said that he would check on that.

Former K Range Supplemental Remedial Investigation

Mr. Gregson reported that four drive-points installed in an effort to provide some additional groundwater characterization following submittal of the draft Former K Range groundwater RI had tested nondetect. He noted that the drive-points were located downgradient of some areas of concern identified in the RI, that there doesn't appear to be a plume coming from the Former K Range, and that some question remains about the need for additional soil sampling and regarding UXO as a potential source of contamination, given the likelihood that 40-mm grenades and other UXO containing high explosives (HE) exist there.

Mr. Schlesinger inquired about the status of UXO removal at the site. Mr. Gregson replied that the IAGWSP has proposed an investigation to see what specific rounds exist there, how many there are, where they're located, and whether there's risk of leaching to groundwater. Based on this assessment a decision will be made in terms of whether an action is needed to prevent a future groundwater problem. Mr. Schlesinger indicated that he thought that the UXO would be removed anyway. Mr. Gregson replied that it probably would and explained that the question is whether there's an imminent need to do so.

Agenda Item #4. Central Impact Area Feasibility Study Screening Report Status

Mr. Gallagher noted that an FS screening report is a step taken for fairly complex sites where the remedial alternative is not that obvious, such as the Central Impact Area plume, which is quite large and discontinuous and has a large source area. He reported that for the Central Impact Area 64 different options within seven general categories were evaluated for the FS screening report. The IAGWSP then worked with the regulators to select a subset to undergo computer modeling and determine timeframes for achieving aquifer restoration. At this time the IAGWSP is again

working with the regulators to further narrow down the remaining options to a more manageable subset of the most promising alternatives to be carried forward to the actual FS for detailed analysis. Mr. Gallagher also noted that the current group of alternatives is a representative set meant to provide an idea of how different potential actions would affect overall cleanup. He also said that the FS process is an iterative one, and that it's likely that some of the alternatives will be changed prior to or even during the FS. In addition he noted that the evaluations thus far have been based on the RDX plume, as it is the most widely distributed, highest-concentration plume at the Central Impact Area; however, they would also capture the perchlorate, HMX, and TNT contamination there.

Mr. Gallagher then reviewed the alternatives: Alternative 1, long-term management, which involves institutional controls (ICs) or access restrictions, groundwater monitoring, and natural attenuation; Alternative 2, which adds partial source removal, and for which 14-acre, 24-acre, and 80-acre source areas were considered, and the 24-acre option was carried forward for all alternatives involving partial source removal; Alternative 3, which adds groundwater treatment at higher-concentration areas, and for which three scenarios were considered – one involving an existing extraction well that was installed for a pump test, one involving 11 extraction wells pumping at 1,100 gpm, and another involving eight extraction wells pumping at 850 gpm; Alternative 4, which is full containment of the plume at Spruce Swamp Road (approximately 14 extraction wells) and natural attenuation for the portion of the plume downgradient of the containment wells; Alternative 5, which is capture at the leading edge of the plume; and Alternative 6, which is containment along Spruce Swamp Road (approximately 14 wells) and active restoration in the area downgradient (approximately 21 wells and a 20-year cleanup timeframe); and Alternative 7, treatment and remediation of the entire 330-acre Central Impact Area source area and remediation of the entire plume, which is estimated to require about 38 extraction wells. Mr. Schlesinger inquired about the cleanup timeframe, and Mr. Gallagher replied that the initial evaluation looked at two options – 20 years and 30 years.

Mr. Gallagher also reported that the draft FS Screening Report is due in November 2006, that a selected subset of the alternatives will be evaluated in the FS, that the final FS Screening Report is due in March 2007, and that a combined soil and groundwater FS will be presented for public comment in July 2007.

Mr. Conron inquired about access restrictions. Mr. Gallagher replied that they pertain to restricting the use of groundwater as drinking water supply in areas downgradient of the plume and preventing access to direct contact with soils containing contamination. Mr. Conron asked if the restrictions apply to soldiers firing at the base. Mr. Gonser confirmed that ICs or land use controls (LUCs) pertain to prevention of exposure, while the firing issue is separate and different. He also noted, however, that there's no planned artillery firing for the Central Impact Area, but added that such decisions are up to the Adjutant General (TAG).

Mr. Mullennix asked if the regulators think that the investigation phase is developed well enough to move into the FS stage. Ms. Jennings replied that the post-screening investigations (which look at UXO density and the size of the source area) are really focused on helping with the FS. Mr. Gallagher noted again that some of the alternatives are likely to be refined as they're brought forward into the FS for detailed evaluation. For example, based on data collected over the past couple years it appears that the active source area is smaller than the 330 acres it was initially thought to be – around 80 acres or perhaps smaller. Mr. Pinaud said that while MassDEP is “more comfortable with the groundwater investigation than the source areas,” the agency believes that it's appropriate to move forward with the FS.

Mr. Walsh-Rogalski inquired about the estimated depth of soil removal associated with the alternatives. Mr. Gallagher replied that a depth of 2 feet was assumed in the FS screening report,

but that may be refined during the FS. Mr. Walsh-Rogalski suggested that this would vary depending on concentrations and Mr. Gallagher confirmed that some areas might be shallower and some deeper.

Mr. Schlesinger said that he thinks that rather than limiting just public access to the groundwater and soil, “limiting access of this area completely, from all institutions, would be a very good thing indeed.” He also asked when cost estimates for the alternatives would be developed. Mr. Gallagher replied that the IAGWSP is currently working on cost estimates, which is a fairly complex process, mostly because of the UXO removal component.

Mr. Schlesinger also referred to the issue of risk to ecological receptors and suggested that it’s important to know from the outset which alternatives are nonstarters because of effects on state-listed endangered species. Ms. Jennings replied that the plan is to involve natural resources personnel after some of the alternatives on the table have been eliminated for other reasons, such as implementability, cost, or effectiveness. She explained that it doesn’t make sense to solicit comment from the natural resources people on alternatives that might be screened out before reaching a stage of more detailed analysis.

Mr. Schlesinger then noted that he’s anxious to learn more about the natural attenuation aspect of the alternatives in terms of the size of the downgradient area and the amount of time it would take for it to attenuate to acceptable levels. Mr. Gonser said that the modeling conducted as part of the FS will show what would happen to the plume over time and how long it will take to attenuate. However, because this type of modeling is very expensive and complex, the IAGWSP is first trying to narrow the amount of alternatives down to a reasonable number.

Mr. Dow inquired about the placement of extraction wells for Alternative 6. Mr. Gallagher replied that containment wells would be placed along Spruce Swamp Road and the additional aquifer restoration wells would be located in the general area downgradient of there. He also noted that the alternative would involve reinjection wells located in order to help control the plume, and that if this option is carried forward optimum well locations, pumping rates, and so forth would be selected. The current version of the alternative, however, does not show exactly where wells would be located.

Mr. Dow noted that AFCEE’s cleanup program has used axial wells to drive down contaminant mass at “hotspots” in plumes. Mr. Gallagher said that because the Central Impact Area plume is large, discontinuous, and at different depths, traditional treatment options aren’t necessarily that applicable and therefore the plume lends itself well to computer analysis to go through the various iterations and determine optimum well locations and pumping rates. Mr. Gonser emphasized that it is important to keep in mind that unlike the Demo 1 plume, for example, the groundwater contamination at the Central Impact Area is really a “bunch of little tubes coming from a whole bunch of source areas vertically and horizontally,” which makes for a much more complex scenario.

Mr. Dow referred to the natural resources issue and said that he thinks it’s important to consider the patchiness of the landscape in relation to the distribution of the Central Impact Area “plumelets” and source areas. He said that it’s not a “straightforward kind of problem” to determine how much habitat is needed to support the endangered species, given the patchy distribution of clumps of trees with grassy areas in between.

Ms. Jennings referred to Mr. Dow’s comment about “hotspot” treatment and said that although it may not be evident, Alternative 3 employs a hotspot type of approach. She also said that she thinks that the more detailed analysis will show alternatives that are more similar to some of those associated with the AFCEE program.

Mr. Minior referred to the map depicting Alternative 3, pointed out the Chemical Spill 19 (CS-19) RDX plume 2-ppb contour line, and noted that AFCEE had modeled what will happen to that contamination after the source is removed. He said that it is predicted to attenuate to below the health advisory of 2 ppb in approximately 20 years, before crossing the base boundary. He also said that he could make this information available to Mr. Schlesinger. Mr. Schlesinger indicated that he would like to receive that information. He also recommended that the IAGWSP consider an alternative that involves treatment at the 2-ppb contours rather than at the leading edges of the plume.

Agenda Item #5. Open Discussion

Mr. Schlesinger inquired about upcoming meeting topics. Mr. Murphy reviewed the future agenda items, as listed below.

Agenda Item #6. Adjourn

Mr. Murphy noted that the IART would meet next on October 24, 2006 at the Bourne Best Western and on December 5, 2006 at a location to be determined. He then adjourned the meeting at 8:38 p.m.

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Action Items:

1. Mr. Mullennix and Mr. Minior asked to be provided with a copy of the IAGWSP's response to regulator comments on the Northwest Corner Remedial Investigation Report, when available.
2. Mr. Schlesinger asked for clarification on laboratories' ability to analyze for tungstate versus tungsten.
3. Mr. Schlesinger asked that a lead fate & transport study be undertaken. Mr. Mullennix asked that the Massachusetts Army National Guard/USGS lead data report be provided to the IART, when available.
4. The IAGWSP will check the color-coding on the Central Impact Area figure showing RDX detections at the water table in order to ensure accuracy of the depicted data.
5. AFCEE (Mike Minior) will provide Mr. Schlesinger with the CS-19 modeling information that shows dissipation of that plume after removal of its source area.

Potential Future Agenda Topics:

October 24, 2006 – Bourne Best Western:

- Western Boundary Remedial Investigation
- Bourne Water District Water Supply Well 4 Permit Request Update
- J-1 and J-2 Range Soil Remedial Investigation Update

December 5, 2006 – Location TBD:

- Gun and Mortar Positions Remediation Investigation & Groundwater Monitoring Plan
- Phase IIB Remedial Investigation

Agenda Topics TBD:

- Natural Resources Discussion
- Wellhead Treatment vs. Aquifer Restoration

Handouts Distributed at Meeting:

1. Responses to Action Items from the July 25, 2006 IART Meeting

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2. Presentation handout: Remediation & Investigation Update
 3. Presentation handout: J-1 and J-2 Ranges Soil Remedial Investigation Update
 4. Presentation handout: Central Impact Area Feasibility Study Screening Report
 5. Figures for Central Impact Area Feasibility Study Screening Report presentation
 6. Map Legends sheet
 7. UXO Discoveries/Dispositions Since Last IART (Ending 9/21/06)
 8. IART Meeting Evaluation Form
 9. News Releases, Neighborhood Notices and Media Coverage 7/22/06 – 9/22/06