Joint Base Cape Cod Cleanup Update

2019

JBCC Cleanup Update

The Installation Restoration Program (IRP) cleanup is regulated under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

The Impact Area Groundwater Study Program (IAGWSP) cleanup is regulated under the Safe Drinking Water Act (SDWA).

For more information, visit EPA's Web site at www.epa.gov.

Community members in Pocasset, MA hear updates on groundwater cleanup in their neighborhood (December 2018).

The two cleanup programs at JBCC use web sites, public meetings, news releases, neighborhood notices, public comment periods and other publications to update community members on the programs' progress and to solicit their input on cleanup actions. For information on how to learn more, see page 12.

Photos on the cover: (Clockwise from Left: Modular treatment units treating the J-2 Northern Plume, field staff conducting direct push groundwater sampling and AFCEC's 1.5-megawatt wind turbines.

Two environmental cleanup programs at the Joint Base Cape Cod (JBCC, formerly known as the Massachusetts Military Reservation) are addressing areas of groundwater contamination, known as plumes, and their sources. One program, managed by the Air Force, is addressing contamination found primarily on the southern portion of the JBCC and off-base, and the other, managed by the Army, is addressing contamination from the northern portion of the installation and some off-base areas. Both of these programs' efforts are being conducted with oversight from the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP). To date, the programs have invested over $1.2 billion on investigation and cleanup activities at JBCC.

Cleanup at JBCC continues to move forward. Cleanup actions are addressing most areas of groundwater contamination and efforts to select remedies for those that remain are in progress. In all cases, measures are in place to protect against exposure to unsafe levels of contamination and to make sure that public or private water supplies are not affected.

Groundwater plumes are being addressed through treatment and/or monitored natural attenuation, which uses the natural process of dilution, dispersion and degradation. Treatment generally involves pumping contaminated groundwater from the aquifer, treating it using granular activated carbon, ion exchange resin, or both to remove contamination, and returning treated water to the aquifer. Both options use routine groundwater monitoring to make sure contamination is being reduced, as predicted. The programs also rely on land-use controls, which include enforcement of regulations, verification/evaluation of private wells in plume areas, and other protective measures designed to prevent development or use of drinking water supplies in areas affected by the groundwater contamination.

Source areas, those areas of contaminated soil or other materials (e.g. unexploded ordnance) that contributed to contamination of the groundwater, have been addressed by removal and treatment, or off-site disposal of the soil, munitions and other items.

Installation Restoration Program

JBCC was listed on the Superfund National Priorities List in 1989. The Air Force Civil Engineer Center's (AFCEC) Installation Restoration Program (IRP) began cleaning up source areas and groundwater contamination in 1996. Interim treatment systems were used to begin addressing many of the groundwater plumes while final decisions on how to address the contamination were ongoing. There are over 100 locations on JBCC that have been evaluated as part of the Air Force cleanup efforts. Many of those locations were confirmed as source areas that contributed to soil and/or groundwater contamination at some point in the past and over 70 have been cleaned up. Sixty-one source areas have been delisted as Superfund sites.

Several potential source areas are being investigated under the Military Munitions Response Program and for emerging contaminants which were recently added to the AFCEC program.

AFCEC is addressing 18 groundwater plumes, four of which have been cleaned up as the contamination is now below applicable standards. There are nine IRP treatment systems currently treating approximately nine million gallons of groundwater per day and those systems and the groundwater in the area of each plume are regularly monitored to verify that cleanup goals are being achieved. AFCEC owns and operates three 1.5 megawatt wind turbines that offset 100% of the power used by the treatment systems. The program continually looks at ways to optimize system operations and cleanup actions, and will be working with state and federal regulators to determine when cleanup efforts are complete and systems can be shut down.

As part of its cleanup efforts, the IRP has replaced impacted drinking water supplies located off base and connected over 1,300 homes in the area of groundwater plumes to municipal water. In addition, the IRP conducts extensive reviews to identify and test private wells in the vicinity of the plumes.

For additional information on IRP background and activities, please visit https://massnationalguard.org/JBCC/afcec.html.

A sonic drill rig collects groundwater samples up to 300 feet deep.

Impact Area Groundwater Study Program

The Army National Guard's Impact Area Groundwater Study Program (IAGWSP) on Camp Edwards began in 1997 when EPA issued Administrative Orders requiring investigations and cleanup actions of munitions and munitions constiutents in Camp Edwards' training ranges and Impact Area. The program began active cleanup of groundwater contamination in 2004 and also is removing potential sources of contamination. Interim treatment systems were employed to allow cleanup to begin quickly on the plumes that had the highest levels of contamination or the potential to impact public or private drinking water supplies. Decision Documents have been signed for all of the IAGWSP's sites and final remedial actions are underway.

The IAGWSP is treating 4.1 million gallons of groundwater per day and over 12 billion gallons have been treated to date. Five sites have active groundwater treatment and long-term monitoring. Four sites have a requirement for long-term monitoring with monitored natural attenuation and land-use controls as their selected remedy. Three sites required no further action and two sites have met the monitoring requirements set forth in the Decision Document and have been completed.

In addition to groundwater treatment, the Decision Document for the Central Impact Area requires clearance of the unexploded ordnance at the source area. Cutting edge electromagnetic induction sensor technology called "metal mapper" is being utilized to identify objects and reduce the cost of cleanup. Instead of having to clear and sift through every acre, metal mapper is able to identify munitions which reduces the number of items that need to be dug up.

The Upper Cape Water Supply Reserve is co-located with Camp Edwards' 15,000-acre northern training area. It was established by Chapter 47 of the Acts of 2002 as public conservation land dedicated to three primary purposes: water supply and wildlife habitat protection; the development and construction of public water supply systems; and the use and training of the military forces of the commonwealth, provided that such military use and training is compatible with the natural resource purposes of water supply and wildlife habitat protection.

Records of Decision/Decision Documents Signed and Remedies in Place

Plume Name & Status	Treatment /Remedy in Place Date*	Projected Remedy Complete Date**	Contaminants of Concern
Ashumet Valley Plume			
The source areas have been cleaned up and groundwater remediation is ongoing. Investigations are underway for the emerging contaminants PFAS and 1,4-dioxane; and the outcome may impact the projected remedy complete date.	1999/2009	2021	PCE, TCE, Mn, thallium
Chemical Spill-4 (CS-4) Plume			
The source area has been remediated and groundwater treatment is ongoing.	2005	2020	PCE, TCE, 1,1,2,2-TeCA, EDB
Chemical Spill-10 (CS-10) Plume			
The multiple source areas have been remediated and groundwater treatment is ongoing. Surface water at Ashumet Pond and Johns Pond is tested biennially for contaminants of concern. Results show the ponds are safe for recreational purposes.	1999/2009	2060	PCE, TCE
Chemical Spill-19 (CS-19) Plume			
The source area has been remediated. The plume is not expected to move beyond the base boundary and is being addressed through monitored natural attenuation and land-use controls.	2009	2037	RDX
Chemical Spill-20 (CS-20) Plume			
No continuing source was identified for the CS-20 plume. The treatment system was shut down in 2015 and the remaining plume is being addressed through monitored natural attenuation.	2006	2020	PCE
Chemical Spill-21 (CS-21) Plume			
No continuing source was identified for the CS-21 plume. Groundwater treatment is ongoing.	2006	2025	TCE
Chemical Spill-23 (CS-23) Plume			
No continuing source was identified for the CS-23 plume. The treatment system was shut down in 2017 and the plume is no longer defined.	2006/2007	2020	TCE, $CC1_4$
Fuel Spill-1 (FS-1) Plume			
The plume is being treated and the last extraction well is expected to be shutdown within the year. PFAS is present in the FS-1 area and an investigation is ongoing; and the outcome may impact the projected remedy complete date.	1999/2000	2020	EDB (plume), Lead, toluene, thallium (source area)
Fuel Spill-12 (FS-12) Plume			
The source area has been remediated and the groundwater plume is being treated. Monitoring data collected at Snake Pond confirmed no impacts due to the plume and results show the pond is safe for recreational use.	1997-2006	2037	EDB, Benzene

IRP program-related plumes/Records of Decision (ROD)

IAGWSP program-related plumes/Decision Documents (DD)

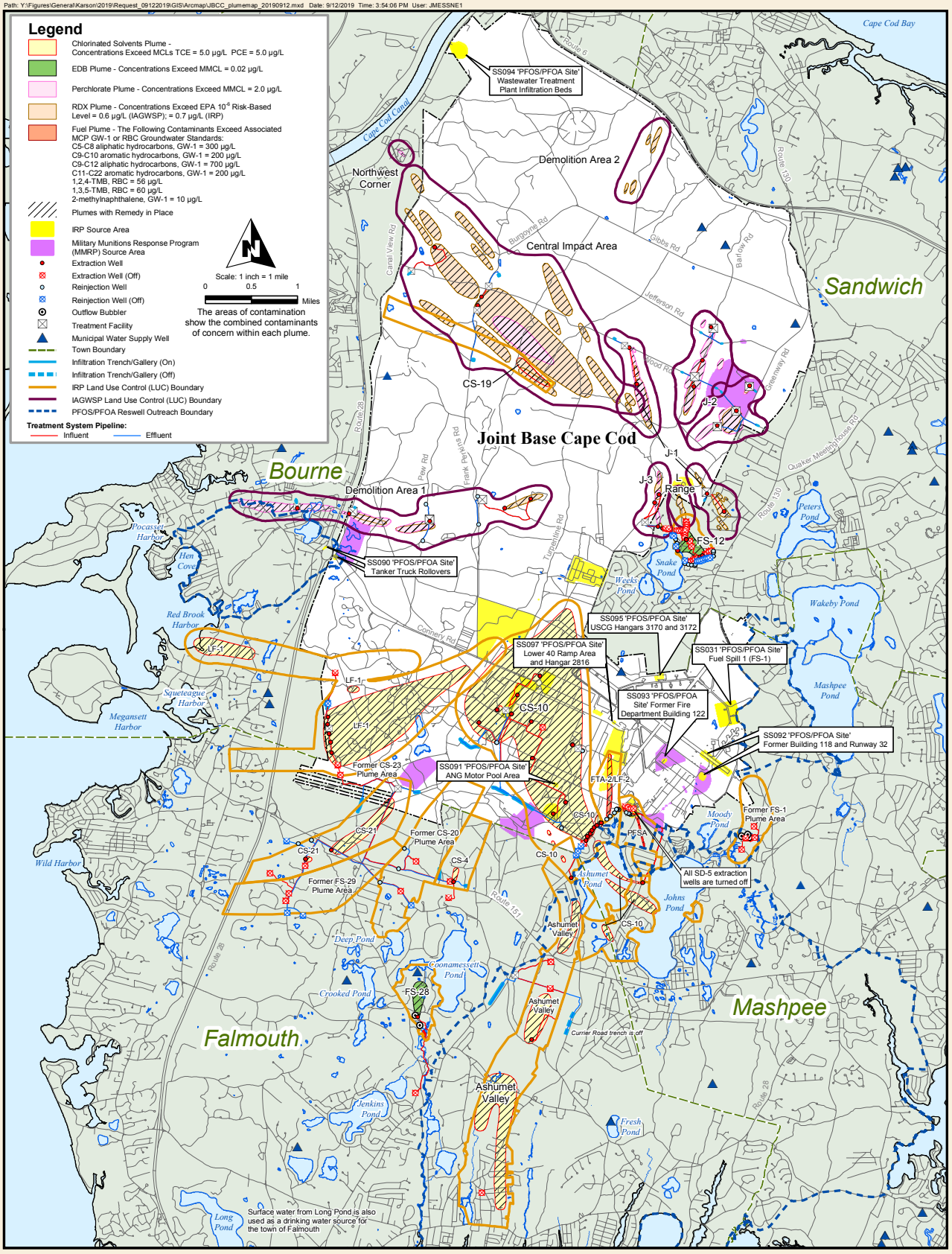
* "Treatment in Place" = year groundwater treatment started; "Remedy in Place" = year that ROD or DD was finalized.

** Monitoring will continue for a specified period after cleanup levels are achieved in order to ensure cleanup goals have been met.

Records of Decision/Decision Documents Signed and Remedies in Place

Plume Name & Status	Treatment /Remedy in Place Date	Projected Remedy Complete Date*	Contaminants of Concern
Fuel Spill-28 (FS-28) Plume			
The source of the plume is unknown. The plume is being treated. The Coonamessett River in Falmouth remains free of EDB and cranberry farming continues. The Town of Falmouth is restoring the habitat along the Coonamessett River System.	1997/2000	2020	EDB
Fuel Spill-29 (FS-29) Plume			
The source of the plume is unknown. The treatment system was shut down in 2010 and the plume is no longer defined. FS-29 is advancing through the closure process.	2006	2019	EDB, CCl_4
Landfill-1 (LF-1) Plume			
The landfill was the source of the plume and has been capped, and the plume is being treated. A remedial investigation has been completed for the emerging contaminants PFAS and 1,4-dioxane; the contaminants are contained within the on base footprint of the defined plume and are not likely to impact the projected remedy completion date. Red Brook and Squeteague harbors are tested biennially. Results show they are safe for recreational purposes.	1999/2007	2045	PCE, TCE, CCl_4, EDB, 1,1,2,2-TeCA, VC, 1,4-DCB, Mn
Demolition Area 1			
The source area which included 28,000 tons of contaminated soil, was excavated and treated. Groundwater treatment systems are addressing the plume which extends off-base into the town of Bourne. All residents in the area of the plume are on town water.	2004/2007 (on-base) 2013 (off-base)	2028	RDX, perchlorate
Western Boundary			
Monitored natural attenuation and land-use controls addressed this plume. Contaminants were below risk-based levels in 2017 and the site began the site closure process in 2018.	2010	2018	Perchlorate
Demolition Area 2			
The source area was removed. The plume, which is not expected to move beyond the JBCC boundary, is being addressed through monitored natural attenuation and land-use controls.	2010	2021	RDX
Northwest Corner			
The plume is dissipating into the Cape Cod Canal and is being addressed through monitored natural attenuation and land-use controls. All homes in the area are on town water.	2010	2020	perchlorate

Path: Y:\Figures\General\Karson\2019\Request_09122019\GIS\Arcmap\JBCC_plumemap_20190912.mxd Date: 9/12/2019 Time: 3:54:06 PM User: JMESSNE1



Contaminant of Concern (COC)	Type of Contaminant	Risk-Based Level
TCE = trichloroethene	solvent	MCL = 5 µg/L
PCE = perchloroethene	solvent	MCL = 5 µg/L
CCl_4 = carbon tetrachloride	solvent	MCL = 5 µg/L
EDB = ethylene dibromide	fuel-related compound	MMCL = 0.02 µg/L
benzene	fuel-related compound	MCL = 5 µg/L
VC = vinyl chloride	solvent	MCL = 2 µg/L
1,1,2,2-TeCa = 1,1,2,2-tetrachloroethane	solvent	GW-1 = 2 µg/L
1,4-DCB = 1,4-dichlorobenzene	solvent	MMCL = 5 µg/L
Mn = manganese	metal	EPA Health Advisory = 300 µg/L
thallium	metal	MCL = 2 µg/L
lead	metal	15 µg/L (treatment technique action level for water distribution systems)
toluene	fuel-related compound	MCL = 1,000 µg/L
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine	explosive	HA = 2 µg/L GW-1 = 1 µg/L 10^{-6} = 0.6 µg/L (IAGWSP); = 0.7 µg/L (IRP)
perchlorate	oxidizer	HA = 15 µg/L MMCL = 2 µg/L
C5-C8 aliphatic hydrocarbons	fuel-related compound	GW-1 = 300 µg/L
C9-C10 aromatic hydrocarbons	fuel-related compound	GW-1 = 200 µg/L
C9-C12 aliphatic hydrocarbons	fuel-related compound	GW-1 = 700 µg/L
C11-C22 aromatic hydrocarbons	fuel-related compound	GW-1 = 200 µg/L
1,2,4-TMB	fuel-related compound	RBC = 56 µg/L
1,3,5-TMB	fuel-related compound	RBC = 60 µg/L
2-methylnaphthalene	fuel-related compound	GW-1 = 10 µg/L

Joint Base Cape Cod Groundwater Plume Map, IRP and IAGWSP LUC Areas, and IRP PFOS/PFOA Outreach Areas

Issued September 2019

Note: MCL – Maximum Contaminant Level
MMCL – Massachusetts Maximum Contaminant Level
HA – Federal Lifetime Health Advisory
PFOS - Perfluorooctane Sulfonic Acid
PFOA - Perfluorooctanoic Acid
GW-1 – State default cleanup value to be used in lieu of site-specific risk-based level
10^{-6}– EPA level resulting in an excess cancer risk of one in a million
RBC - Site Specific Risk Based Concentration

Records of Decision/Decision Documents Signed and Remedies in Place

Plume Name & Status	Treatment /Remedy in Place Date	Projected Remedy Complete Date*	Contaminants of Concern
L Range			
The source area was removed in 2008 and 2009. The plume is being addressed through monitored natural attenuation and land-use controls. While the plume originally contained Perchlorate and RDX, Perchlorate is no longer detected.	2010	2031	RDX
J-1 Range			
Removal of the source area was completed in 2010. A treatment system began addressing the highest concentrations in the southern plume in 2007 and was expanded as part of the final remedy in 2012. Construction on a treatment system to address the northern plume was completed in 2013.	2007/2011 (Southern) 2013/2011 (Northern)	2024 (Southern) 2047 (Northern)	RDX (Southern) RDX, Perchlorate (Northern)
Central Impact Area			
Source area removals began in 2009 and are ongoing. 68 acres have been partially cleared of UXO and over 4,000 pounds of explosives have been recovered. Three treatment systems are addressing a groundwater plume.	2013/2012	2058	RDX, Perchlorate
Gun & Mortar Positions			
The source area was removed. No significant groundwater contamination has been identified. No further action is planned at the Gun and Mortar Positions.	2012	2013	N/a
Former K Ranges			
Source area removals have been conducted at the range. No significant groundwater contamination has been identified. No further action is planned at the Former K Range.	2012	2012	N/a
Former A Range			
Source area removals have been conducted at the range. No significant groundwater contamination has been identified. The Former A Range was addressed through limited groundwater monitoring and land-use controls. The site was closed in 2018.	2012	2017	N/a

O&M staff review schematics for a groundwater treatment vessel's piping configuration.

Record of Decisions/Decision Documents Signed/ Remedies in Place

Plume Name & Status	Treatment/ Remedy in Place Date	Projected Remedy Complete Date*	Contaminants of Concern
J-2 Range			
Source area removals have been conducted. J-2 Northern and Eastern plumes treatment systems began operation in 2006 and 2008.	2006/2013 (Northern) 2008/2013 (Eastern)	2030	RDX, perchlorate
J-3 Range			
The J-3 Range extends off-base towards Snake Pond in Sandwich. A treatment system began treating the plume in 2005. Source area removals have been conducted.	2005/2015	2025	RDX, perchlorate
Small Arms Ranges			
Several ranges have been investigated and cleared. Source area removals have been conducted. No groundwater remediation is necessary at the Small Arms Ranges; however long-term monitoring is required.	2016	2021	Metals
Training Areas			
Site consists of thirty-six areas where various types of military training activities were conducted. No further investigations or response actions are required for the majority of the Training Areas. Six sites required minor additional data review, geophysical surveys and sampling which will be completed in 2019.	2019	2021	Metals

Soil samples from a source area being processed for shipping and testing.

The Metal Mapper is used to discriminate between buried unexploded ordnance items and other non-hazardous metallic objects in the Central Impact Area.

Munitions debris found during IAGWSP Central Impact Area source investigations awaiting recyling.

Military Munitions Response Program (MMRP) Site Status

Site Name & Description	Site Status	Contaminants of Potential Concern
Former Otis Bomb Storage Magazines		
A 38.5 acre area located inside the flightline. Site was used for munitions storage of bombs at Otis Air Force Base from 1940s to 1951.	Investigation was completed in Feb 2018. No further action recommended. Finalize No Further Response Action Planned Decision Document (NFRAP DD).	None. No evidence of munitions and explosives of concern (MEC), munitions debris (MD), or munitions constituents (MC).
Ordnance Area 1		
A 23.5 acre area located primarily on base with footprint extending off base into Mashpee. Used for short-term munitions storage after the closure of the Former Otis Bomb Storage Magazines during the 1950s.	Investigation was completed in Feb 2018. Prepare investigation report and Decision Document.	None. No evidence of MEC, MD, or MC
Otis Target Butt		
A 1.3 acre area used for test firing aircraft machine guns (0.30 caliber and 0.50 caliber) from 1943-1950s.	Investigation was completed in Feb 2018. No further action recommended. Finalize Decision Document.	None. MEC was not anticipated nor found. Lead is soil was below EPA residential screening levels.
Skeet Range		
A 29.3 acre area used for small arms (shotguns) training in the 1940s	Investigation was completed in Feb 2018. Conduct removal action for lead and complete a Further Response Action Needed/Planned Decision Document.	Lead in soil.
Mock Village		
A 1.9 acre former mock German village, used for urban combat training in the 1940s. Used 0.30-caliber blank rounds, explosives/pyrotechnics, and hand grenades.	Investigation was completed in Feb 2018. Prepare investigation report and Decision Document.	None. No evidence of MEC, MD, or MC
Old Grenade Courts		
A 44.1 acre area used to train handling/throwing of practice and live grenades in the 1940s-1950s. Practice courts had mock targets. Live courts had throwing trenches and cleared impact areas. Located primarily on base with footprint extending off base into Falmouth.	Investigation was completed in Feb 2018. Prepare investigation report and Decision Document	None. No evidence of MEC, MD, or MC
Former Ammunition Supply Point		
A 58.1 acre area used in the 1940s-1950s as a munitions storage and distribution point. In the late 1950s, the area was developed for residential housing and a school. The housing and school were demolished in early 2000.	Investigation was completed in July 2015. Recommended no further action. Finalize Decision Document.	None. No evidence of MEC, MD, or MC
Old K Range		
A 149.4 acre area consisting of a former moving target rifle range and a former rocket range	Investigation was completed in Feb 2018. Follow-up investigation ongoing. Prepare recommendations and Decision Document.	MEC present, potential MC present.
Otis Gun Club		
A 74.6 acre area used for small arms (shotgun, pistol, rifle) training in the 1940s. Includes three training areas: rifle range, skeet and trap range, and a pistol range.	Investigation was completed in Feb 2018. Follow-up investigation ongoing. Prepare recommendations and Decision Document.	No MEC. Lead and polycyclic aromatic hydrocarbons present above risk-based screening criteria.

Emerging Contaminants Site Status

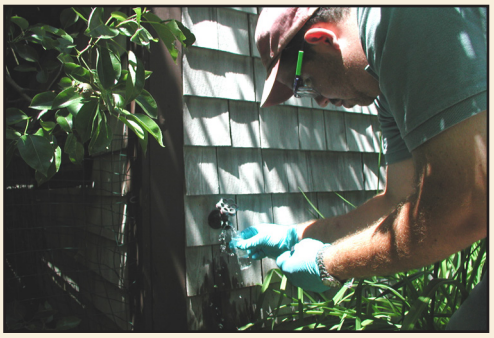
Site Name & Description	Site Status	Contaminants of Potential Concern
Ashumet Valley (AV): Fire Training Area-1 (FTA-1)		
One of the sources of the AV plume was the former FTA-1 where firefighter training exercises were held from 1958 to 1985. Flammable waste liquids were dumped on the ground surface, set afire, and extinguished. From 1970 to 1985, aqueous film-forming foam (AFFF) containing perfluorooctane-sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), was used in the training exercises. The PFOS/PFOA contamination has migrated from the source area off base into Falmouth and Mashpee. The former wastewater treatment plant (WWTP), closed in 1995, was located next to the FTA-1 site and might also be a source of PFOS/PFOA contamination from collection of wastes from other potential sources on base. 1,4-Dioxane was used as an additive in 1,1,1-trichloroethane, which may have been used at the FTA-1.	Supplemental Remedial Investigation (RI)	Perfluorooctane -sulfonic acid (PFOS), perfluorooctanoi c acid (PFOA), 1,4-dioxane
Landfill-1 (LF-1)		
Groundwater downgradient of the landfill has been sampled for 1,4-dioxane and PFOS/PFOA and all are present in the LF-1 groundwater plume.	Supplemental RI	PFOS, PFOA, 1,4-dioxane
Tanker Truck Rollovers (TTRS)		
The TTRS were identified as having the potential for PFOS/PFOA contamination based on the application of AFFF to the ground surface as part of emergency responses by the Base Fire Department at two tanker truck rollover sites. A groundwater plume of PFOS/PFOA has been identified extending from the source area to Hen Cove in Bourne.	RI	PFOS, PFOA
Air National Guard (ANG) Motor Pool Area		
An emergency response was required at the ANG Motor Pool area when a snow plow crashed into a fuel truck. The fuel truck caught fire and was extinguished by the Base Fire Department using AFFF.	Expanded Site Inspection (SI)	PFOS, PFOA
Former Building 118		
The Base Fire Department used the area to flush out hoses containing residual AFFF after responding to emergencies and to conduct time and distance testing. Time and distance testing was conducted annually for 10 years.	Expanded SI	PFOS, PFOA
Former Fire Department Building 122		
An accidental AFFF release occurred in 2000 when AFFF was activated instead of water. Approximately 10 gallons of AFFF/water mixture was released to the ground surface. Other minor spills and leaks of AFFF may have contributed to the contamination at this site.	Expanded SI	PFOS, PFOA
USCG Hangers 3170 and 3172		
USCG Hangars 3170 and 3172 are equipped with an AFFF fire suppression system which has been in operation since 1972. Several releases of AFFF have occurred at these hangars and caused PFOS/PFOA contamination of the groundwater.	Expanded SI	PFOS/PFOA
Lower 40 Ramp Area/Helicopter Hanger		
An AFFF release occurred at the Lower 40 Ramp Area when the Fire Department was conducting fire training activities using water and accidently activated the AFFF/water mixture instead. Approximately 3-4 gallons of AFFF/water mixture were released to the concrete surface of the airfield and flowed into the nearby storm drain that discharges to a drainage ditch. Nine 2.5-gallon portable fire extinguishers charged with AFFF were stored outside of the helicopter hangar (Bldg 2816) on a concrete slab between 2015 and 2016 and reportedly have never been used. There have not been any documented AFFF releases at this hangar. Building 2814, located next to the hangar was used as a fire department in the past.	Expanded SI	PFOS/PFOA
Fuel Spill-1 (FS-1)		
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 onto the ground. Although there are no known uses or releases of AFFF in this area, the timeframe the site was used is close to the start of AFFF use in 1970.	Expanded SI	PFOS/PFOA
Wastewater Treatment Plant (WWTP) and Infiltration Beds		
The new WWTP is located in the southeast portion of JBCC and the sand infiltration beds are located in the northern portion of JBCC. The WWTP receives wastewater from the JBCC operations, some of which use AFFF and release it to the sewer.	Expanded SI	PFOS/PFOA
Chemical Spill-10 (CS-10)		
1,4-Dioxane was detected above the applicable standard within the footprint of the CS-10 plume and is proposed to be added as a contaminant of concern.	Explanation of Significant Differences	1,4-Dioxane

The status of AFCEC groundwater cleanup systems in the control room at AFCEC's Operations and Maintenance Facility.

Operations & Maintenance

Groundwater cleanup remedies require long-term operation and maintenance of treatment plants and the programs continually review the system performance of each plume. The cleanups are supported by monitoring data from the plants and groundwater. While groundwater contaminants remain above their cleanup levels, land-use controls to prevent exposure are maintained through continual interaction with local boards of Health and property owners of affected areas.

In order to find ways to accelerate treatment, improve operations, save resources and reduce environmental impacts, both cleanup programs look at adjusting monitoring plans, changing flow rates, adding extraction wells or turning off extraction wells as the plumes shrink, alternating extraction well operation, or other ways to make their treatment efforts more efficient. In addition, per EPA requirement, five-year reviews are conducted to evaluate the remedies and impacts of any new information on that remedy.



Private well sample collection by an AFCEC field technician.

Future decisions regarding each of the plumes will include determining when remediation is complete, when to shut off specific extraction wells or entire treatment systems, and when to discontinue monitoring. The final decisions on when to shut down treatment systems are presented to EPA and MassDEP and there will be an opportunity for public input.

Until then, the programs will be looking at ways to to adhere to the Army's and Air Force's goal of sustainability - protecting resources in a way that preserves them for future use.

Green Remediation

JBCC cleanup programs have been leading the way in Sustainable Green Remediation. Sustainability efforts being used include:

- biofuels
- low-energy pumps
- energy-efficient lighting heating and cooling
- renewable sources of energy (i.e. wind turbines)
- reusable modular treatment units
- beneficial reuse of treated water
- building new treatment systems in existing facilities

Surface water sampling in a shallow wetland depression in Pocasset, MA.

These efforts reduce the use of new materials, the destruction of natural habitat and emissions from vehicles, pumps, and equipment.

AFCEC operates three wind turbines on JBCC. A 1.5 MW Fuhrlaender turbine was constructed in the southwest corner of the Cantonment Area and became operational in December 2009. Two 1.5 MW General Electric turbines were constructed in the northwest corner of JBCC and became operational in November 2011. Since their startup, they have produced a combined total of 75,832 MWhr through March 2019, resulting in a credit of over $11M towards AFCEC's energy bills. With the annual production of renewable energy, AFCEC's energy use and related air emissions are offset by 100%.

Learn More

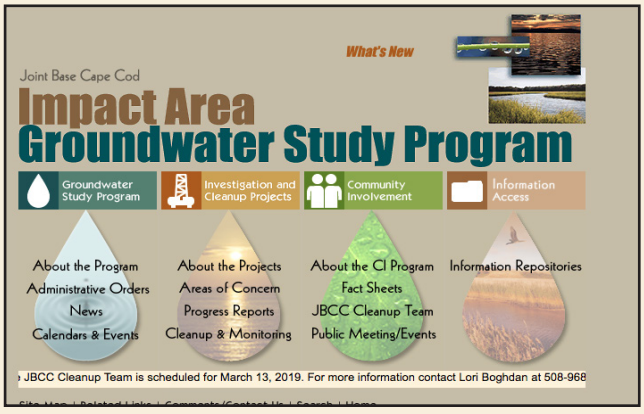
The IRP and IAGWSP strive to keep the local community informed by:

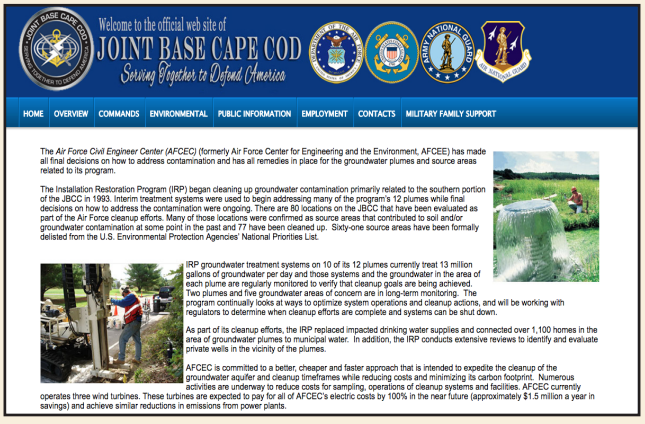
Information Repositories

Information on the IRP and IAGWSP cleanup programs is available on the individual program websites listed below and at the Information Repositories located at public libraries in Bourne (both programs), Falmouth and Sandwich (IRP). The repositories are updated to ensure that current documents are available. A complete repository of documents is available at the Jonathan Bourne Library in Bourne. All documents are available on CLAMS (Cape Libraries Automated Materials System).

Online

Documents, reports, meeting minutes, fact sheets and other information are available on the IAGWSP website: http://jbcc-iagwsp.org and the AFCEC/JBCC Web site: https://massnationalguard.org/JBCC/afcec.html.





JBCC Cleanup Team

A citizens' advisory team periodically meets with members of the IRP, the IAGWSP, the EPA and MassDEP to review program activities and to provide input. If you are interested in joining the team, or for more information on the meetings, which are open to the public, please refer to contacts listed on the back cover.

Public Comment Periods

Public comment periods on propopsed cleanup decisions are held periodically. News releases and paid advertisements are used to announce public comment periods timeframes, where to find documents and how to submit comments.

Administrative Record

The Administrative Record for the IRP can be found online at: http://afcec.publicadmin-record.us.af.mil. Select "Joint Base Cape Cod." It is also located at: 322 East Inner Road, Otis ANG Base, MA. Access is by appointment only. Please call the AFCEC Community Involvement office at (508) 968-4678, x2.

The Administrative Record for the IAGWSP is located at: 1807 West Outer Road, Camp Edwards, MA. Access is by appointment only. Please call the IAGWSP at (339) 202-9360.

More information is available on the JBCC and IAGWSP websites.
http://jbcc-iagwsp.org and
https://www.massnationalguard.org/JBCC/afcec.html

Contact Information

AFCEC/JBCC
Installation Restoration Program
Douglas Karson
Community Involvement Lead
322 East Inner Road
Otis ANG Base, MA 02542-5028
Phone: (508) 968-4678, x2 Fax: (508) 968-4673
E-mail: douglas.karson@us.af.mil
Website: https://www.massnationalguard.org/JBCC/afcec.html

Impact Area Groundwater Study Program
Pamela Richardson
Program Coordinator
1807 West Outer Road
Camp Edwards, MA 02542
Phone: (339) 202-9360 Fax: (508) 968-5286
E-mail: pamela.j.richardson.nfg@mail.mil
Website: http://jbcc-iagwsp.org

U.S. EPA New England
Robert Lim
Remedial Project Manager
5 Post Office Square - Suite 100
Mail Code 07-3
Boston, MA 02109-3912
Phone: (617) 918-1392 Fax (617) 918-0020
E-Mail : lim.robert@epa.gov

MassDEP Southeast Region
Ellie Donovan
Regional Planner
20 Riverside Drive
Lakeville, MA 02347
Phone: (508) 946-2866 Fax: (508) 947-6557
E-mail: ellie.donovan@mass.gov

For information on Camp Edwards training activities, please contact:

Massachusetts National Guard Environmental
& Readiness Center
Emily Kelly
Building 1204 West Inner Road
Camp Edwards, MA 02542
Phone: (339) 202-9341 Fax: (508) 968-5676
E-mail: emily.d.kelly2.nfg@mail.mil
Website: https://www.massnationalguard.org/ERC/index.html

Environmental Management Commission
Leonard Pinaud
Environmental Management Officer
Building 3468 Beaman Street
Camp Edwards, MA 02542
Phone: (508) 946-2871 or (508) 968-5127 Fax: (508) 947-6557
E-mail: leonard.pinaud@mass.gov

Acknowledgments

This Cleanup Update was developed through a collaborative effort of the Air Force Civil Engineer Center's Installation Restoration Program, the U.S. Army National Guard Impact Area Groundwater Study Program, the U.S. Environmental Protection Agency, and the Massachusetts Department of Environmental Protection.

Impact Area Groundwater Study Program
1087 West Outer Road
Camp Edwards, MA 02542