

**Massachusetts Military Reservation Cleanup Team (MMRCT)/  
Senior Management Board (SMB) Meeting  
Building 1805  
Camp Edwards, MA  
March 24, 2010  
6:00 – 9:00 p.m.**

**Draft Meeting Minutes**

<b>Member:</b>	<b>Organization:</b>	<b>Telephone:</b>	<b>E-mail:</b>
Jon Davis	AFCEE/MMR	508-968-4670	<a href="mailto:jonathan.davis.2@us.af.mil">jonathan.davis.2@us.af.mil</a>
Mike Minior	AFCEE/MMR	508-968-4670	<a href="mailto:mike.minior@us.af.mil">mike.minior@us.af.mil</a>
Hap Gonser	IAGWSP	508-968-5107	<a href="mailto:kent.gonser1@us.army.mil">kent.gonser1@us.army.mil</a>
Ben Gregson	IAGWSP	508-968-5821	<a href="mailto:Benjamin.p.gregson@us.army.mil">Benjamin.p.gregson@us.army.mil</a>
Mike Ciaranca	E&RC	509-968-5121	<a href="mailto:Michael.ciaranca@us.army.mil">Michael.ciaranca@us.army.mil</a>
LTC Richard Bertone	MAARNG	508-968-5883	<a href="mailto:richard.bertone@us.army.mil">richard.bertone@us.army.mil</a>
Capt Dan Abel	USCG	508-968-6300	<a href="mailto:dan.b.abel@uscg.mil">dan.b.abel@uscg.mil</a>
Mary Sanderson	US EPA	617-918-1381	<a href="mailto:sanderson.mary@epa.gov">sanderson.mary@epa.gov</a>
Lynne Jennings	US EPA	617-918-1210	<a href="mailto:Jennings.lynne@epa.gov">Jennings.lynne@epa.gov</a>
Millie Garcia-Serrano	MassDEP	508-946-2727	<a href="mailto:millie.garcia-serrano@state.ma.us">millie.garcia-serrano@state.ma.us</a>
Len Pinaud	MassDEP	508-946-2871	<a href="mailto:Leonard.pinaud@state.ma.us">Leonard.pinaud@state.ma.us</a>
Ellie Grillo	MassDEP	508-946-2866	<a href="mailto:ellie.grillo@state.ma.us">ellie.grillo@state.ma.us</a>
Tom Cambareri	Cape Cod Commission	508-362-3828	<a href="mailto:tcambareri@capecodcommission.org">tcambareri@capecodcommission.org</a>
Steve Hurley	MMRCT/MDFW	508-759-3406	<a href="mailto:steve.hurley@state.ma.us">steve.hurley@state.ma.us</a>
Virginia Valiela	SMB/Falmouth rep	508-563-9028	<a href="mailto:valiela@hotmail.com">valiela@hotmail.com</a>
Stephen Mealy	SMB/Town of Bourne	508-759-0600	<a href="mailto:smealy@townofbourne.com">smealy@townofbourne.com</a>
Phil Goddard	MMRCT/Bourne	508-759-3043	<a href="mailto:pgoddard@aol.com">pgoddard@aol.com</a>
Diane Rielinger	MMRCT/Falmouth	508-563-7533	<a href="mailto:one-brain@verizon.net">one-brain@verizon.net</a>
Greg Taylor	MMRCT/Sandwich		<a href="mailto:gtaylor1@prodigy.net">gtaylor1@prodigy.net</a>
Ronald Reif	MMRCT/Falmouth	508-495-1373	<a href="mailto:rreif@whoi.edu">rreif@whoi.edu</a>
Wade Saucier	MMRCT/Sandwich	508-833-6002	<a href="mailto:wajsaucier@aol.com">wajsaucier@aol.com</a>
<b>Facilitator:</b>	<b>Organization:</b>	<b>Telephone:</b>	<b>E-mail:</b>
Patrick Field	CBI	617-492-1414	<a href="mailto:pfield@cbuilding.org">pfield@cbuilding.org</a>
<b>Attendee:</b>	<b>Organization:</b>	<b>Telephone:</b>	<b>E-mail:</b>
Tom Sims	AFCEE	404-562-4200	<a href="mailto:Thomas.sims@hq.af.mil">Thomas.sims@hq.af.mil</a>
Rose Forbes	AFCEE/MMR	508-968-4670	<a href="mailto:rose.forbes@us.af.mil">rose.forbes@us.af.mil</a>
Kris Curley	IAGWSP	508-968-5626	<a href="mailto:kris.curley@us.army.mil">kris.curley@us.army.mil</a>
Pam Richardson	IAGWSP	508-968-5630	<a href="mailto:Pamela.j.richardson@us.army.mil">Pamela.j.richardson@us.army.mil</a>
Paul Nixon	IAGWSP	508-968-5620	<a href="mailto:paul.nixon@us.army.mil">paul.nixon@us.army.mil</a>
Dave Hill	IAGWSP	508-968-5621	<a href="mailto:dave.hill@us.army.mil">dave.hill@us.army.mil</a>
Joanne Palmer	E&RC	508-233-6517	<a href="mailto:jbeanpalmer@yahoo.com">jbeanpalmer@yahoo.com</a>
Emily Derbyshire	E&RC	508-968-5146	<a href="mailto:Emily.derbyshire@us.army.mil">Emily.derbyshire@us.army.mil</a>
Sally Hartmann	E&RC	508-968-5145	<a href="mailto:sally.hartmann@us.army.mil">sally.hartmann@us.army.mil</a>
Keith Driscoll	MAARNG		<a href="mailto:keith.driscoll@us.army.mil">keith.driscoll@us.army.mil</a>
Mike Koski	MANG	508-968-5888	<a href="mailto:Michael.koski@us.army.mil">Michael.koski@us.army.mil</a>
John McKenna	MANG	508-233-6770	<a href="mailto:jack.mckenna@us.army.mil">jack.mckenna@us.army.mil</a>
John Kelly	MANG	508-968-5848	<a href="mailto:john.kelly@us.army.mil">john.kelly@us.army.mil</a>
Mike Speth	NGB	508-968-5936	<a href="mailto:mike.speth@us.army.mil">mike.speth@us.army.mil</a>
Mike Koski	Camp Edwards	508-968-5888	<a href="mailto:Michael.koski@us.army.mil">Michael.koski@us.army.mil</a>
Bryan Olson	US EPA	617-918-1365	<a href="mailto:olson.bryan@epa.gov">olson.bryan@epa.gov</a>

Jane Dolan	US EPA	617-918-	<a href="mailto:dolan.jane@epa.gov">dolan.jane@epa.gov</a>
Elliott Jacobs	MassDEP	508-946-3786	<a href="mailto:elliott.jacobs@state.ma.us">elliott.jacobs@state.ma.us</a>
Mark Begley	EMC	508-968-5127	<a href="mailto:mark.begley@state.ma.us">mark.begley@state.ma.us</a>
Carter Hunt	MDFA	508-563-2785	<a href="mailto:chunt@massdevelopment.com">chunt@massdevelopment.com</a>
Rosemary Roberts		508-539-3078	<a href="mailto:roberts0441@comcast.net">roberts0441@comcast.net</a>
Katie Thomas	Jacobs	508-743-0214	<a href="mailto:Katie.thomas@jacobs.com">Katie.thomas@jacobs.com</a>
Jim Quin	Aerostar Env.	720-937-9123	<a href="mailto:jpg9123@msn.com">jpg9123@msn.com</a>
Philip Elson	Aerostar Env.	904-565-2820	<a href="mailto:pelson@aerostar.net">pelson@aerostar.net</a>
Diane Barth	Enterprise Newspapers	508-548-4700	<a href="mailto:barth@capenews.net">barth@capenews.net</a>
Jane Gasper	Innovar	508-759-9114	<a href="mailto:jgasper@innovar-env.com">jgasper@innovar-env.com</a>

**Action Items:**

1. Mr. Reif requested that MMRCT presentation slides pertaining to contaminant data identify the dates when the samples were collected. He also asked that presenters reference soil standards when discussing soil contamination levels.
2. Mr. Cambareri requested that AFCEE look into the possibility of analyzing data associated with reinjection/infiltration systems in order to share experience to benefit future Cape-wide activities associated with indentifying wastewater discharge areas.

**Handouts Distributed at Meeting:**

1. 3/24/10 EPA letter re: approval for Hand Grenade Simulator Training
2. Presentation handout: IAGWSP FY10 Program
3. Presentation handout: Demolition Area 1 Update
4. Presentation handout: J-1 Range Remedy Selection
5. Presentation handout: L Range Remedy Selection
6. Presentation handout: Program/Budget Update (IRP)
7. Presentation handout: Extraction Well Optimization Status
8. Map: IRP Plumes and Treatment Systems, March 2010
9. Presentation handout: Renewable Energy Update
10. Presentation handout: eXportable Combat Training Capability (XCTC)
11. Presentation handout: XCTC Site Review Process
12. Map: Massachusetts Military Reservation Groundwater Findings – Issued March 2010
13. Draft Massachusetts Military Reservation Cleanup Update – Spring 2010
14. MMR Cleanup Team Meeting Evaluation form

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**Agenda Item #1. Introduction and Agenda Review**

Mr. Field convened the meeting at 6:03 p.m. and the Massachusetts Military Reservation Cleanup Team (MMRCT) and Senior Management Board (SMB) members introduced themselves. It was noted that Ms. Steele and Mr. LoGuidice would not be attending the meeting. Mr. Field then reviewed the agenda and asked if there were any changes or additions to the January 13, 2010 MMRCT meeting minutes. No changes were offered and the minutes were approved as written.

**Agenda Item #2. Community News**

Mr. Sims, the Air Force trustee representative on the Natural Resource Trustee Council (NRTC) at MMR, announced that the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) issued a news release yesterday regarding the public comment period on the restoration plan associated with the Textron natural resource damages (NRD) settlement. Mr. Sims noted that the public comment period runs until April 21, 2010 and that a public meeting on the restoration plan will be held

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on April 6, 2010, at 7:00 p.m., at the Upper Cape Regional Technical School in Bourne. He also noted that more information is available on the EOEEA website.

Capt Abel announced that David Tessicini is now working for the U.S. Coast Guard in the job that had been occupied by Bob Cannon for many years.

Ms. Sanderson announced that tonight's meeting materials packet includes a letter, dated March 24, 2010, from the U.S. Environmental Protection Agency (EPA) to COL Francis McGinn, regarding limited authorization to allow use of the reformulated pyrotechnic device at MMR for a two-year period.

### **Agenda Item #3. Impact Area Groundwater Study Program Update**

Mr. Gonser informed the group that the meeting materials packet also includes the draft "MMR Cleanup Update." He noted that the publication, which is a joint effort of the Installation Restoration Program (IRP) and the Impact Area Groundwater Study Program (IAGWSP), is made up of an MMR-wide plume map as well as summaries about sites associated with each of the cleanup programs. He said that comments on the draft document should be submitted to Pamela Richardson at the IAGWSP. He also noted that the IAGWSP will be publishing a more detailed plume booklet later this year.

Mr. Gonser then showed a slide entitled "IAGWSP FY'10 Program" and noted that a good portion of the budget (\$3.5 million) is being spent on operations & maintenance (O&M) of treatment systems (at Demolition Area 1, J-1 Range, J-2 Range, and J-3 Range). He also said that the biggest portion of the budget (\$10.9 million) is being spent on source response actions at L Range, J-1 Range, J-2 Range, Former K Range, Former A Range, Former B, D, and M Ranges, and the Central Impact Area – which are mostly completed. Source response actions at some of the Gun & Mortar Positions will begin this year, and it's expected that all source removals will be completed.

Mr. Gonser also reported that some of the budget (\$6.7 million) is going into investigations and studies, which include the installation of new monitoring wells at J-1 Range, Demolition Area 1, and Demolition Area 2, and writing all the reports. Mr. Gonser further noted that there is money in the budget (\$7.1 million) for the groundwater response action at J-1 Range, and that once the J-1 system has been installed, the Central Impact Area will be the main site left to address.

### **Agenda Item #4. Demolition Area 1 Update**

Mr. Gregson showed a figure entitled "Demolition Area 1 New Wells" and pointed out the toe of the Demolition Area 1 plume, the Pew Road treatment system, the MMR boundary, Route 28, the three new monitoring wells downgradient of the toe of the plume, and the new monitoring well farther downgradient. He noted that profile results from the new wells showed perchlorate detections of 0.4 parts per billion (ppb), 0.5 ppb, and 11 ppb (at the northernmost well), and 0.2 ppb at the downgradient well. He also reminded the group that the target cleanup level for perchlorate is the Massachusetts maximum contaminant level (MCL), which is 2 ppb. Mr. Gregson further noted that based on the 11 ppb detection, the IAGWSP drilled another location to the north, with results of 0.4 ppb. Based on results from the new wells, the IAGWSP is conducting additional modeling and particle tracking, and will propose two or three additional monitoring wells at the base boundary. Mr. Gregson noted that the IAGWSP will be updated as more information becomes available.

Ms. Valiela asked if the 11 ppb detection occurred at an elevation in the groundwater that correlates to the Demolition Area 1 plume. Mr. Gregson replied that it had occurred at a depth where it would be expected, but at a higher concentration.

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## **Agenda Item #5. J-1 Range Remedy Selection**

Mr. Gregson showed the MMR Groundwater Findings map and pointed out the J-1 Range on the eastern side of the base, the MMR boundary with the Forestdale neighborhood in Sandwich, the top of the groundwater mound, the J-1 Northern (J-1N) plume (migrating northwest, and containing RDX and perchlorate), and the J-1 Southern (J-1S) plume (migrating southeast into Forestdale, and containing only RDX). He noted that the J-1 Range is 600 feet wide by 6,000 feet long, and was used from the mid-1940s to late 1980s – initially for training as an anti-tank and transition range for small arms training, and later, beginning in the 1950s, as a defense contractor munitions testing area. Mr. Gregson stated that the IAGWSP conducted extensive soil and groundwater investigations at the J-1 Range and found explosives and propellants (primarily RDX and perchlorate) in soil. He said that defense contractor testing and disposal activities are believed to be the likely source of the groundwater contamination coming from the range.

Mr. Gregson reminded the group of the J-1 Range Groundwater briefing at the July 2009 MMRCT meeting, and the J-1 Range Soil/Source briefings at the December 2009 and January 2010 MMRCT meetings. He also displayed a slide listing the phases of the J-1 Range soil/source investigation phases and noted that the effort included geophysical surveys (air magnetometry and ground-based surveys), intrusive investigation of anomalies identified through geophysics, a great deal of soil sampling, review of aerial photographs, and the robotics technology demonstration that involved soil remediation and unexploded ordnance (UXO) removal. Mr. Gregson showed a figure of the J-1 Range study areas and pointed out the range's firing point, the flyover area, the 2,000 meter berm, and the interberm area (IBA), where many disposal activities occurred. He noted that the IBA is thought to be primary source of the J-1N plume and the firing point area is thought to be source of the J-1S plume. He also reported that all known source areas (contaminated soils and munitions burials) have been removed, and it's believed that there are no continuing sources to groundwater contamination at the J-1 Range.

Mr. Gregson stated that groundwater characterization activities at J-1 Range, which began in 1997, have included groundwater modeling, the installation and sampling of numerous monitoring wells, and synoptic water level surveys, all of which have helped to develop an understanding of the extent of contamination and the groundwater flow regime controlling the migration of the plumes at the range.

Mr. Gregson noted that when the J-1 Range Remedial Investigation/Feasibility Study (RI/FS) was published, the J-1N plume, an RDX and perchlorate plume migrating northwest beneath the Impact Area, had a maximum RDX concentration of 36 ppb and a maximum perchlorate concentration of 47 ppb. The historic maximum RDX concentration was 36 ppb, and the historic maximum perchlorate concentration was 78 ppb. Currently the maximum RDX concentration is 11 ppb, and the maximum perchlorate concentration is 42 ppb. Mr. Gregson reminded the group that the EPA health advisory (HA) for RDX is 2 ppb, the one-in-a-million cancer risk level for RDX is 0.6 ppb, and the state MCL for perchlorate is 2 ppb. He also displayed figures showing plan view and cross-section views of J-1N perchlorate contamination, and of the RDX contamination, and noted that the perchlorate is detached from its source, while there are still some RDX detections near the water table, but at lower concentrations than farther out in the plume, which indicates that the source is depleting.

Mr. Gregson then reviewed J-1N groundwater alternatives: Alternative 1 – No Further Action, under which long-term groundwater monitoring would be discontinued, no land-use controls (LUCs) would be implemented, and the cost would be \$114 thousand for well abandonment and documentation; and Alternative 2 – Monitored Natural Attenuation (MNA) and LUCs, under which groundwater contamination would be reduced through natural processes, long-term monitoring would continue, LUCs would be implemented to protect against use of the groundwater during remediation, perchlorate would dissipate to below the 15 ppb HA by 2024 and below the 2 ppb state MCL by 2080, RDX would dissipate to below 2 ppb by 2053 and to below 0.6 ppb after 2109, and the cost would be \$3.4 million for groundwater monitoring, well abandonment, and closeout documentation.

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Mr. Gregson then discussed Alternative 3 – One Extraction Well, under which groundwater contamination would be remediated using one extraction well installed in-plume. He explained that Alternative 3a involves operating the well until influent concentrations decrease below the method detection limit and Alternative 3b involves operating the well until 2030. Also, with Alternative 3 long-term groundwater monitoring would continue, LUCs would be implemented, perchlorate would dissipate below 2 ppb by 2042 (3a) or 2043 (3b) and below 15 ppb by 2018 (3a & 3b), RDX would dissipate below 2 ppb by 2038 (3a) or 2040 (3b) and below 0.6 ppb by 2048 (3a) or 2051 (3b), and the cost would be \$12.4 million for 3a and \$11.7 million for 3b. He also reviewed details of Alternative 4 – Two Extraction Wells (In-Plume): groundwater contamination would be remediated using two in-plume extraction wells, 4a involves operating the well until influent concentrations decrease below the method detection limit, 4b involves operating the upgradient well until 2015 and the downgradient well until 2023, long-term monitoring would continue, LUCs would be implemented, perchlorate would dissipate below 2 ppb by 2037 (4a) or 2045 (4b) and below 15 ppb by 2023 (4a) or 2024 (4b), RDX would dissipate below 2 ppb by 2027 (4a) or 2031 (4b) and below 0.6 ppb by 2035 (4a) or 2050 (4b), and the cost would be \$13 million for 4a and \$11.6 million for 4b.

Mr. Gregson noted that for Alternative 5 – Two Extraction Wells (In-Plume, Leading Edge), groundwater contamination would be remediated using two extraction wells (one in-plume and one in front of the leading edge of the plume), long-term monitoring would continue, LUCs would be implemented, perchlorate would dissipate to below 2 ppb by 2035 and to below 15 ppb by 2017, RDX would dissipate below 2 ppb by 2037 and below 15 ppb by 2047, and the cost would be \$14.9 million. Alternative 6 – Five Extraction Wells is designed to clean up the plume within a 10-year timeframe. Under Alternative 6 groundwater contamination would be remediated using five in-plume extraction wells, long-term monitoring would continue, LUCs would be implemented, perchlorate would dissipate below 2 ppb by 2020 and below 15 ppb by 2017, RDX would dissipate below 2 ppb by 2018 and below 0.6 ppb by 2020, and the cost would be \$19.8 million. Mr. Gregson also showed a slide entitled “Northern J-1 Plume FS Alternatives Summary.”

Mr. Gregson then reviewed the criteria that were used to evaluate the alternatives: overall protection of human health and the aquifer; compliance with regulations; long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; cost; state acceptance; and community acceptance. He also reported that the IAGWSP’s recommendation is to remediate the groundwater using two extraction wells, with locations to be determined once factors such as cost, timing, and potential impacts to habitat, have been fully considered as part of the design process. The recommended alternative would also include long-term monitoring and LUCs, and perchlorate would dissipate below 2 ppb between 2035 and 2045, RDX would dissipate below 0.6 ppb between 2047 and 2050, and the cost would be in the range of \$12 million to \$15.3 million.

Mr. Taylor inquired about EPA and the Massachusetts Department of Environmental Protection (MassDEP) concerns regarding the recommended alternative. Ms. Jennings replied that the regulators are balancing amongst some of the criteria. She said that there some differing opinions on where to place the most leading extraction well, which is why additional investigation work is ongoing. She also said that the regulators are looking to balance against the timeframes to remediate, and noted that in this case the plume is headed toward the Impact Area. The regulators are also looking as the cost factor: how much money is spent versus how much time is saved versus uncertainty. Ms. Jennings also mentioned the habitat issue, noting that the installation of a well along Wood Road under Alternative 5 would cause minimal impacts, while the well location under Alternative 4 is farther into the plume itself and installation of a well there could have some habitat destruction associated with it, as well as be more costly due to having to bring electricity to the site. Ms. Jennings also said that the location of the second extraction well really hasn’t been decided, although there’s general agreement that a well is needed in the core of the plume. She added that it’s hoped that the additional investigation work and

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discussions with the state over the coming months will clarify where the extraction well should be located.

Ms. Garcia-Serrano said that MassDEP generally agrees with the two-well extraction system, is also looking at balancing groundwater restoration costs, and is particularly concerned about the habitat issue, trying to arrive at an alternative that aims to restore the groundwater without adversely impacting the existing habitat.

Mr. Jacobs added that yesterday MassDEP issued a letter on the groundwater portion of the RI/FS in which it recommended several modifications to some of the designs to eliminate some of the piping runs and make more use of “green” remediation, which will be discussed at tomorrow’s Tech meeting. He noted that MassDEP also expressed concern about the plume shell being used to evaluate the alternatives, as it was developed in 2008 and since then historic maximum perchlorate detections have been seen in four monitoring wells, and MassDEP believes that the plume shell developed in 2009 would probably be a more appropriate tool for evaluating restoration times. Mr. Jacobs also said that MassDEP is looking at ways to minimize costs by eliminating extensive piping runs and has recommended design modifications to work around the habitat issue.

Mr. Reif asked when the J-1N plume concentrations that Mr. Gregson had mentioned were measured. Mr. Gregson replied that the RI/FS concentrations were based on 2008 data, current concentrations were from 2009, and the historic maximum perchlorate concentration (78 ppb) was from November 2008. Mr. Reif observed that RDX concentrations had dropped significantly in one year. Mr. Gregson said that it’s important to keep in mind that the contaminant concentrations are migrating. Mr. Reif said that it appears that natural attenuation is significantly reducing concentrations relative to what the model is predicting. Ms. Jennings explained that it’s unlikely that the RDX dropped from 36 ppb to 11 ppb; rather, the 36 ppb is probably still in the plume now, but between two monitoring points. Likewise, the 78 ppb perchlorate is probably still there, and EPA is quite concerned about that. She said that Mr. Jacobs had been referring to this when he noted that the RI/FS was based on one data set, after which higher contaminant concentrations were found downgradient. She said that this is why one has to go “well by well,” look at the whole plume shell, and try to estimate the right amount of mass in the plume, given the data that have been seen over time.

Mr. Gonser made a point of noting that IAGWSP plumes differ from the ones being addressed by the Air Force Center for Engineering & the Environment (AFCEE) in that they are not the result of a single release, but of disposal activities that occurred over a number of years, at different times, and at different locations. And due to there having been a number of releases, it’s common to see pulses of contamination moving through IAGWSP plumes. Mr. Reif said that it makes sense that concentrations wouldn’t be homogeneously distributed throughout the plume. He also remarked that he thinks it would be good to recalibrate the models as more data are gained, and not treat them as static representations of reality.

Ms. Rielinger noted that on one of the two-well system modeling animations Mr. Gregson showed while reviewing the alternatives, it appeared that the upgradient well was actually separated into two different depths. She said that she didn’t see that on the upgradient well in the other alternatives, and she’s interested in knowing the rationale for that. Mr. Gregson explained that the idea is “get this lower contamination zone” that can be seen in the cross-section.

Mr. Goddard inquired about the two RDX cleanup levels – the one-in-a-million cancer risk level (0.6 ppb) and the HA (2 ppb). Mr. Gregson explained that the HA is a non-cancer number based on a reference dose, and the 0.6 ppb cancer risk level is the RDX cleanup target being used by the IAGWSP. He also noted, however, that the cancer risk level may go up in the future. Mr. Goddard then asked if an MCL is based on cancer risk or health risk. Ms. Jennings explained that some are based on cancer risk, some on non-cancer risk, depending on the compound. In the case of RDX, the cleanup

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goal is based on the cancer endpoint, but whether or not RDX is a carcinogen is currently under evaluation. If it's determined not to be a carcinogen, the IAGWSP will rely more on the HA. Mr. Goddard noted that that could change the cleanup target dates. Ms. Jennings agreed. She also explained that for this particular plume, however, a change in the RDX cleanup level would not affect the outcome because perchlorate is also driving the remedy. She added that the cleanup number for perchlorate is 2 ppb, the state MCL, and that is not going to change. The potential change in the RDX number could affect the J-1S plume, which will be discussed later in the presentation. Mr. Goddard noted that a treatment system would have to run for a longer period of time to reduce RDX concentrations to below 0.6 ppb. Ms. Jennings agreed, but added that in the case of J-1N, under Alternative 4, for example, one extraction well would be placed to treat RDX and one to treat the leading edge of the perchlorate. And if the RDX standard were to change, it's possible that the upgradient well could be shut off sooner for RDX treatment but might still be needed to have some effect on the perchlorate contamination.

Mr. Goddard asked Mr. Gregson to explain the piping run associated with Alternative 5, which he did. Mr. Goddard also inquired about the timeline for a decision on the J-1N plume. Ms. Jennings said that the hope is that a Decision Document (DD) will be issued sometime late this summer. She also said that a 30-day public comment period will begin in April, and a public hearing is scheduled for April 28, 2010. Mr. Goddard requested that the availability of any updated versions of the RI/FS based on new plume data be communicated to the public and the public comment period extended on the Remedy Selection Plan (RSP), if necessary.

Mr. Cambareri asked if capital costs are the reason for the price of Alternative 6, which has the early (10-year) shutoff time. Mr. Gregson confirmed that the initial construction of the extraction wells drives up that cost. Mr. Cambareri also asked if there would have been a cost difference if piping from the wells in Alternative 5 went back to the treatment plant in Alternative 4. Mr. Gregson replied that over the next few weeks the project managers will be looking at different layouts and potential costs in great detail. He also noted that for Alternative 4 electricity lines would have to be run down the J-1 Range, about 1,000 meters from Greenway Road. Mr. Cambareri asked if that's the same case for Alternative 3. Mr. Gregson replied yes, power would have to be brought "up into that location." Mr. Cambareri asked if power lines are typically run underground. Mr. Gregson replied that they are usually run along the same trench that's dug for the piping to transport the extracted water.

Ms. Grillo noted that generally speaking the RI/FS is finalized before an RSP is issued. However, this case is different because of the comments about the need to update the plume shell. She also said that the April/May is the target for finalized the RI/FS.

Mr. Gregson then continued his presentation by discussing the J-1S plume, an RDX-only plume that already has an active one-well treatment system in place at the base boundary. The maximum RDX concentration for the RI/FS was 14.9 ppb, the historic maximum was 130 ppb, and the current maximum is 12 ppb. He noted that nothing similar to the historic maximum has been found, which means that it's probably an isolated area in length or width that hasn't been intercepted again in a monitoring well. Mr. Gregson reported that the J-1S system, which has been operating since October 2007, has treated 85 millions of groundwater to date. He also noted that an additional drive-point investigation to define the northeast edge of the plume is ongoing.

Mr. Gregson showed the latest J-1S plume map and pointed out the residential neighborhood, the groundwater contours and direction of groundwater flow (to the south), the plume's source area, and the extraction well at the base boundary. He said that recent data indicate that the plume has quite effectively been cut in two – the upgradient portion is being treated, monitoring wells at the base boundary are currently testing nondetect, and the other part of the plume is to the south, off base. He also showed a cross-section view of the plume and pointed out two areas of higher concentrations and the extraction well. He noted that the analysis conducted as part of the FS looked at the existing

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extraction well and what to do with the downgradient portion of the plume. Mr. Gregson also pointed out where, in response to an 11 ppb detection, drive-points are being installed to better define the eastern edge of the plume, but added that in general he believes the current plume depiction is reasonably accurate, allowing for the evaluation of potential cleanup alternatives.

Mr. Gregson reviewed J-1S alternatives: Alternative 1 – No Further Action, under which long-term monitoring would be discontinued, no LUCs would be implemented, RDX would dissipate below 2 ppb by 2032 and below 0.6 ppb by 2050, and the cost for well abandonment/documentation would be \$107 thousand; Alternative 2 – MNA, under which groundwater contamination would be reduced through natural processes, long-term groundwater monitoring would continue, LUCs would be implemented, RDX would dissipate below 2 ppb by 2032 and below 0.6 ppb by 2050, and the cost for groundwater monitoring, well abandonment, and closeout documentation would be \$1.8 million; Alternative 3 – One Extraction Well, under which groundwater contamination would be remediated using one extraction well (the existing J-1S extraction well, pumping at 45 gallons per minute [gpm]), long-term monitoring would continue, LUCs would be implemented, and RDX would dissipate below 2 ppb by 2032 and below 0.6 ppb by 2048, and the cost would be \$2.3 million; Alternative 4 – Two Extraction Wells, under which groundwater contamination would be remediated using two extraction wells (the existing extraction well and a downgradient extraction well), long-term groundwater monitoring would continue, LUCs would be implemented, RDX would dissipate below 2 ppb by 2019 and below 0.6 ppb by 2024, and the cost would be \$3.3 million; and Alternative 5 – Three Extraction Wells, under which groundwater contamination would be remediated using three extraction wells (the existing well, a new mid-plume well, and a new downgradient well), long-term groundwater monitoring would continue, LUCs would be implemented, RDX would dissipate below 2 ppb by 2018 and below 0.6 ppb by 2022, and the cost would be \$6.5 million.

Mr. Gregson mentioned that it could be problematic to conduct cleanup in a residential neighborhood, given that residents are generally reluctant to allow the installation of even a monitoring well in their yard, and therefore any extraction wells would probably have to be located on the road, which is limiting. He also showed a slide entitled “Southern J-1 Plume FS Alternatives Summary.”

Mr. Gregson then stated that the recommended alternative for J-1S groundwater contamination is remediation using one or two extraction wells, locations to be determined. He also explained that the recommendation is a little vague because of the potential change to the RDX standard – if the standard remains at 0.6 ppb, an additional extraction well would be installed downgradient, off base. Over the next year or so, EPA and the Army will be doing additional work to look at the RDX standard and determine whether the cancer effect is real or if it should be eliminated, in which case the standard would likely become the 2 ppb HA level. There’s also some discussion about adjusting other factors that may raise the target cleanup level for RDX to 5 ppb or 6 ppb. Mr. Gregson noted that the plan is to work through the decision process based on installing an additional extraction well off base, continue working the cleanup level issue, and conduct additional drilling to define the plume. He also noted that the recommended alternative, which would also include long-term groundwater monitoring and LUCs, is predicted to clean up the plume between 2024 and 2048, at a cost of \$2.3 million to \$2.4 million.

Mr. Gregson stated that the next steps are: finalize the RI/FS; issue the RSP in April 2010; hold the public comment period from April to May 2010; hold a public meeting at the Forestdale School during the public comment period; and prepare a DD and Response to Comments in the summer of 2010.

Mr. Goddard questioned whether recirculating well technology would make sense for treating the downgradient portion of the plume, as it would eliminate the need for long piping runs through the residential neighborhood. Mr. Gregson said that he’s not sure that the use of recirculating wells has been effective at MMR. Mr. Goddard said that AFCEE’s cleanup program had made use of recirculating wells. Mr. Davis noted that typically recirculating wells are more expensive, providing “a lot less bang for the buck” than traditional extraction well systems.



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Mr. Goddard said that the legend on the layout indicates a conceptual location of a mobile treatment unit (MTU), but he believes that that is actually an existing MTU. Mr. Gregson explained that under Alternatives 4 & 5 there would be an additional MTU located right next to the existing one. Mr. Goddard suggested clarifying that there is an existing MTU. He also asked if it's correct that the expanded infiltration trench on the figure is shown in blue. Mr. Gregson confirmed that it is.

Ms. Rielinger asked when the new data pertaining to the eastern edge of the plume are expected to be available. Mr. Gregson replied that the drive-points are being installed now, so data will become available over the next couple of weeks.

Ms. Jennings referred to the issue of re-evaluating the RDX standard and said that EPA's position is that it would be inappropriate not to move forward with the DD while waiting for the standard to be established. In this case, given the current 0.6 ppb cleanup standard for RDX, based on the time savings and cost differential, EPA believes that the final system will be a two-well system – the existing extraction well plus one more. However, it will take at least through the summer before the decision process is complete, and during that time an effort will be made to obtain valuable feedback from the local residents as to whether they would allow installation of an extraction well in their neighborhood. Also, the design process will probably extend into next year, and it's hoped that by that time the agency will be in a good position to know whether or not the RDX standard will change. And if it appears that it is going to change, but hasn't done so yet, it's possible that a decision will be made to delay construction until it's definitely known whether the standard is going to change. Ms. Jennings explained that the bottom line is that EPA is not going to force the IAGWSP to install a system that would then be shut off three months later. She also said that the situation would probably be described in the RSP as a contingent remedy.

Mr. Goddard said that he thinks it's critical to find out as soon as possible what the residents are willing to accept because “the sooner you get to them, the more real your plan is going to be.”

Mr. Cambareri noted that the estimated shutoff year for Alternative 3 (with the one existing extraction well) is 2014 and the estimated shutoff year for Alternative 4 (with the one existing well plus a downgradient well) is 2018. Therefore, it seems that Alternative 4 represents a one-well system after 2014. Ms. Jennings replied that it can't be assumed that because Alternative 3 is shutting off in 2014 that the same thing can be done under Alternative 4, and this is due to the placement of the wells. She said that she thinks the estimated shutoffs are correct, but they're based on two different wells. Mr. Cambareri said that this is what he understood.

Mr. Taylor said that there seems to be an overwhelming concern that the residents in the neighborhood will not want a treatment system in their area. He then referred to the IRP treatment activities that successfully took place in the Briarwood subdivision in Mashpee, and suggested that if handled correctly “it shouldn't be a neighborhood problem.” Ms. Grillo noted that over the years Ms. Richardson of the IAGWSP has had an excellent rapport with the local residents, and therefore would be the best person to discuss this issue. Ms. Richardson stated that the IAGWSP has visited the neighborhood several times over the past four years, has sent out neighborhood notices throughout the investigation process to inform residents about the installation of wells and about sampling results, and held a public meeting a few years ago. She also noted that she had walked the neighborhood herself and spoken with several residents, who, for the most part seemed comfortable with the activities that were occurring and the level of information that the IAGWSP was providing. Ms. Richardson also said that the IAGWSP will make the effort to encourage the residents to attend the public meeting in April at the Forestdale School, to hear what they have to say and to ensure that they're fully aware of the potential plan. She further noted that a neighborhood notice was sent out this week to inform residents about the drive-point work and invite them to attend tonight's MMRCT meeting.

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Ms. Garcia-Serrano asked if the IAGWSP has been able to determine whether there are any irrigation wells in the area. Ms. Richardson said that letters regarding this issue were sent out to residents in the neighborhood and the neighborhood north of the Forestdale School, and the IAGWSP did receive some responses, although it turned out that residents who thought they had irrigation wells actually didn't have them anymore. Ms. Richardson also noted that the IAGWSP is aware of one irrigation well, and it has been sampled before. She then informed the group that all of the residences in the area are on town water, and also said that the IAGWSP is going to conduct additional outreach to confirm that there aren't any other irrigation wells.

#### **Agenda Item #6. L Range Remedy Selection**

Mr. Gregson showed a map of the L Range, which he noted is located south of the J-1 Range, near the base boundary with the Forestdale neighborhood. He also showed an aerial photo of L Range, pointed out the firing point and the target areas, and reported that the range is about 600 feet wide by 1,500 feet long. He also noted that the L Range study area included nearby areas called Cleared Area 11 and Areas 46 & 49. The L Range itself was used as an infiltration course during World War II and the early 1950s, and then switched over to a 40mm grenade-launcher range from the late 1960s up until the mid-1990s. Area 46 was used during construction, operation, and maintenance of the IRP's Fuel Spill 12 (FS-12) source area treatment system. Mr. Gregson also noted that based on results from the robotics, soil excavation, and munitions removal work conducted at the range, it's believed that there are no continuing sources to groundwater contamination at L Range.

Mr. Gregson reported that the contaminants of concern (COCs) in L Range groundwater, and previously in L Range soils, are RDX and perchlorate. The levels of contamination in groundwater are relatively low – right around 2 ppb for RDX and around 1 ppb for perchlorate, and so a limited number of alternatives were evaluated. Mr. Gregson then reviewed L Range investigations: analysis of 473 soil samples from 60 locations (pre-2008); analysis of 340 groundwater samples from 70 wells (since 2004); identification of several small noncontiguous lobes of explosives and perchlorate migrating to the southeast; in the RI/FS, RDX concentration of 3.6 ppb and perchlorate concentration of 1.9 ppb; historical maximum RDX concentration of 9 ppb and perchlorate concentration of 3 ppb; and the plume appears to have detached from the source, with concentrations declining.

Mr. Gregson showed a map of the L Range area RDX contamination, and pointed out the nearby FS-12 plume and treatment system, the J-3 Range plume and treatment system, and the J-1S plume. He also showed a cross-section figure of the RDX contamination and pointed out the J-3 Range plume, and showed a map and cross-section of the L Range perchlorate contamination. He then described the L Range groundwater contamination as very small, discontinuous plumes with low concentrations.

Mr. Gregson then discussed the 2008 technology demonstration, which used robotics to safely clear metallic debris and munitions from the range. He noted that the 40mm grenade is a particularly dangerous round, so the robotics technology was very helpful in removing remaining rounds from L Range. The robotics effort at L Range included removal of targets, flush-cutting vegetation, conducting an EM-61 geophysical survey, and clearance of metallic debris and munitions, all using remote-controlled equipment. The soil sampling effort that occurred after the robotics work was completed found fairly significant concentrations of RDX (up to 92 parts per million [ppm]) in the soil, as well as some HMX and TNT, in the mid-range (target) area.

Mr. Gregson stated that the soil remediation effort, which began last year and is almost finished, has involved excavating 2,700 cubic yards of RDX-contaminated soil and placing it in a treatment cell to undergo alkaline hydrolysis, a process that chemically degrades the RDX in the soil. The soil is screened through a one-inch mesh to ensure that all munitions have been removed; then lime and water are added to the soil, which is placed in the treatment cell. The treated soil tested nondetect for explosives and will be used as backfill on the range. Mr. Gregson noted that the cost of this

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remediation effort is \$1.5 million, and he showed several photographs of the soil treatment process. He also displayed a figure that showed the portions of the range that were cleaned up as part of this effort. Mr. Gregson then stated that no additional measures for soil cleanup or control are thought necessary since no further release of contamination from soil to groundwater is expected. He also noted that the munitions removal effort was effective at removing the majority of unexploded rounds from the range.

Mr. Gregson showed the 2004 L Range plume depiction and the recent L Range plume depiction and noted that the plume has been degrading on its own over the years. He then reviewed the L Range groundwater alternatives: Alternative 1 – No Further Action, under which long-term monitoring would be discontinued, no LUCs would be implemented, RDX would dissipate below 2 ppb by 2013 and below 0.6 ppb by 2027, and the cost would be \$110 thousand, for well abandonment and documentation; Alternative 2 – MNA and LUCs, under which groundwater would be reduced through natural processes, long-term groundwater monitoring would continue, LUCs would be implemented, RDX would dissipate below 2 ppb by 2013 and below 0.6 ppb by 2027, and the cost would be \$1.9 million for groundwater monitoring, well abandonment, and closeout documentation; and Alternative 3 – One-Well Extraction, Treatment, Recharge, under which groundwater contamination would be remediated using one extraction well pumping at 50 gpm (to operate for one to two years), long-term groundwater monitoring would continue, LUCs would be implemented, RDX would dissipate below 2 ppb by 2012 and below 0.6 ppb by 2016, and the cost would be \$3.8 million. Mr. Gregson then showed a layout of the Alternative 3 system as well as modeling animations of the non-active treatment alternatives and the active treatment alternative. He also showed the “L Range FS Alternatives Summary” slide and the “Evaluation of Alternatives” slide.

Mr. Gregson then reported that the recommended alternative is Alternative 2 – MNA & LUCs because it provides more protection than a non-monitoring alternative, while achieving cleanup goals in a reasonable timeframe (2027). He also noted that if the RDX standard were to change to something above 2 ppb, the plume would already be considered cleaned up. He further noted that although Alternative 2 costs more than Alternative 1, the cost is significantly less than what it would cost to install an extraction well off base. The next steps are to issue an RSP (April 2010), hold a public comment period (April to May 2010), hold a public meeting (in conjunction with the J-1 Range public meeting on April 28, 2010), and prepare a DD and Response to Comments (June 2010).

Mr. Goddard asked if the recommendation of Alternative 2 is based on the potential change to the RDX standard. Mr. Gregson replied that even if the 0.6 ppb standard were to stay the same, Alternative 2 would still be the recommended alternative because it achieves cleanup in a reasonable timeframe; raising the standard would just make it better. Mr. Goddard asked what the regulators think about this. Ms. Jennings replied that EPA is comfortable with 2027 as a reasonable cleanup timeframe.

Mr. Reif noted that the different RDX contamination concentrations shown on the “Site Features” slide and the “L Range Investigations” slide are confusing and probably could be presented more clearly. He also said that it would be useful if the dates associated with contaminant detections were noted on the slides. Mr. Reif also inquired about the detection limit for RDX in soil. Mr. Nixon replied that it is 120 ppb, and Mr. Reif suggested referencing that number in the slides as well.

Ms. Rielinger asked if it's correct that the extraction well associated with Alternative 3 would be off base. Mr. Gregson confirmed that that's correct. Ms. Rielinger then inquired whether that property is conservation land or if it's privately held. Mr. Gregson replied that he thinks it is Camp Good News property.

Mr. Cambareri said he is astounded by the cost of Alternative 3 and asked Mr. Gregson to point out the pipeline run, which he did. Mr. Gonser added that electricity would have to be brought in as well.

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## **Agenda Item #7. Installation Restoration Program Budget Update**

Mr. Davis reviewed the IRP's major activities: treatment system operation/optimization; additional wind turbines; the residential well verification program, which is a LUC involving the verification of whether private or irrigation wells exist at more than 2,000 parcels; another Ashumet Pond alum treatment (summer 2010); the Groundwater Explanation of Significant Differences (ESD), the purpose of which is to achieve consistent language across all of the IRP's Groundwater Records of Decision (RODs), and which will involve a public comment period this summer; the Source Area ESD, to clarify cleanup levels at CS-10, FS-1, and FS-9 source areas; Removal Action Reports associated with CS-10, Ashumet Valley, the petroleum fuels storage area, and Landfill-2/Fire-Training Area 2; and the AFCEE 2010 Plume Booklet, which is anticipated to be issued in spring 2010.

Mr. Davis then reported that the FY'10 budget (\$27.1 million split between the Army and Air Force) is fully validated, and \$6.4 million of that budget has been obligated to date. He explained that theoretically, unobligated funds could be redirected to a higher priority, although that's never happened to MMR. Mr. Davis also referred to the IRP's O&M funding history, and said that \$8.4 million budgeted for 2010 pertains to optimization work, bringing on the wind turbine, monitoring, and electrical costs.

Mr. Davis further noted that the FY'11 budget is projected to be \$9.3 million, with a great deal of that going toward O&M, monitoring, and LUCs work. He also said that validation of the FY'11 budget is expected to occur in June 2010. And he explained that the FY'11 budget is significantly less than the FY'10 budget for the following reasons: no wind turbine construction, no alum treatment, no large data gap investigation, reduced overhead support, more offset in utilities from the existing wind turbine, and smaller real estate transactions (while sizeable real estate transactions involving the Crane Wildlife Management Area and Camp Good News are occurring in FY'10). Mr. Davis showed a bar graph entitled "Program Funding FY'85-11," pointed out the more than \$70 million budget in FY'99, a big construction year, and noted that by the end of FY'11, total dollars will be about \$676 million for the Superfund program at MMR.

Ms. Grillo asked if it's correct that an Ashumet Pond alum treatment is planned for FY'10. Mr. Davis confirmed that that's correct, and noted that the last alum treatment was done in 2001.

Mr. Reif asked if the return on investment for optimization efforts is quantifiable, and if not, whether the IRP would rethink an optimization. Mr. Davis replied that once all the necessary data are gathered, these types of calculations are done, and given enough uncertainty, an optimization wouldn't be pursued.

## **Agenda Item #8. Extraction Well Optimization Status**

Mr. Davis displayed a map entitled "IRP Plumes and Treatment Systems, March 2010," which included symbols representing extraction and reinjection wells that are on and those that are off. He then reported that 105 extraction wells have been installed since 1993; this includes six recirculating wells (four of them from pilot tests) and the 13 extraction wells from the original CS-14 system, but does not include the nearly 300 shallow well-points. Forty-three extraction wells are currently in operation, and 62 have been shut down through the years, 19 of which have been abandoned (grouted) and no longer provide a pathway to the aquifer. Mr. Davis also noted that since 1999 at least one extraction well has been shut down every year, with 14 wells having been shut down the year that the old CS-4 system was discontinued.

Mr. Davis explained that the optimization process involves systems undergoing an evaluation based on collected data. Typical indicators that optimization is required are low influent concentrations in an extraction well, reduced plume concentrations, and high, sustained influent concentrations that aren't expected. He noted, for example, that a lot of data gap work has been focused on a CS-10 extraction

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well that has unexpectedly being doing the lion's share of removal at CS-10. He also said that the evaluation process can include (often in combination): collecting additional data in an area (using existing monitoring wells or drilling new wells); altering pumping rates and checking the influent concentrations; evaluating the infrastructure; conducting aquifer response testing; and doing groundwater modeling.

Mr. Davis also reported that the optimization process involves evaluating alternative pumping schemes to determine whether plume containment is being maintained (if the well is sited for that purpose), whether there's a change in restoration timeframe, whether the extraction well efficiency can be improved, and whether the existing infrastructure needs modification. Based on these evaluations, adjustments to the pumping scheme can include: shortening the effective well screen length; increasing or decreasing the pumping rate; shutting down an extraction well on an interim basis; running an extraction well on a cyclic basis; altering reinjection rates and/or location; and adding or shutting down extraction wells. Mr. Davis said that although the process often leads to the shutdown of extraction wells, it can also lead to the installation of new extraction wells, as has happened at the LF-1, CS-10, and Ashumet Valley plumes.

Mr. Davis stated that the optimization process is an ongoing, iterative process, with evaluations currently under way in various stages at all of the IRP plumes. The next shutdowns are expected to be in the Southwest Plumes and the FS-1 plume, in the 2010/2011 timeframe. Mr. Davis then showed a four-panel figure entitled "Temporal Change of EDB Concentrations at FS-12" and noted that the system started up in 1996 with 20 extraction wells operating, but is currently operating only four extraction wells. He also mentioned that the last two slides in the presentation handout list the extraction wells that have been shut down or shut down and abandoned.

Ms. Valiela inquired about the amount of optimization decisions that are made in-house versus the amount made in consultation with EPA and MassDEP. Mr. Davis clarified that all optimization decisions are made only with regulatory approval – including every change in pumping rate, monitoring location and monitoring frequency, and certainly extraction well shutdown. He also noted that beginning this year AFCEE has brought the regulators in even earlier in the process to get their buy-in on identifying data gaps and the like.

Ms. Valiela then asked if there are additional plumes, other than CS-10, that turned out not to be as modeled. Mr. Davis replied that as far as plumes in general, the northern part of CS-21 had monitoring wells with contaminant concentrations in the 80 ppb to 90 ppb range that weren't expected. In terms of extraction wells, however, the CS-10 well that he'd mentioned earlier is really the only one that comes to mind that had higher than expected concentrations. Ms. Valiela remarked that it's good to have confidence in the model.

Ms. Garcia-Serrano stated that the model is seen as a predictive tool, and over the years MassDEP has commented on the selection of parameters, modeling runs, and model validations to ensure good accuracy. She then inquired about the frequency of model validation to ensure good decision-making based on a predictive tool. She also said that MassDEP is in favor of optimization, but wants to ensure that the right decisions are being made, and is interested in Mr. Davis's opinion on how well the model is running these days.

Mr. Davis replied that the model is actually "a bunch of little models" called zoom models. He also said that one part of model validation is the aquifer response testing he'd mentioned, which is done to see if the aquifer is responding as the model indicates, and the second part is how the chemical concentrations are loaded into the plume shell. Mr. Davis also stated that each decision to upgrade a model is made on a case-by-case basis. When model predictions and actual contaminant concentrations are generally the same, it's not automatically decided that the model should be updated. He also mentioned that a model update, from the chemical side, is definitely going to be done for CS-10 at this

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time, although it's not certain yet whether it requires updating from the flow side. He further noted, however, that what's being seen in the field at CS-4 is very close to what was predicted in the baseline assessment after system startup.

Mr. Cambareri remarked that the optimization program looks good because it is saving money, time, and effort. He also said that he's interested in the reinjection aspect, and he'd noticed that nearly all of the FS-12 reinjection wells are still operating. He added that his point, however, is that much of Cape Cod is looking at wastewater infrastructure in future decades and locating discharge sites will be a big issue. He said he's wondering whether AFCEE has taken a collective look at reinjection well operations, types of failures, and so forth, and whether there's been any kind of standard operating procedure developed for reinjection wells/infiltration trenches that might benefit the wider Cape Cod community.

Mr. Davis mentioned the Ashumet Valley plume infiltration trench that became clogged not long after system startup and said that now part of the IRP's standard operating procedures is monthly inspections of infiltration trenches for any water buildup and of reinjection wells to see that they are handling the amount of water intended. He also said that there are no current plans to abandon any significant infrastructure for other use. Mr. Cambareri clarified that he wasn't thinking of using the infrastructure, but would be interested in a better review of how they work, and what the pluses and minuses are. Mr. Field asked if it would be possible to analyze the data associated with reinjection and come up with recommendations for future activities. Mr. Davis replied that it would be possible to do so, but that's not something that's done on a regular basis for the cleanup program. Mr. Cambareri said that he understands that this would be outside of the program's normal course, but he'd be interested if there is a way to do it.

Mr. Goddard inquired about the applicability of the cleanup program's modeling and optimization at Department of Defense (DoD) bases throughout the country. Mr. Davis replied that the modeling is an off-the-shelf software program. However, taking a 3-D grid of concentrations and turning it into an input parameter that can be put into a model is something that's been developed by AFCEE's consultant, and it is DoD-owned. Mr. Goddard said that it can be applied to other cleanup projects then. Mr. Davis agreed, but noted that many places aren't yet using 3-D modeling.

Ms. Valiela asked if the reinjection wells terminate in the unsaturated zone or if they extend into the groundwater. Mr. Davis replied that they reach well into the groundwater. He also noted that reinjection wells are sometimes stepped in order to maintain a certain type of hydrologic steady state. Ms. Valiela asked how far into the groundwater the reinjection wells usually extend, and mentioned 20 to 30 feet. Mr. Davis replied "much more than that" and noted that the reinjection well screens are 70 to 80 feet long.

Mr. Cambareri then asked if it's correct that most of the FS-12 reinjection wells are still operating. Mr. Davis replied that they are; the water is spread around. Ms. Forbes clarified that all but two of the FS-12 reinjection wells are operating at this time.

#### **Agenda Item #9. Renewable Energy Update**

Ms. Forbes announced that she has copies of a wind turbine construction video for anyone who might want one. She then showed some photos of the wind turbine construction and pointed out the base and lower tower sections, the upper tower and nacelle, and the blade assembly and lift. She also reported that the wind turbine construction was completed in October 2009, the ribbon-cutting ceremony took place on November 2, work associated with site restoration and the electrical connection occurred from November 2 to December 1, an NStar witness test was done on December 1, and the wind turbine became operational December 2, 2009. As of March 15, 2010, the wind turbine has produced 740 megawatt hours (MWh) of clean energy.

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Ms. Forbes then began reviewing the wind turbine startup issues by noting that the turbine was started up at 50% power (maximum output of 750 kilowatts [Kw]), and after 50 hours was supposed to increase to 100% power production, but failed to do so. The designer and manufacturer were contacted, and it turned out that the problem was in the programming. Reprogramming fixed the problem and the turbine has been operating at 100% ever since.

Ms. Forbes reported that another startup issue was that the auto-restart was not working properly; the wind turbine failed to restart when favorable conditions returned after it shut down for high wind, low wind, or a power outage. Reprogramming by the manufacturer fixed the problem. Also, currently the wind turbine is not responding well to gusts, shutting down upon gusts that are less than cutout speed. Reprogramming is also expected to fix this problem and is scheduled to take place tomorrow. Ms. Forbes also mentioned that it had seemed that the red flashing light on the nacelle that runs at night was too dim, but, as it turned out, the light had been set at an incorrect angle, and was readjusted. In addition, USCG airfield operations had requested a flashing light to run during the day as well so that the turbine could be seen in foggy conditions, and the plan is to replace the light with one that flashes white during the day and flashes red at night. Ms. Forbes further noted that the remote monitoring software for the turbine was not available at startup, but now is, and AFCEE is currently working through the license agreement for that.

Ms. Forbes then displayed a “Weekly Electricity Production/Cumulative Electricity Production” chart and pointed out the line that represents what was expected for cumulative power production (based on a 29% capacity factor, a calculated number that takes into account wind speed, wind shear, turbulence, and availability). She also pointed out the line that represents what was actually produced during the first couple months of operation, which is not as much as what was expected, and said that this may have to do with some of the startup issues, which have been or are being resolved.

Ms. Forbes also spoke about an AFCEE/Army Environmental Command (AEC)-IAGWSP project that currently involves evaluating the feasibility of installing two to three additional wind turbines in the northern part of the base along the PAVE PAWS access road. She noted that an Environmental Assessment and Basis of Design are being prepared at this time, and filings with the Federal Aviation Administration (FAA), PAVE PAWS, the Massachusetts Historical Commission (MHC), the Bourne Historical Commission (BHC), the Natural Heritage Endangered Species Program (NEHSP), and U.S. Fisheries & Wildlife (USFW) have been done. She also said that the construction contract award is planned for FY’10, and that PAVE PAWS is also exploring wind turbine installation in the same area.

Ms. Forbes displayed a map and pointed out the location of the existing AFCEE wind turbine and the proposed wind turbine locations near PAVE PAWS. She then showed a more close-up view and pointed out the PAVE PAWS access road and the four proposed locations (just under two acres per site) for two to three wind turbines. She also noted that the plan is to minimize habitat loss by limiting the amount of clearing that has to be done, including flush-cutting vegetation so that the roots aren’t destroyed and allowing the edges of access roads to grow back after construction. Utilities will follow the access roads and Flat Rock Hill Road. Ms. Forbes then showed a figure entitled “Potential Sites for Wind Turbines in Bourne, MA,” which included potential sites for both AFCEE/AEC and PAVE PAWS wind turbine sites.

Ms. Forbes then showed a slide entitled “Progress To Date,” which listed all of the activities relating to the new wind turbines that have gone on over the past several months, including working on the Basis of Design, sending a letter to the Tribal Historic Preservation Office and giving a presentation at an MMR Energy Committee meeting on March 9, 2010. Capt Abel asked if the MMR Energy Committee relates to MMR’s Alternative Energy Policy, through which all base commands would give their approval. Ms. Forbes confirmed that it does. She also noted that the next steps in the process are to make presentations to the Environmental Management Commission (EMC) and its Science Advisory

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Council (SAC) and Community Advisory Council (CAC), after which an Environmental Assessment (EA) will be submitted for a 30-day public comment period and later finalized.

Ms. Forbes then reviewed other MMR energy projects: as noted, PAVE PAWS is in the beginning stages of planning for the installation of two additional wind turbines closer to the PAVE PAWS facility; the Air National Guard is considering the installation of solar panel arrays on the MMR landfill; the Veterans Affairs (VA) cemetery is planning the installation of a smaller wind turbine (100 kW) on its property; the U.S. Department of Agriculture (USDA) is installing a geothermal heating/cooling system using treated groundwater from CS-10; the USCG already uses a geothermal heating/cooling system at one of its hangars; and various MMR users are actively making improvements in energy efficiency, including programs offered by Cape Light Compact.

Ms. Forbes also informed the group that an EPA-funded feasibility study is under way to evaluate the potential for the solar photovoltaic (PV) array on the landfill. The study is being conducted by the National Renewable Energy Laboratory (NREL), which conducted a site visit in February 2010 and is scheduled to issue a report early this summer. If the project looks good, the Air National Guard is interested in contracting the project. Ms. Forbes then showed a map of the landfill source area and pointed out the landfill cap that's being considered as the location for a PV array.

Mr. Goddard asked if PAVE PAWS intends to use its two wind turbines to offset power costs. Ms. Forbes confirmed that it does, and noted that PAVE PAWS uses as much power as AFCEE's cleanup program. Mr. Goddard also asked if the plan is to get credits (net-metering) from the AFCEE/AEC wind turbines near PAVE PAWS. Ms. Forbes confirmed that that is the plan.

Capt Abel referred to the Alternative Energy Policy and explained that the four commanding officers at MMR had gotten together to create a process by which approval for renewable energy projects could be expedited. He said that the idea is to bring such projects to fruition faster, without the confusion of dealing with the "patchwork of who's in charge" on the base. He also said that the USCG wholeheartedly endorses the Alternative Energy Policy.

Mr. Reif inquired about a collaborative effort on bio-fuels with some researchers at the Woods Hole Oceanographic Institute (WHOI). Mr. Hunt, vice president of military initiatives for MassDevelopment, noted that his office was recently approached by bio-fuel developer Plankton Power, which is currently working with WHOI and Marine Biological Laboratory (MBL) to develop algae strains that can be converted into bio-fuels. The plan is for the pilot program to begin at the WHOI campus, and at some point in the future, when land becomes available at MMR, be transferred to approximately 10 acres on the base, where it's hoped that one million gallons of bio-fuel would be produced per year. Mr. Hunt noted that the production of the bio-fuels would be a closed process, and he mentioned that there's some consideration of using methane out of the Bourne landfill as part of the process.

Mr. Reif asked if the 10 acres on the base are guaranteed to be available. Mr. Hunt replied no, and explained that the acreage belongs to numerous MMR entities, which will have to agree to its use. He also said that the effort was recently discussed as an Enhanced Use Lease Project, whereby the military allows other entities to use land that is under-utilized, and the hope is that the project might produce some sort of income that would benefit the installation. Mr. Reif asked if it's correct that there's some Defense Advanced Research Projects Agency (DARPA) funding associated with the project. Mr. Carter informed him that Plankton Power had spoken to the Department of Energy (DoE) about a grant, but didn't receive one. He added that DoD is actually well ahead of DoE in these kinds of matters, especially with respect to bio-fuels.

Ms. Grillo asked if Mr. Carter knows whether the 10 acres would be a previously-disturbed portion of the base. Mr. Hunt replied that it would be a previously-disturbed area in the cantonment area.



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## **Agenda Item #10. Exportable Combat Training Capability Overview**

MAJ Koski, Plans and Training Officer for Camp Edwards, stated that Operation Warriors Edge is part of the larger Exportable Combat Training Capability (XCTC) initiative. He noted that Warriors Edge, a culminating training event for units preparing for combat operations, is the largest training exercise to occur at MMR probably since World War II. The event will take place during this year's annual training in June and will involve the participation of 1,800 active soldiers who will be going to Iraq or Afghanistan within the next six months. MAJ Koski said that the difference between XCTC and other training events at MMR is that it is scenario-based training facilitated by a large amount of external contractor support. He also noted that having this training at MMR means that soldiers can stay closer to home, rather than having to go to California or Louisiana.

MAJ Koski showed a slide entitled "XCTC Intent," which noted that the "mission of XCTC is to provide realistic, theater immersed, multi-echelon, combined arms training in a Contemporary Operational Environment (COE) during Annual Training (AT) as the culminating event in the Ready Phase of the Army Force Generation (ARFORGEN) model." The slide also noted that the "end-state is defined as certified company proficiency with demonstrated Battalion Battle Staff proficiency, competent leaders, and trained Soldiers prepared for success on the modern battlefield." MAJ Koski also showed two slides listing the numerous soldiers' training requirements, made up of core tasks coming under the categories of shoot, communication, move, urban operations, fight, and battle drills.

MAJ Koski then showed a slide entitled "What XCTC Provides," and said that the idea is to replicate scenarios that soldiers would encounter once deployed and provide stressful, realistic, dynamic, challenging training that causes them to be mentally and physically tasked. He also noted that After Action Review (AAR) to maximize learning, which is provided by external contract support (by capturing events on camera), is a key factor of XCTC.

MAJ Koski also showed a slide entitled "XCTC Environmental" and noted that nine "villages" (made up of temporary fiberglass structures erected in previously-disturbed areas and taken down after the event) will be scattered throughout the training area. He noted that each village will have a boss who is specifically briefed on the area and knows where the soldiers can and cannot go. In addition, each soldier who comes to MMR for XCTC training will, as with any other AT period, go through a local soldier briefing. The "XCTC Environmental" slide also noted that "XCTC activity (will be) conducted under Environmental Performance Standards, and Army Environmental Stewardship program, (which) ensures compatible training and protection of the groundwater." Also, that the Environmental & Readiness Center (E&RC) "tracks all materials used for both setup and training exercise."

MAJ Koski then displayed a map depicting sites selected for village locations and noted that each village will have a different theme – for example, one may involve locating a heat target and another may involve reacting to sniper fire. He also said that the map that shows the village locations also indicates the locations of potential landing zones, tower sites, occupying units, and contractor operations. He further noted that the event will involve role players (Afghan foreign nationals) and translators for the theater-immersion aspect of the training. Also, the training will pertain to improvised explosive devices (IEDs), which are the cause of about 70% of casualties. MAJ Koski then concluded his part of the presentation by showing a photo of a sample village.

Mr. Goddard asked if it's correct that local actors will be part of the training. MAJ Koski replied that local actors will be involved and the contractor will hire them through a local temp agency.

Ms. Garcia-Serrano asked if all of the soldiers coming to MMR this June for XCTC training will be from Massachusetts. LTC Bertone said that a small number of the soldiers will be from upstate New York, and all the others from Massachusetts.

Mr. Reif asked how long the training event will last. MAJ Koski replied that it will last one month.

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Mr. Gregson stated that as part of the IAGWSP's XCTC site review process, four site categories were identified. He showed the slide for Category 1, sites that need additional investigation (Sites #3: Bivouac Area 1/Individual Movement Area [BA-1/IMT Area]; Site #4: Southern Inactive Demolition Area; and Site #23: KD Range Parking Area), which noted that the additional investigation is being completed to determine if there's any risk to groundwater, and a No-Further-Action document will be prepared after the investigation or any response action is completed.

Mr. Gregson also showed the slide for Category 2, sites that are part of an existing operable unit (Site #2: Wood Road, part of Former A Range Operable Unit; and Site #6: Kendrick Road Site, former Gun Position 19, part of the Gun & Mortar Position Operable Unit), which noted that if Operable Unit DDs are not completed prior to the training event, EPA would grant conditional approval to use the sites if exercise activities don't interfere with investigation.

Mr. Gregson then showed the slide for Category 3, sites with no likelihood of a release, which noted that a No-Further-Action document would be prepared once available information has been reviewed. The Category 3 sites listed on the slide were: Site #1: BA-4 Bivouac Area; Site #5: NBC/MOUT Training Area; Site #8: C-14 Bivouac Area; Site #10: C-15 Bunker Area; Site #12: NBC Site; Site #14: Pinnacle Landing Zone; Site #15: Goat Pasture Road; Site #21: C-14 Landing Zone; Site #22: Wood Road Landing Zone; Site #24: Gaudet Road; and Site #25: Sierra Range Parking Area.

Mr. Gregson showed the slide for Category 4, sites that do not present a concern under the Safe Drinking Water Act (SDWA) Administrative Order. The slide noted that EPA will issue a letter to that effect, while reserving rights if new information/unknown conditions arise. The Category 4 sites listed on the slide were: Site #7: Bivouac Area; Site #9: MOUT (Cantonment Area); Site #11: Simulation Building (Cantonment Area); Site #13: Wheelock Road Site; Site #17: Unit Training & Equipment Site (Cantonment Area); Site #18: Marshalling Yard (Cantonment Area); Site #19: Simulation Center (Cantonment Area); and Site #20: Barracks (Cantonment Area).

Mr. Gregson showed a map of the XCTC sites and noted that the IAGWSP has prepared a report to sent to the regulators that summaries the investigation at each of the sites.

#### **Agenda Item #11. Next Meeting Schedule and Adjourn**

Mr. Goddard asked when MMRCT comments on the draft MMR Cleanup Update should be submitted, and was told that they should be submitted before the April MMRCT meeting. Mr. Goddard then asked why a separate AFCEE plume booklet is also going to be issued. Mr. Davis explained that the plume booklet will provide more specific information on each of the IRP plumes. He also mentioned that the booklet will be useful when making presentations to senior staff. Mr. Goddard asked if that is the plan for every year. Mr. Davis replied that the last AFCEE plume booklet was issued in 2007.

Mr. Ciaranca noted that all of the XCTC sites have gone through the Massachusetts Environmental Policy Act (MEPA) process and have been reviewed through the Small Arms Ranges Working Group.

Mr. Davis announced that tonight is Mr. Field's last formal night as facilitator. Although he will be kept on retainer to handle any critical issues that might come up, the cleanup programs and agencies will now be handling meeting facilitation in-house. Mr. Davis noted that Mr. Field has helped out the cleanup program for more than 10 years and he is thankful for everything Mr. Field has done. The group warmly applauded Mr. Field for all his efforts.

Mr. Field adjourned the meeting at 9:12 p.m. The MMRCT will meet next on April 14, 2010.