

**Joint Base Cape Cod Cleanup Team
Building 1805
Camp Edwards, MA
October 14, 2015
6:00 – 8:00 p.m.**

Draft Meeting Minutes

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Handouts Distributed at Meeting:

1. Draft final of the July 8, 2015 Meeting Minutes
2. Presentation handout: EPA Update to Emerging Contaminants Investigation
3. Presentation handout: Emerging Contaminants Update
4. Presentation handout: IAGWSP Central Impact Area UXO Removal Update
5. Presentation handout: IAGWSP Small Arms Ranges and J-Ranges Source Removal Update
6. Handout: Technical Fact Sheet 1,4-dioxane
7. Handout: Technical Fact Sheet Emerging Contaminants
8. Handout: Technical Fact Sheet 1,4-dioxane, A Reference Guide for Massachusetts Residents

Agenda Item #1. Introductions, Late-Breaking News, Approval of July 8, 2015 JBCC CT Cleanup Team Meeting Minutes

Ms. Donovan began the meeting and asked those at the table to introduce themselves. She then introduced Gerard Martin, the Deputy Regional Director of the Massachusetts Department of Environmental Protection (MassDEP) for the Southeast Region.

Ms. Donovan then reviewed the agenda and noted that some topics would be presented at different times so that the citizens in the audience could hear the items that they were most interested in.

There were no changes to the July 8, 2015 meeting minutes so they were approved, as written.

Agenda Item #2. Emerging Contaminants

Bob Lim introduced himself as the U.S. Environmental Protection Agency (EPA) Project Manager overseeing the Emerging Contaminants investigation at JBCC. He stated that private well sampling had been conducted in Mashpee for Perfluorinated Compounds (PFCs).

For background purposes, he showed a figure of the neighborhoods in question. He noted that EPA had asked the Air Force to sample the private wells last year but due to Air Force policy they were unable to do so. Therefore, EPA regional personnel collected 13 samples from 12 locations and the EPA Region 4 Laboratory analyzed the samples for PFCs.

Mr. Lim reported that all results were non-detect (ND) and all residents have been notified. There are no plans for additional sampling for PFCs.

Mr. Pinaud asked Mr. Lim to explain the particle tracks that were shown on the figure. Mr. Lim pointed to the particle tracks, which began at the flight line on the base and moved downgradient, towards Mashpee Pond and southward. The particle tracks helped to select the private wells for sampling.

Ms. Forbes stated that the reason why the Air Force declined to sample the wells last year is because there were no documented releases or suspected releases of aqueous film forming foam (AFFF) upgradient of the Route 130 area in Mashpee. She noted that this is a different situation from the Ashumet Valley area because there is a plume there and use of AFFF has been documented at one of the source areas (fire training area).

Ms. Donovan added that PFCs have multiple sources, not just AFFF and flame-retardants.

Mr. Winters asked if the twelve locations covered all possible scenarios of where the contamination could be. He commented that it did not seem like enough and wondered if some properties would “fall through the cracks in the testing.” Mr. Lim replied that the twelve locations were selected based on access. EPA had started with an estimate to sample 20 wells and ended up with 12. He added that for this initial effort, EPA was satisfied with the sample size.

Mr. DiNardo asked about the way the samples were collected. Mr. Lim noted that the samples were collected either from a tap inside the homes or at an outdoor spigot. The samplers purged a certain, pre-determined volume of water and then collected the samples. Mr. DiNardo if the samples were analyzed for anything else. Mr. Lim said they were also analyzed for combined nitrite to determine if the septic systems had an effects on the private well. Mr. Winters asked if the results were within range of what would be considered “normal.” Mr. Cambareri confirmed that they were.

Agenda Item #3. Emerging Contaminants Update

Ms. O’Reilly explained that emerging contaminants are not commonly monitored in the environment but they have the potential to enter the environment and have adverse impacts on the environment or to public health. They are considered “Contaminants of Emerging Concern” because the health risk and environmental risk are not yet fully known and there is no Federal or State promulgated standard. The two emerging contaminants under investigation at JBCC are PFCs and 1,4-dioxane.

Ms. O’Reilly reviewed the steps of the EPA evaluation process to determine the action(s) to take at a site. The steps include: a Preliminary Assessment (PA), a Site Inspection (SI) and a Remedial Investigation/Feasibility Study (RI/FS)

She noted a SI has been done for Ashumet Valley, Chemical Spill-20 (CS-20), CS-10, and Landfill-1 (LF-1) and they are now entering the Remedial Investigation For Ashumet Valley, they are looking at PFCs and 1,4-dioxane. For CS-20, CS-10, and LF-1, they are looking at 1,4-dioxane.

There is a new area called the “Flight Line Area” and a PA for PFCs has been completed.

Ms. O’Reilly showed a figure with the groundwater plumes. She stated that Air Force Civil Engineer Center (AFCEC) is completing PAs to determine potential releases of PFCs at 82 Air Force and Air National Guard (ANG) installations nationwide related to suspected releases from AFFF usage or storage. PFCs are compounds used in the formulation of AFFF, which the Air Force has used in fire training exercises, suppressing aircraft and other vehicle fires, and in aircraft hangar fire suppression systems since 1970.

Ms. O’Reilly explained that PFCs are also used extensively in household and industrial products, clothing and food wrappers. She said there are strict rules for the people collecting groundwater samples (e.g. they have to wear clothing that has been washed at least six times, they cannot have any fast food wrappers with them, and they cannot have Post-it notes) because there is potential for cross-contamination. PFCs are soluble and mobile in groundwater and are chemically and biologically persistent in the environment. The most commonly encountered PFCs are Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic acid (PFOA). There are no Federal Maximum Contaminant Levels (MCLs) or Massachusetts MCLs (MMCLs) for PFCs, but there are EPA Provisional Health Advisory (PHA) values of 0.2 micrograms per liter (µg/L) for PFOS and 0.4 µg/L for PFOA.

Ms. O'Reilly explained the primary industrial use of 1,4-dioxane was to stabilize solvents, particularly 1,1,1-trichloroethane (1,1,1-TCA). 1,4-Dioxane is commonly associated with 1,1,1-TCA or its breakdown product 1,1-dichloroethene (1,1-DCE). 1,4-Dioxane has also been used in printing and textiles (e.g., polyester), household cleaners and detergents, cosmetics, paints, varnishes, and paint remover, industrial processing of fats and oils, pharmaceuticals, and the chemical industry. She noted that 1,4-dioxane is soluble and mobile in groundwater and does not readily break down in the environment. There are no MCLs or MMCLs for 1,4-dioxane in drinking water, but there is an EPA risk-based Regional Screening Level of 0.46 µg/L and MassDEP Massachusetts Contingency Plan (MCP) Groundwater-1 (GW-1) Standard and Office of Research and Standards Guidance (ORSG) of 0.3 µg/L.

AFCEC completed the SI equivalent for 1,4-dioxane at all seven of the chlorinated solvent plumes and it was determined to be in four of them (Ashumet Valley, CS-10, CS-20, and LF-1). They are now entering the RI phase to determine the extent of contamination, the risks associated with it, and whether remedial treatment is needed. As part of the SI phase, they sampled the treatment plant influent and effluent, eight Ashumet Valley monitoring wells, four private residential wells, two Backus River surface water locations and one Backus River irrigation well.

The initial SI equivalent 1,4-dioxane sampling effort in 2013-2014 included sampling of the treatment plant influent and effluent, 14 Ashumet Valley monitoring wells, five private residential wells, two Backus River surface water locations and one Backus River irrigation well.

The Pre-RI/FS sampling effort included sampling of 35 Ashumet Valley monitoring wells, 22 private residential wells, treatment plant influent and effluent, eight Backus River surface water locations and four irrigation wells (sampled twice).

Ms. O'Reilly pointed to Figures 2 and 3 in the presentation. The figures showed results from SI-equivalent investigation in 2013-2014. She noted that PFOS concentrations ranged from ND to 3.2 µg/L; concentrations exceeded the EPA PHA of 0.2 µg/L at 11 monitoring wells. PFOA concentrations ranged from ND to 1.3 µg/L, concentrations exceeded the EPA PHA of 0.4 µg/L at four monitoring wells. 1,4-dioxane concentrations ranged from ND to 0.63 µg/L, concentrations exceeded the MCP GW-1 standard of 0.3 µg/L at three monitoring wells. Approximately 85 additional locations were added to the sampling program for further delineation of PFC and 1,4-dioxane contamination.

Ms. O'Reilly then showed a figure from the 2015 investigation at Ashumet Valley. Sampling was done in June 2015 and August 2015 for PFCs and 1,4-dioxane at eight Backus River surface water locations. All surface water detections were below applicable advisory values/standards and, therefore, the cranberry harvest is not affected. The Backus River irrigation wells (four locations) were also sampled for PFCs and 1,4-dioxane in July 2015 and September 2015. July 2015 results for PFCs and 1,4-dioxane were below applicable advisory values/standards. These results were submitted to cranberry stakeholders.

Due to the presence of PFCs and 1,4-dioxane in the Ashumet Valley plant influent and/or effluent, residential well sampling near the infiltration trenches was completed. Outreach to neighborhoods located downgradient of Ashumet Valley infiltration trenches identified 22 private drinking water wells; 20 locations were sampled for PFCs and 1,4-dioxane. No access was received for the other

two locations. 1,4-dioxane concentrations ranged from ND to 0.27 µg/L. All 1,4-dioxane and PFC detections were below applicable advisory values/standards. These results were forwarded via transmittal letters to property owners and Falmouth Board of Health in September 2015. Any “measurable” concentration in a private drinking water well (i.e., 1,4-dioxane detection above the method reporting limit) indicates a Critical Exposure Pathway in the MassDEP MCP regulations. AFCEC will resample the wells to monitor 1,4-dioxane concentrations in this area.

Ms. O’Reilly noted that concluded the Ashumet Valley portion of the presentation and paused to take questions. Mr. LoGuidice asked what the selected remedies would be for 1,4-dioxane. Ms. O’Reilly replied one might be installing another kind of treatment at the plant to address 1,4-dioxane. Ms. Forbes stated that all of the plumes have pump and treat systems installed to treat chlorinated solvents and now AFCEC needs to look at the PFCs and 1,4-dioxane concentrations to determine if they will drive another cleanup action to the point of modifying the existing system or install a new system. She explained that those decisions will be made as part of the RI/FS process. Mr. LoGuidice asked if it had ever been done before. Ms. Forbes replied that AFCEC has added extraction wells to an existing system and added a treatment system to the leading edge of Ashumet Valley but they have never modified an existing system. Mr. DiNardo asked if there was an existing, proven remediation method for 1,4-dioxane. Ms. Forbes replied that there are some that are commonly used, such as UV Oxidation and a resin technology. Mr. DiNardo then asked if modification of an existing treatment system is “feasible.” Ms. Forbes replied, “Yes.”

Mr. Pinaud stated that when there is an emerging contaminant and existing technology is not efficient at remediating it, there are many vendors that are eager to help by coming up with new technologies. He added that carbon is not efficient at removing 1,4-dioxane. He stated that when carbon is new, it is effective but as it degrades, there is breakthrough. He commented that EPA and MassDEP will be looking at the technology options very closely.

Mr. DiNardo asked if it is still legal to use AFFF. Ms. Forbes replied that AFFF is still in inventory and it is used. Ms. Donovan commented that no decision has been made to discontinue the use at this time. Mr. Pinaud said that it is his understanding that the manufacturers are no longer selling it and Fire Service Agencies are looking to remove it from inventory however, they need to find a substitute. Mr. Winters asked if there was way to use it safely, perhaps by putting down tarps. Ms. Forbes replied that it is used in an emergency so there usually is no time to put down tarps. Mr. Winters clarified that he meant ways to use it safely for training. Ms. Forbes noted that it is not used for training. Mr. LoGuidice commented, “This must have been used at every airport in the country.” Mr. DiNardo added, “And at every fire station.” Ms. O’Reilly stated that it is still used by every town on Cape Cod.

Ms. O’Reilly resumed the presentation and stated that there was an initial SI equivalent investigation at CS-20 for 1,4-dioxane in 2013/2014. The effort included sampling at the treatment plant influent and effluent, two extraction wells, five monitoring wells, and one private residential well. AFCEC began sampling CS-20 wells in August 2015; 21 of the 26 monitoring wells have been sampled to date. Validated analytical results have been received for 14 locations and 1,4-dioxane concentrations ranged from ND to 0.73 µg/L. Concentrations in two monitoring wells exceeded the MCP GW-1 standard of 0.3 µg/L for 1,4-dioxane.

The initial SI equivalent investigation at CS-10 for 1,4-dioxane in 2013/2014 included sampling at the treatment plant influent and effluent, 16 extraction wells, six monitoring wells, and the JBCC golf course irrigation well. The RI/FS sampling effort for 1,4-dioxane includes: 56 monitoring wells, two new extraction wells, plant influent and plant effluent ports, and surface water sampling in Ashumet Pond and Johns Pond.

The initial SI equivalent investigation at LF-1 for 1,4-dioxane in 2013/2014 included sampling at the treatment plant influent and effluent, six extraction wells, 12 monitoring wells, and two Bourne public water supply wells. The RI/FS sampling effort for 1,4-dioxane includes: 105 monitoring wells (16 wells have been sampled to date), treatment plant influent and effluent, and surface water/seep sampling in Red Brook Harbor and Squeteague Harbor.

Ms. O'Reilly then summarized the Flight Line Area PA. The JBCC PA Report for PFCs evaluated 21 sites and identified 14 locations where the potential exists for AFFF to have been released into the environment. Two sites were added to the SI Work Plan: Fuel Spill-1 (FS-1) and Runway 32. She showed a JBCC Preliminary Assessment Report Summary Table with groups for:

- Group 1 – High mass of AFFF released/probability of contamination.
 - Group 2 – Unknown mass or medium mass of AFFF released.
 - Group 3 – Low mass of AFFF released.
 - Group 4 – No AFFF released.
- Group 1, 2, and 3 site are recommended for SI.

Ms. O'Reilly explained that Group 4 Sites were:

- Former FTA-2 and Former FTA-3 fire training areas were decommissioned in the 1950s, prior to the use of AFFF by the Air Force which started in 1970.
- The T-Cell hangars were constructed after 9-11 and have been in operation since 2002. A high expansion foam (HEF) system was installed in the T-Cell hangars and HEF does not contain PFCs. AFFF has not been stored or handled in the T-Cell hangars.
- Hangar 3181 has been in operation since August 2013. A HEF system was installed in the hangar. AFFF has not been stored or handled in Hangar 3181.
- Hangar 2816 was constructed in 1969 and is equipped with a water deluge sprinkler fire suppression system and five 125/150-pound portable Amerex fire extinguisher units charged with Purple K, a dry-chemical fire suppression agent which is composed of potassium bicarbonate. Nine 2.5-gallon portable fire extinguishers charged with AFFF have been stored outside of the hangar on a concrete slab for the past five years and have never been used. There have not been any AFFF releases at the hangar.
- Building 120 is operated by the 102nd Intelligence Wing as the Base Hazardous Storage Facility. Four RMT-2000 portable fire extinguishers, each having a storage capacity of 120 gallons and are currently charged with 3 percent AFFF, are stored in the building. There have not been any releases of AFFF associated with the RMT-2000s in Building 120.

Ms. O'Reilly explained that the Flight Line Area SI field program includes monitoring well sampling and/or direct push drilling with groundwater vertical profiling if no appropriately positioned monitoring wells are available. This is consistent with the Interim Air Force Guidance

on Sampling and Response Actions for PFCs at Active and BRAC Installations, all samples are being analyzed for the following six PFC compounds:

- – Perfluorooctane Sulfonate (PFOS),
- – Perfluorooctanoic acid (PFOA),
- – Perfluorohexane Sulfonate (PFHXS),
- – Perfluoroheptanoic acid (PFHPA),
- – Perfluorononanoic acid (PFNA), and
- – Perfluorobutane Sulfonate (PFBS).

The Former Building 118 release area is located at the southeast end of the runway and is currently an undeveloped lightly vegetated area. Building 118 was removed in the late 1990s. The Base Fire Department used the area to flush out hoses with residual AFFF after responding to emergencies and to conduct annual time and distance testing. Time and distance testing was conducted annually for ten years and released a total of approximately 10,000 gallons of AFFF/water mixture to the ground surface at the Former Building 118 release area.

At the Drainage Ditch #3 area, an AFFF/water mixture from the Former Building 118 release area may have drained into the surrounding storm sewer inlets which discharge to Drainage Ditch #3 located to the south. Monitoring well 00WT0003 was sampled and PFCs were not detected above PHAs. Three direct push borings were completed in September 2015 and results are pending.

The ANG motor pool area is located on the southern portion of the JBCC and is used to conduct maintenance and refueling for military vehicles. A snow plow crashed into a fuel truck at the ANG motor pool area, the fuel truck caught fire and was extinguished by the Base Fire Department using AFFF. The date of the incident, the exact location of the incident on the asphalt parking lot, and the amount of AFFF used is unknown.

At the Drainage Ditch #2 area, AFFF was released at the ANG motor pool area and potentially drained into storm sewers that discharge to Drainage Ditch #2 located, along the southern boundary of the ANG Motor Pool Area. Monitoring well 26MW0001 was sampled and PFOS was detected at 0.44 µg/L, which exceeds the EPA PHA. A direct push boring was completed and PFOS was detected at a concentration of 1.9 µg/L in the first sample interval collected at the water table. No other samples exceeded EPA PHAs. Additional investigation is recommended for further delineation of PFC contamination.

The Building 122 release area is located in the southeastern portion of the JBCC, northwest of Building 122, which is the Former Base Fire Station. This was formerly used as a time and distance testing area by the Base Fire Department. The testing was historically performed with water. An accidental AFFF release occurred in 2000 when AFFF was activated instead of water. Approximately 10 gallons of AFFF/water mixture was accidentally released to the ground surface. Another release occurred at the release area in 2000 during the acceptance and training of four RMT-2000 single oscillating turrets. Each RMT-2000 has a capacity of 120 gallons, indicating approximately 480 gallons of AFFF/water mixture was released to the ground surface. Two direct push borings will be completed.

Hangar 3170 is located in the southeastern portion of the JBCC and is currently occupied by the U.S. Coast Guard (USCG). The hangar is equipped with an AFFF fire suppression system, which has been in operation since 1972. The hangar mechanical room has four 800-gallon AFFF above-ground storage tanks, two are charged with AFFF and the other two are empty. An unknown amount of AFFF has been released at the hangar through fire suppression system testing and a diverter valve failure. The AFFF was allowed to drain into the hangar floor drains and was released to a leaching well and leach structure to the east of the hangar or to a collection pond where it is then slowly introduced into the wastewater collection system for treatment.

Hangar 3172 has been reclassified as a Group 2 site because the USCG Environmental Manager noted that she had once seen AFFF/water mixture coming out of the northwest corner of this hangar. Five direct push borings were completed in September 2015 and results are pending. An AFFF release occurred at Hangar 3172 in September 2015 and approximately 10 gallons of AFFF were released.

Since 1995 JBCC wastewater is treated at the JBCC Wastewater Treatment Plant (WWTP) and is released to the Cape Cod Canal via sand infiltration beds. Prior to 1995 wastewater at JBCC was released at the former MMR STP Infiltration Beds located to the south of FTA-1 (Ashumet Valley source area). Monitoring wells FLMW0013A and FLMW0014A were sampled. PFOS was detected at concentrations of 0.9 µg/L and 0.43 µg/L, respectively, in these two wells, above the EPA PHA of 0.2 µg/L for PFOS. PFOA did not exceed the EPA PHA of 0.4 µg/L. AFCEC added sampling of the WWTP influent and effluent at the plant, the effluent at the sand infiltration beds, and upgradient monitoring well FLMW0016. PFOS concentrations in plant influent and effluent were above the EPA PHA. Further investigation is needed.

The Lower 40 Ramp Area is located on the JBCC airfield at the southeastern portion of the JBCC. An accidental AFFF release occurred at the Lower 40 Ramp Area when the JBCC Fire Department attempted to conduct fire training activities using water and accidentally activated the AFFF instead. Approximately three to four gallons of AFFF/water mixture was released to the concrete surface of the airfield.

Releases from the Fire Station and the Lower 40 Ramp Area drained into the surrounding storm sewer inlets and was released to Drainage Ditch #1 via underground storm sewer pipelines. AFCEC sampled five monitoring wells and PFCs were not detected above EPA PHAs. Two direct push borings will be completed.

At the sites of Tanker Truck Rollover #1 and #2, AFCEC completed three direct push borings. PFCs were not detected above EPA PHAs in samples collected from FLDP4011. PFOS was detected at concentrations of 0.8 µg/L and 0.72 µg/L in the first two sample intervals collected at and 10 feet below the water table from FLDP4012. No other samples exceeded EPA PHAs. PFOS was detected at a concentration of 1.1 µg/L in the sample interval collected at 30 feet below the water table from FLDP4013. No other samples exceeded EPA PHAs. AFCEC added sampling of two downgradient monitoring wells located on Barnstable County property. PFCs were not detected above EPA PHAs. Additional investigation is recommended for further delineation of PFC contamination.

The source of the FS-1 groundwater plume was surficial releases of aviation gasoline at the Eastern and Western Aircraft Turnaround Areas within the flight line. The site was used from 1955 to 1970 to test fuel dump valves on EC-121 Super Constellation aircraft. As part of the tests, fuel was intentionally released directly onto the ground. Although there are no known use or releases of AFFF in this area, the timeframe the site was used is close to the start of AFFF use for suppressing aircraft and other vehicle fires, therefore this area has been included in the SI. AFCEC sampled the FS-1 Source Area monitoring wells 36MW0002 and 36MW0007. PFCs were not detected above EPA PHAs.

During recent interviews, a retired pilot indicated that in the early 1980s he observed approximately 2,000 feet of the approach end of Runway 32 foamed twice for the emergency landing of a civilian twin engine plane that was unable to extend the nose gear. This site is located to the north/northeast of the Former Building 118 Release Area/Drainage Ditch #3 site. AFCEC will include this area as a Group 2 site in the Final SI work plan and will complete a direct push groundwater vertical profile boring downgradient of the approach to Runway 32.

Ms. O'Reilly summarized the deliverables. The Preliminary Assessment for PFCs at JBCC was submitted on 29 June 2015 along with the Draft SI Work Plan for PFCs at the Flight Line Area and the draft Pre-RI Work Plan for PFCs at Ashumet Valley. The draft RI/FS Work Plan for 1,4-dioxane at Ashumet Valley, CS-10, CS-20, and LF-1 was submitted on 31 July 2015. The draft RI/FS Work Plan for 1,4-dioxane and PFCs at Ashumet Valley was submitted on 30 September 2015. All of the draft work plans met the Federal Facilities Agreement (FFA) deliverable dates.

Ms. O'Reilly outlined the next steps. AFCEC needs EPA and MassDEP comments/concurrence to finalize the work plans. AFCEC will resample private drinking water wells with 1,4-dioxane detections above the reporting limit and continue SI and RI/FS sampling programs. AFCEC will present sample results and field program updates to the agencies at Technical Update Meetings and to the public at future JBCC Cleanup Team Meetings.

Ms. Rielinger asked about the mobility of the emerging contaminants and noted that it looked as if some of the exceedances were within existing plumes and some were outside of the plumes. She asked if the mobility was similar to the contaminants of concern (COCs) in the plumes or if they were running at a different rate. Ms. O'Reilly and Ms. Forbes explained that PFCs and 1,4-dioxane are within the plume footprint. One exception is 1,4-dioxane being detected outside of the chlorinated solvent footprint at Ashumet Valley because it is being discharged through the infiltration trenches. The concentrations are below the GW-1 standard so it is unlikely there is a 1,4-dioxane plume outside of the chlorinated solvent plume footprint. The other exception is that PFCs are being detected in the source area where the chlorinated solvents have long since detached.

Mr. Winters suggested that a table should be developed to help summarize the information. Ms. O'Reilly stated that a table could be provided to the team members.

Mr. DiNardo stated that the presentation contained a "ton of info." He asked what happens to a private well if it is deemed a Critical Exposure Pathway. Mr. Pinaud stated that the MCP definition of a Critical Exposure Pathway is, "Those routes by which oil and or hazardous materials released at a disposal site are transported, or are likely to be transported, to human

receptors via ingestion, dermal absorption, or inhalation of measureable concentrations of oil or hazardous materials from a drinking water supply well located at, or servicing, either a pre-school, a daycare, a school, or occupied residential dwelling.” He added that, in this case, MassDEP is looking at emerging contaminants and believes there is a reasonable connection between the emerging contaminants and the Air Force disposal sites. When there is a detection below a health-based standard, the regulations states that the responsible party is obligated to determine if there is a health impact. If it is, they have to abate it, eliminate the exposure or provide an alternate water supply, if feasible. He stated, “In this case, there are detections in residential wells of some emerging contaminants, that we think is related to the base, it is a critical exposure pathway, it is below the standard. It is detectable, above the reporting limit but below the health-based standard, so it is a real detection.” He then added that the Air Force, EPA, and MassDEP have discussed the actions that could be taken. He listed these actions as follows: resample the wells, stop the discharge in that location, and provide bottled water or a town water connection. He added that the extraction could also be stopped, which would mean stopping the treatment and he indicated this was not an ideal solution.

Ms. Forbes stated that as part of the CERCLA process, a remedial investigation is done to define the nature and extent of the contamination. If it is determined there is a health risk, then the next step is the Feasibility Study process to outline what actions should be taken. She explained that in the interim, the wells will be resampled. The influent and effluent at the treatment plants will also be sampled. The effluent flow has also been diverted. AFCEC plans to conduct a test, as Ms. Forbes described, “We have two infiltration trenches. The one on Currier Road is next to a number of the properties in question. We are pushing that water over to the Sandwich Road trench, which is on the other side.” She noted there is still one resident AFCEC is trying to contact regarding sampling, which will also help with the test with the water being pushed to the other trench.

She noted that all of the water from the treatment system, which is operating at 350 gallons per minute (gpm), cannot be sent to the other trench. AFCEC is looking at what the maximum flow for the one trench could be and then they will look at optimizing the extraction well, reduce the flow, and still capture the contamination within that zone of contribution of the operating extraction well. In the interim, she noted that they are also identifying what could be done immediately and she reiterated that the extraction well could be shut down, as Mr. Pinaud had indicated. Different treatment technologies will also be evaluated. Ms. Forbes added that the downgradient investigation area was also expanded.

Mr. DiNardo stated, “We are dangerously on the edge of a public relations issue. These emerging contaminants are new and the process of cleaning up the base is potentially adding to an issue of private wells. So we are in neighborhoods in which we have made progress but now we are looking at other contaminants we are not certain we are not causing part of what is happening.” He stated that there needs to be a plan for communicating with the property owners. He also stated that residents might not want their wells sampled since this can affect property values. He wants the team to keep this in mind for future conversations with residents.

Mr. DiNardo then commented that he is surprised at the small amounts AFFF and PFCs that seem to be driving the investigation. He commented that a push well test on three gallons was a very low threshold for a response action. He asked if this is just because this is the first phase of an investigation or because of the severity of the potential health impacts.

Ms. Forbes replied that as part of the Site Inspection, where there is no history, they must rely mostly on people's recollections of what has occurred. She explained that if a witness recalls a release, due diligence is required to investigate. She said, "If there is any suspected release or known release, we are going to investigate it regardless of the volume that was released. There is nothing that says, 'Three gallons is ok but ten gallons is bad.'"

Mr. DiNardo said, "By no means do I want to go on record saying that I don't think you are doing the right thing but I feel compelled to make a comment that PFCs are in everything. So one of the things in my mind is what is the background threshold to this? Let's test an area other than the base. Fire foam is everywhere and it's continuing to be everywhere. There isn't a stoppable source for this investigation." Mr. DiNardo stated the agencies need to determine if there is an acceptable background threshold.

Ms. Donovan commented that she was concerned with the length of the presentation but acknowledged that it was important to provide all of the information that has been obtained so the team can see the possible locations for the potential releases.

Mr. Martin commented that even small releases can cause widespread contamination. He noted that 2 gallons of chlorinated solvents can contaminate 13 million gallons of groundwater. He said that background levels have not yet been determined because these are emerging contaminants. Ms. Donovan stated that MassDEP has an "Emerging Contaminants Work Group" working on the issue.

Mr. Winters commented that since much of this is based on people's recollection, he thinks there could be a lot of uncertainty. Ms. Forbes agreed and said that the Air Force is trying to distribute the sampling efforts just in case there is not a witness recollection for an area that might have had a release. She added that there is a Fire Department employee, who has been working on the base since 1978, and he has been very helpful with historical accounts.

Ms. Rielinger asked if the residential wells that had detections had year-round or seasonal residents. Mr. Karson said that he believes most are year-round residents.

Mr. McCarthy addressed the team and asked, "Why isn't there someone from the fire department at this meeting to answer some of the questions? I know being in the Air Force myself at one time, we used to dump a lot of the foam in the hangars as a test to see if they worked correctly. I understand they no longer do that now but they used to. I don't know how long they were doing that. We are looking at something that has been going on for a long time and now its finding its way down Currier Road to our residential wells." Ms. Forbes replied that as part of the process that is currently underway, the fire department employees are being interviewed to get those historical accounts.

Mr. McCarthy then asked, “What is the acceptable range we have to be concerned with? I know what our water tested at and that it is going to be tested again, which makes me a little concerned.” Ms. O’Reilly replied that on Currier Road, PFCs have not been detected. The private wells in that area are part of the 1,4-dioxane investigation related to Ashumet Valley contamination.

Mr. Pinaud said that there is a GW-1 standard of 0.3 µg/L for 1,4-dioxane and the way the number is calculated is based on the “one in a million chance that someone would get cancer if they drank the water every single day for a lifetime. It is very conservative. The concentrations in these wells is below that but there is still the issue of the Critical Exposure Pathway that has to be dealt with. We would all like to have more data to determine if this is a more transient situation or if it is actually something that is in the aquifer and not moving. The additional testing will help us with that.”

Mr. Hocking stated, “I have a year-round home and this has been in my life for 35 years. The plume was resolved years ago but now this has really shaken me up. I have been drinking bottled water for 35 years out of my own pocket. I am concerned about my children’s health. All the test and all the studies mean nothing to me. I am here 35 years later and I am starting to worry again.”

Ms. Donovan replied, “Your comment is well taken and we will make sure we keep you informed as we get more information.” Mr. Hocking added that his road was “the only road” that did not receive town water hook-up 35 years ago. He thinks that had to do with population density.

Mr. Cambareri asked about the sampling methods used. He also asked what area of the aquifer was sampled. Ms. O’Reilly explained that direct push wells were being used and noted the depths.

Mr. Forbes noted that more data are needed to do a risk assessment at the RI level and then do a FS. She explained that the highest concentrations do appear to be within the source area at FTA-1, where a lot of the fire training activities occurred.

She noted that thermal desorption does not remediate PFCs. This method was used in the 1990s as part of active remediation to treat VOCs and the temperature was not high enough to destroy the PFCs. She added, “PFCs do not degrade. 3M designed this molecule to be resistant to degradation so it sticks around a long time but also dissolves in groundwater.”

Agenda Item #4. Central Impact Area UXO Removal Update

Mr. Gregson began the presentation on the Source Area Removal at the Central Impact Area and showed a map of the area. He explained that the final groundwater remedy is in place with two extraction wells at Burgoyne Road and the final extraction well at the base boundary will be built this winter.

The EPA Decision Document (DD) required source removal of 75 – 95% of Unexploded Ordnance (UXO) in two phases. The first phase, which was just completed, covered 30 acres and the second phase, which was just started, will cover 28 acres.

Mr. Gregson explained that a team of US Army Corps of Engineers personnel are managing the project and there are dozens of contractors doing the UXO removal work, in all conditions.

He then showed a figure with the removal actions at the 30 acres as part of Phase I. He then showed a figure with ¼ acre grids and the second phase of UXO removal. He explained that the areas were chosen based on several lines of evidence, which led to an estimate of UXO density in the areas.

Mr. Gregson then showed a picture of the remote-controlled bulldozer, which was used as part of Phase I. He noted that this approach was very complicated and destroyed vegetation so a better approach was implemented. He then showed a picture of the Metal Mapper, which is the geophysical measuring tool which identifies items underground that are the shape of UXO. The classification concept is primarily based on the shape of the object. UXO have a distinct shape. Metal Mapper technology uses electromagnetic induction (EMI) physics specifically designed for munitions classification. This is needed at JBCC because of the volume of scrap metal in the ground. Approximately 91% of the metal in the ground is something other than UXO. The other 9% is either inert munitions or UXO. This method reduces costs and meets the cleanup objective.

As part of the investigation, anomalies meeting the 'dig' criteria are investigated by the UXO contractor (currently Dawson). All detectable metal are removed within a 1-meter radius. The items will be destroyed in the Impact Area in the Buried Explosive Module (BEM). Crews are also finding many items that look like munitions but contain no explosives (e.g. 155mm practice artillery rounds).

Mr. Gregson then showed a picture of the vegetation in the area after the removal and noted that the root is maintained so regrowth is possible within a few years.

Mr. Gregson then showed a summary table and noted that 646 UXO items were found as part of the Phase I investigation and that equated to 1,826 lbs. of explosives. Metal Mapper looked at 47,648 anomalies to do the work and excavated a little less than half. Phase II will take place over the next couple of years. Metal Mapper has identified 22,202 anomalies to date and 854 items have been excavated.

Quality controls are done to ensure accuracy. Every six acres, 100% of the items within a grid are excavated to make sure no UXO items are missed. The result of all of the 100% test digs only found two UXO items missed (1 partial 81mm, 1 very deep 81mm). This is far exceeding the DD requirement for removal of 75 to 95% of UXO. The work is also meeting the classification goal of 70% reduction in clutter digs.

In summary, the work at Phase I, at 30 acres, has been completed. 100% digs were completed for five ¼-acre test grids. Work is underway for Phase II. The Metal Mapper work is nearly complete in Area 1 and initial EM61 data has been completed in Area 2.

Mr. DiNardo asked what percent of anomalies were actually UXO. Mr. Gregson referred back to the table and stated that only approximately 1% were UXO.

Mr. Cambareri asked if the IAGWSP still used the Contained Detonation Chamber (CDC). Mr. Gregson replied that many of the items are too large for the CDC and they are not safe for storage because they have been fused and fired. He stated that the BEM is now used. He explained that method to Mr. Cambareri and directed him to the videos available on the IAGWSP website.

Agenda Item #5. Small Arms Ranges and J-Ranges Source Removal Update

Mr. Gregson began the Small Arms Ranges and J Ranges Source Removal presentation by showing a map of the area. He noted that post-DD source response actions are required at the Small Arms Ranges, J-2, and J-3 Ranges. Sampling is currently being conducted at the J-1 Range.

The DD required additional action at the Operational ranges: B, C, G and N and at the non-operational ranges: Former B, Former C, Former D, Former M-2, and Former N. He displayed a figure showing the locations.

Mr. Gregson then showed a summary table for the contaminants of concern (lead and tungsten), the cleanup levels, and the extent of the source removal actions. He then displayed figures showing the removal areas at B Range, C Range, G Range, N Range, Former B Range, Former C Range, Former D Range, Former M2 Range, and Former N Range.

The J-2 DD required confirmatory soil sampling at the J-2 Range to verify the findings of the RI/FS regarding residual soil contamination. Phase I multi-increment soil samples (MIS) were collected in 19 grids (area 1), 26 grids (area 2), and 17 grids (area 3). Results indicated the presence of soil contamination requiring response actions in eight grids. Phase II MIS sampling was conducted to determine the full extent of contamination observed during Phase I. MIS samples were collected in previously unsampled grids adjacent to Phase I. All Phase I and II sampling data will be evaluated. Based on results to date, 10 grids will be excavated to a depth of six inches and contaminated soils will be properly disposed of off-site.

The J-3 DD required confirmatory soil sampling to verify the findings of the RI/FS regarding residual soil contamination. Soil sampling to date indicated the presence of explosives and perchlorate primarily in Area 3, where the J-3 groundwater plume originated. Area 3 included Artillery Range, Demolition Area and Explosives Storage Bunker. The IAGWSP will confirm that the removal actions conducted to date were adequate. Nineteen sampling grids have been selected in Area 3 because they encompass areas previously excavated as part of 2004 soil Rapid Response Action, occupy the general area of the source of the J-3 Range plume, and previous soil sampling was not done using the MIS methodology.

Mr. Gregson explained that sampling underway in the Firing Point Area of the J-1 Range to confirm existing conditions in the vicinity of previously excavated burial/burn pits in grids L1-2 and M2. Groundwater modeling indicates a small plumelet on the eastern side of the J-1 Range Southern plume, which may have originated near this location. No significant contamination was detected in 5-point composite samples collected during the remedial investigation. Eight sampling grids were selected because they encompass the area where a burial and burn pit were previously

excavated, occupy the general area of the source of the J-1 Range southern plume, and previous soil sampling was not done using the MIS methodology.

Mr. Gregson stated that soil removal efforts are ongoing and will continue over the next few months. Any required excavation/off-site disposal would occur early next year.

Agenda Item #7. Final Discussions, Adjourn

Ms. Donovan stated that the next meeting is scheduled for January 13, 2016. The meeting was adjourned.