

GODDARD SPACE FLIGHT CENTER
Wallops Flight Facility
ENVIRONMENTAL RESTORATION PROGRAM

Fall
2010

FACT SHEET

NASA Wallops Flight Facility (WFF) has been part of the Chincoteague and coastal communities for more than 50 years. NASA is committed to a strong environmental management program that addresses both current and future challenges. NASA aggressively investigates past practices regarding the storage and disposal of fuel and hazardous materials formerly used on site by both NASA and the US Navy; its predecessor on the WFF site.

For more than two decades NASA has been working with the U.S. Environmental Protection Agency and the Virginia Department of Environmental Quality to address the investigation and cleanup of WFF sites containing contaminated soil and groundwater that resulted from historic US Navy and NASA activities.

NASA is close to completing the remediation of one of these sites; the Old Aviation Fuel Tank Farm. An important part of the WFF environmental commitment continues to be community outreach on our remediation program.

This fact sheet is part of our efforts to communicate our progress. It provides a summary of NASA's Environmental Response Actions at the Old Aviation Fuel Tank Farm at WFF and our planned future actions. NASA is coordinating the response actions with oversight from the Virginia Department of Environmental Quality.

Background

The Old **Aviation Fuel Tank Farm** (AFTF) is located between the two main runways west of the NASA Visitor Center and is currently visible as an open field from Route 175.

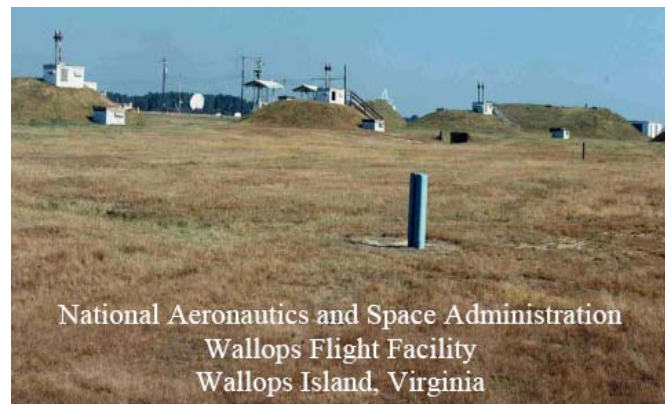


The Old AFTF was constructed and operated by the Navy from 1943 until 1959, when NASA acquired the entire Main Base. Operations continued until approximately 1982. The Old AFTF consisted of 15 underground storage tanks (USTs), one above-ground storage tank (AST), as well as related piping and fueling stations and pumps. The tanks were used to store a variety of fuels including JP4, JP5, and Aviation Gas, as well as oil and waste fuel. As a result of these operations, fuel releases accumulated in the area.

Investigations and Tank Removal

Investigations regarding contamination at the Old AFTF began in 1988, with extensive sampling and analysis to determine the nature and extent of contamination. In June 1989, the Virginia Department of Environmental Quality (VDEQ) was notified of the historic fuel

releases, which prompted an investigation under State and Federal Leaking Underground Storage Tank regulations. The Initial Site Characterization Report was submitted to VDEQ in October 1989.



In 1991, NASA under VDEQ oversight, conducted a tank closure and soil removal action. The storage tanks, pumps, piping, and 4,700 tons of soil contaminated with petroleum were removed. The excavated soil was treated and disposed of at an off-site facility. A Corrective Action Plan to address the free product (petroleum floating on the groundwater surface) and dissolved petroleum under the ground, was prepared by NASA and approved by VDEQ in 1991. The plan identified cleaning up site groundwater to achieve drinking water standards (known as Maximum Contaminant Levels – [MCLs]) as a goal.

Cleanup

To address the remaining petroleum contamination at the site, a groundwater extraction and treatment system and a soil vapor extraction (SVE) system were constructed in 1997. These systems operated at a

reduced rate (i.e. not at full capacity) until 2000, when full-scale, continuous operation began.

Between 2000 and 2002, the groundwater extraction and treatment system, which used a combination of air stripping, granular activated carbon, and ion exchange, removed the free product and processed approximately 140 million gallons of water containing approximately 200 pounds of dissolved petroleum. In 2002, NASA conducted an evaluation to look at the efficiency of the system and determined that the groundwater extraction and treatment system had achieved its intended purpose and the system was shut down in 2002.

Between 2000 and 2004, the SVE system operated and removed approximately 14 tons of petroleum, most of which was extracted between 2000 and 2003. By 2004, the SVE system had successfully achieved the goal of its planned remedial design.

In 2004, NASA conducted an evaluation of residual petroleum contamination in soil and groundwater. This evaluation also investigated options for accelerating cleanup of the site. The evaluation found that the majority of the residual contamination was trapped in soil near and below the water table.

Based on this evaluation, NASA, in consultation with VDEQ, implemented an in-situ air-sparging system, which included the injection of air into the subsurface saturated soils, causing the dissolved petroleum contaminants to volatilize and increase the aerobic biodegradation of residual petroleum. Aerobic biodegradation is the breakdown of the petroleum contaminants by natural microscopic organisms that occurs when oxygen is present. In addition, a larger blower and more extraction wells were added to address additional areas of soil contamination and to control the migration of injected air. The new system started operation in December 2004 and has operated through August 2010.

Results

The upgraded SVE treatment system has removed approximately 18 tons of petroleum and the air sparging system has destroyed approximately 48 tons of petroleum through aerobic biodegradation. Current data indicate that the system has treated the majority of the contamination and only residual levels remain.

During these remedial operations, extensive groundwater monitoring was conducted to evaluate the effectiveness of the treatment, monitor whether the petroleum was moving, and to ensure that there was no impact to the Town of Chincoteague (TOC) drinking water wells. Over the last 7 years, NASA has sampled the TOC wells as an additional measure to ensure public safety. These results confirm there has been no impact to TOC wells from this site.



OLD AFTF Treatment Building and Area

Groundwater quality in most of the original storage tank area on site at WFF meets drinking water quality standards. Some on-site monitoring wells have residual contaminants above these standards, but concentrations are continuing to decrease and are expected to reach MCL standards within a few years. NASA also monitors this area to ensure that groundwater is not used for drinking purposes.

Project Success

As a result of the steps taken by NASA, all of the contamination was successfully contained on NASA property and free product is no longer present. Further, clean up of the groundwater has also been successful with most of the groundwater contaminant levels now below MCLs at the Old AFTF site. Some limited and low level contamination remains adjacent to the Old AFTF site, which is decreasing further over time. As a result of this success, no additional remediation is needed and NASA will continue long-term monitoring at the site until the cleanup goals are achieved.

Planned Activities

Based on the results of the monitoring program, NASA, with VDEQ concurrence, shut down the active treatment portion of the remedial action in September 2010 for one year to observe groundwater conditions in the absence of the system operating. These systems will stay in place until the site is closed by VDEQ. Monitoring of groundwater and TOC water supply wells will continue until all of the area groundwater achieves the MCL standards. This could occur as early as 2014. At that point, monitoring of TOC water supply wells will no longer be needed as full compliance with safe drinking water standards will be achieved.

For more information, please contact:

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