

SITE HISTORY

The Bucks Harbor facility is located in Machiasport, Maine, approximately 25 miles south of the Canada-United States border (herein collectively referred to as the “site” or the “facility”). The facility consists of two separate properties: the Air Force Radar Tracking Station (AFRTS) property located on a spur ridge of Howard Mountain and the former Ground-to-Air Transmitter Receiver (GATR) Site located on Miller Mountain. The Bucks Harbor study areas were grouped into three separate sites based on their locations, individual geologic and hydrologic characteristics, and the distribution of groundwater impacts. These areas are Howard Mountain, Miller Mountain, and Transmitter Site (**Figure 1**).



Figure 1: Howard Mountain, Miller Mountain, and Transmitter Site

between 1955 and 1963. The United States Air Force (USAF) used the AFRTS site as a radar tracking station and the GATR site as an antennae field in conjunction with the AFRTS a few miles away.

The Bucks Harbor facility had three major functional areas: Radar Operations, Cantonment Area (living quarters for military personnel), and the Housing Area. Other site features include a sanitary sewer filter bed and a sanitary wastewater treatment plant (WWTP), located east of Base Road. Three outpost facilities are associated with the former AFRTS (Figure 2) and include the Receiver Site and the Transmitter Site (both located on Howard Mountain) and the GATR site on Miller Mountain.

Organic solvents were used for automotive maintenance, as paint thinners, and as general degreasers and cleaners associated with radar antenna and routine maintenance activities during the site’s active years of operations. Waste solvents were reportedly disposed

The Bucks Harbor AFRTS, consisting of Howard Mountain and the Transmitter Site was acquired by the US government

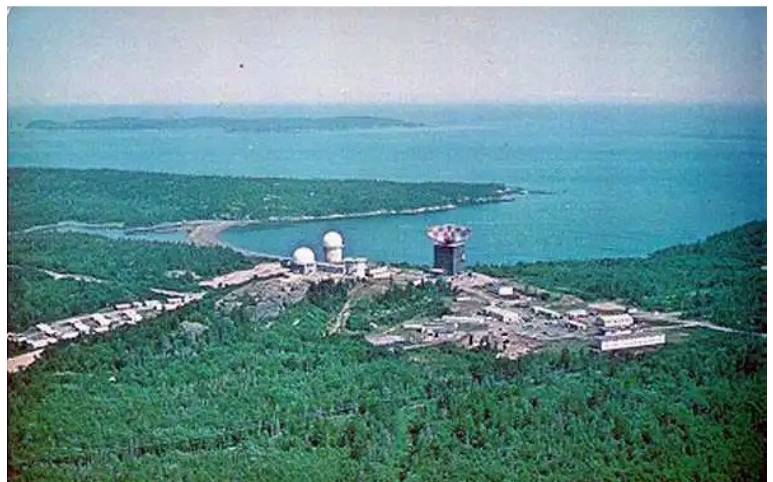


Figure 2: Former AFRTS at Howard Mountain (Photo Source: radomes.org)

directly onto the ground surface at the location where they had been used or dispersed via floor drains and storm water distribution systems.

USAF ended operations at the GATR Site and the Transmitter Site in 1984 due to the development of more advanced satellite-based tracking systems. The radar operations facility, located near the Howard Mountain summit, was transferred to the Federal Aviation Administration (FAA) for use in tracking commercial air traffic, and the remaining portions of the AFRTS (Cantonment Area and Housing Area) were transferred to the State of Maine and used by the Downeast Correctional Facility (DCF) as a minimum-security prison. The former DCF Housing Area consisted of 27 housing units, which historically were used as rental units and/or for storage by the DCF and its employees. The units are currently unoccupied, and seven of the housing units were demolished in 2016.

The GATR property (**Figure 3**) was owned by the USAF until 1984 when it was transferred to the FAA. In 1990, the U.S. Department of the Interior and National Park Service transferred the property on behalf of the FAA to its current owner, the Town of Machiasport, for recreational use. Some areas of the GATR property are also used as residences.

The former AFRTS Site at Howard Mountain is currently home to various buildings, gravel and paved roads, parking lots, and wooded areas. The FAA radar tower is located within a secure fenced area at the top of Howard Mountain. The DCF fenced property is at the base of Howard Mountain and contains administrative offices, maintenance buildings, living areas, a septage field, and public water supply well WY-03.



Figure 3: Former GATR Site at Howard Mountain (1962; Photo Source: radomes.org)

The areas surrounding these Buck Harbor facilities are predominantly rural or residential with some commercial operations (i.e., fishing, lobstering, and blueberry harvesting industries). Locally, homes and commercial facilities are served by the public water supply well WY-03, which is located on the DCF property, or are served by private wells that are typically drilled into the fractured bedrock aquifer. It is expected that current land uses of the site by the DCF, the FAA, the Town of Machiasport, and the surrounding rural residences will not change in the foreseeable future.



FUDS ELIGIBILITY

Some sites, formerly used by the Department of Defense (DoD), are eligible to be cleaned up by the government under the Defense Environmental Restoration Program, Formerly Used Defense Sites (DERP-FUDS). In 1995, the U.S. Army Corps of Engineers (USACE) completed an assessment of the Bucks Harbor and GATR facilities and determined they were eligible for the DERP-FUDS program (FUDS No. D01ME0486 02 and D01ME509-03). The U.S. Army is the lead agency and USACE has mission execution authority under the Comprehensive Environmental Response,

Compensation, and Liability Act (CERCLA) for the USACE FUDS Program. The Maine Department of Environmental Protection (MEDEP) has participated by providing regulatory oversight.

ENVIRONMENTAL INVESTIGATION ACTIVITIES

A series of site visits and environmental investigations have been performed between 1991-2016. Based on the results of environmental investigations and the Decision Document (DD), the contaminant of concern (COC) in groundwater was determined to be trichloroethylene (TCE; also known as trichloroethene).

USACE initially investigated environmental conditions at the Site in 1991. Since then, USACE has completed multiple phases of investigation, including a Site Assessment Report, Hydrogeological Investigation, Engineering Evaluation of Contamination, and numerous specialized geophysical studies, reports, and publications. In addition to USACE investigations, the FAA has

conducted its own investigations and remedial actions including removal of remaining tanks, contaminated soil, and several of the historical structures. USACE and the FAA have actively shared information throughout these programs to support and expedite the groundwater remediation.

These investigations led to the production of a Remedial Investigation (RI) Report, which was finalized in 2005. The RI found elevated levels of chlorinated volatile organic compounds (CVOCs), specifically TCE and tetrachloroethylene (PCE), and determined they had been released onto the ground in certain areas of the Site in the past. Because it's been a long time since these chemicals were used, and due to their properties, it's believed that only small amounts remain in the soil in those source areas. Geophysical investigations at the site reveal bedrock fractures, some of them water-bearing. Contamination in the study areas is found in some of these water-bearing fractures. It has been difficult to fully understand how the contamination moves because of the complex network of bedrock fractures. The slow movement of contamination through connected fractures means that the groundwater can be a long-term source of these contaminants.

While the risk assessment found no unacceptable risks for any residential well at Howard Mountain, concentrations of TCE in on-site monitoring wells could pose an unacceptable risk to future residents. Additionally, there's a potential for TCE in groundwater to create harmful vapors that could enter future homes on Howard Mountain and Miller Mountain. The RI made recommendations for a path forward, which were considered and included in the final DD for the Site.



Figure 4: Former Bucks Harbor Air Force Station Sign
(Photo Source: radomes.org)

The DD for the project was finalized in May 2017. The selected remedy for the Site includes □

- **Monitored Natural Attenuation (MNA):** Carefully tracking the natural breakdown of contaminants in the groundwater.
- **Long-Term Monitoring (LTM):** Regularly testing the groundwater.
- **Alternate Water Supply or Point of Entry Treatment (POET) System:** Providing clean water to residents where TCE concentrations are higher than the Remedial Goal (RG), either through a new water source or a treatment system installed at their property.
- **Monitoring of Indoor Air:** Checking for potential vapor intrusion (harmful vapors entering buildings from contaminated groundwater).
- **Land Use Controls:** Restrictions on how the land can be used to prevent exposure to contamination.

The remedial action objectives (RAOs) laid out in the DD include:

- preventing the ingestion of drinking water containing TCE and other CVOCs (1,2-dichloroethene, vinyl chloride, PCE, 1,1,1-trichloroethane, 1,1-dichloroethene, 1,4-dichlorobenzene, and 1,2,4-trichlorobenzene) above the RGs set forth in the DD,
- restoring the groundwater within the Site to RGs, and
- preventing inhalation of TCE vapors from groundwater, if present.

The first Five Year Review (FYR) was finalized in June 2022 to determine if the three RAOs defined in the DD had been met, and whether the remedy is protective of human health. The first FYR determined that the first RAO (preventing ingestion of groundwater with chlorinated VOCs above the RG) has been met with the installation and/or maintenance of GAC POET systems at Howard Mountain and Miller Mountain. The second RAO (restoring groundwater at the site to RGs) has not been achieved since the concentrations of CVOCs in groundwater are still higher than the RG and the trend analysis to evaluate MNA show variable trends across the Site. Groundwater will continue to be monitored and concentration trends will be re-evaluated in the next FYR. The third RAO (preventing the inhalation of TCE vapors from groundwater, if present) is likely being met since LTM results have been reviewed annually to determine if there were exceedances of RGs with a corresponding potential for vapor intrusion (VI) at residences or buildings, and any residences or buildings with RG exceedances have been provided with POET systems. A VI investigation will occur every five years at locations where predicted indoor air concentrations, calculated from groundwater concentrations, could be above the indoor air screening level. This prevents inhalation exposures from groundwater to indoor air at potentially impacted residences and buildings. The first FYR concluded that the remedy set forth in the DD remains protective.

Since the FYR, the DCF public water supply treatment system was upgraded in 2023 to include granular activated carbon (GAC) treatment and the waterline from the system was extended to connect five homes previously outfitted with POET systems in the Port Road/Howard Mountain vicinity.

FUTURE WORK

Future work at the site includes continuing the remedies established in the DD (MNA, LTM, maintenance of water treatment systems, periodic indoor air monitoring, etc.). Annual monitoring will continue to be performed at existing monitoring wells and drinking water wells. The second

FYR is planned for completion in June 2027.

COMMUNITY OUTREACH

Environmental reports and studies developed as part of the investigation are available at the East Machias Library in East Machias, ME.

HOW TO CONTACT US

If you have questions or comments about the environmental investigation activities, please contact:

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