



# Fourth Five-Year Review Fact Sheet

Marine Corps Base Quantico  
Quantico, Virginia

**MISSION CLEANUP – CLEAN, PROTECT, RESTORE**

October 2018

Marine Corps Base Quantico (MCBQ), Naval Facilities Engineering Command (NAVFAC), Virginia Department of Environmental Quality (VDEQ), and the U.S. Environmental Protection Agency (EPA) worked together to achieve this Five-Year Review Completion, in which we assessed the remedies at five environmental sites at MCBQ to ensure they continue to protect public health and the environment in the long-term.

**Mission Cleanup** is an ongoing federal-state partnership that capitalizes on sound science to **Clean, Protect, and Restore** federal lands nationwide.

## BACKGROUND

MCBQ is located about 35 miles south of Washington, DC, and occupies approximately 59,000 acres within southern Prince William, northern Stafford, and eastern Fauquier counties.

MCBQ's history and mission have required the use, handling, storage, and disposal of hazardous material and petroleum products, including paints, solvents, degreasers, waste oil, fuels, pesticides/herbicides, and household products. Typical historical activities at MCBQ included maintenance of aircraft, vehicles, and engines; fuel and oil storage and distribution; landfill disposal; weapons cleaning and repair, facilities maintenance, photo processing,

medical and dental clinics; munitions operations; and water and sewage treatment. These activities resulted in localized areas of potential or confirmed contamination of soil, groundwater, surface water, and/or sediment.

In 1975, the Department of Defense (DoD) developed a nationwide program to identify and address environmental problems resulting from past operations and waste disposal practices at DoD facilities. Since the early 1980s, the Department of the Navy (Navy) has been addressing hazardous constituents from past operations at MCBQ under this Environmental Restoration Program (ERP).

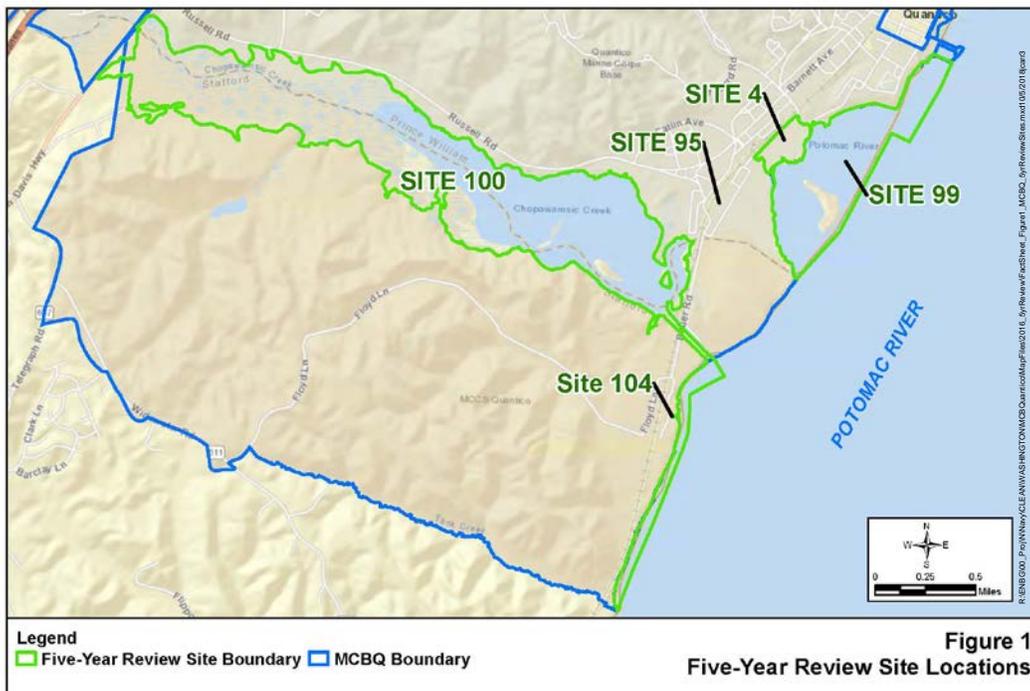
## FIVE-YEAR REVIEWS

The purpose of a Five-Year Review is to evaluate the effectiveness of remedies and remedial actions for sites with contaminants remaining above levels that allow for unlimited use and unrestricted exposure (UU/UE) and for which there is a Record of Decision (ROD) or Decision Document (DD) in place.

The Navy prepared the Fourth Five-Year Review Report under federal regulations that require a review of remedial actions no less often than every five years after initiation of remedial action. The Navy has elected to conduct an installation-wide Five-Year Review. This Fourth Five-Year Review Report was completed by reviewing various reports

pertaining to post-ROD implementation activities and completion of site inspections. The Five-Year Review Report includes additional information on sites that do not require a review at this time. Only the five sites requiring review at this time are included in this fact sheet. These are shown on Figure 1. The Five-Year Review document can be found online at <https://go.usa.gov/xngKr>

The Navy is committed to addressing the potential for perfluorinated compounds at Navy installations and is completing a Base-wide desktop study at MCBQ, which will be published in a separate report that was not available at the time of this Five-Year Review.



## SITE DESCRIPTIONS

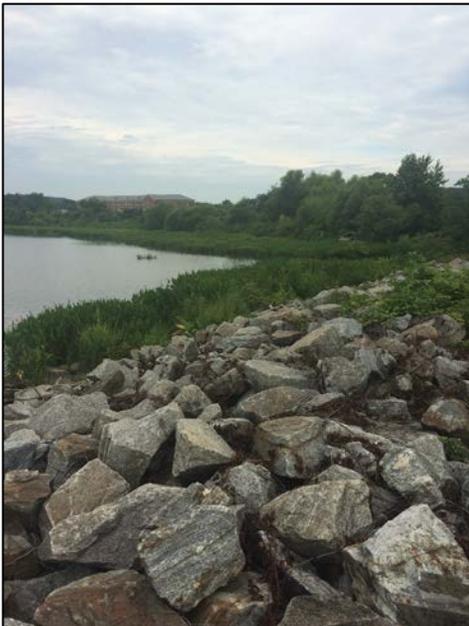
### Site 4 – Old Landfill

Site 4 is a 24-acre landfill located on the banks of the Potomac River. It was used for disposal of MCBQ wastes from the early 1920s until 1971. The landfill site includes a scrapyards constructed in the 1950s and used until 1979, and Building 669, which was used to store electrical transformers until 1979. Historical use of Site 4 resulted in contaminated soil, groundwater, and sediments. Soil contaminated with polychlorinated biphenyls (PCBs) was removed in 1990, and additional actions were taken to prevent continued migration of contaminated sediments.

An interim ROD was signed for Site 4 in September 1997, to prevent exposure to contaminated soil and sediments. Interim actions consisted of: demolishing several buildings on the site; excavating surface soil and drainage swale sediments; excavating waste, debris, and sediment from the river; installing a geotextile cover and vegetated soil barrier (landfill cap); stabilizing the shoreline; creating a wetland; and installing fencing and warning signs to control site access.

The final ROD was signed in 2007 and included maintenance of the site fence and soil barrier layer, continued implementation of land use controls (LUCs), and implementation of a long-term monitoring (LTM) program and site review.

***The remedy for Site 4 is currently protective of human health and the environment. Continued implementation of institutional controls, operations and maintenance, and groundwater monitoring will maintain the future effectiveness of the remedy.***



*Figure 2: Site 4, Riprap along the shoreline with outlet of the constructed wetland in the background.*

### Site 95 – Building 2101 Paint Booth Sump

Site 95 was the paint booth sump associated with former Building 2101, which was used for aircraft maintenance beginning in 1941. A dry paint booth for painting helicopter parts was added to the building in 1984. Various organic primers, lacquers, and solvents were used in the paint booth. A floor drain received wash water from the paint booth and discharged to an adjacent sump, which was pumped to an outside spigot. The spigot connected to a hose, which drained to a sanitary sewer system.

Use of Site 95 resulted in shallow groundwater contaminated by volatile organic compounds (VOCs).

The selected remedy in the 2008 ROD consists of treatment of groundwater by enhanced in situ (in place) bioremediation using an oxygen releasing compound (ORC), groundwater monitoring, LUCs, and five-year reviews.

The remedy is being re-evaluated based on results of an ORC treatability study. During completion of a Supplemental Investigation to further delineate the VOC contamination, a source area upgradient of the sump was identified. An additional Treatability Study for in situ chemical oxidation was completed, and a Time-Critical Removal Action (TCRA) consisting of groundwater treatment and soil mixing, was completed in April 2013.

In 2013, Building 2101 was demolished so bachelor enlisted quarters and a dining hall could be constructed. Vapor intrusion mitigation measures were incorporated into the building design to ensure that VOCs would not travel from shallow groundwater into the air below and inside the buildings.

A Supplemental Investigation was completed in 2015 to delineate remaining contamination. Results recommended additional sampling to delineate the northern boundaries of the groundwater plume, and completion of a Focused Feasibility Study to evaluate whether monitored natural attenuation is a viable remedial alternative.



*Figure 3: Site 95, Open lawn area on the north side of the new bachelor enlisted quarters, looking west.*

**The protectiveness of the remedy for Site 95 cannot be determined until further information is obtained. Protectiveness will be determined when further documentation of the vapor intrusion mitigation measures at the bachelor enlisted quarters is obtained and the additional groundwater investigation and focused feasibility study have been completed. These actions are expected to be completed by May 2019, with a protectiveness determination to be made in June 2019.**

### Site 99 – Quantico Embayment

MCBQ project managers identified the need to evaluate potential releases and environmental impacts from various Installation Restoration Program (IRP) sites to the watersheds. Site 99 is the Quantico Embayment portion of the watershed study and consists of approximately 190 acres located along the eastern shoreline of MCBQ, forming a semi-circular inlet of the Potomac River.

Site 99 is surrounded by several possible historical sources of contamination, including Site 4, Building 669, Site 32, the Mainside sewage treatment plant, and an active airfield. Various activities have been completed to eliminate or control onshore sources; however, historical releases have contributed to sediment contamination at Site 99.



Figure 4: Site 99, Habitat enhancement cap facing southeast

A ROD was signed in 2011, primarily to protect ecological receptors such as birds from unacceptable risks associated with exposure to sediments as well as to minimize migration of contaminated sediments to other parts of the river. The selected remedy included installing a habitat enhancement cap (HEC) and implementing LUCs for contaminated sediments; implementing monitored natural recovery and LUCs for contaminated sediment in the Potomac River Southern Area; and dredging and offsite disposal of contaminated sediment in the drainage channel near the Mainside sewage treatment plant.

The remedy for Site 99 is currently in place except for buoys and signs in the Quantico Embayment. Signs are posted along the shoreline to warn anglers of a fish advisory, but in-water signs need to be installed to protect the habitat enhancement cap.

**The remedy at Site 99 will be protective of human health and the environment. Only one year of LTM data has been collected; further risk evaluation will be conducted following completion of five years of LTM. For the remedy to be protective in the long term, the signage required in the LUC ROD should be installed to minimize potential disturbance of the habitat enhancement cap.**

### Site 100 – Chopawamsic Creek

Site 100 is the Chopawamsic Creek portion of the watershed study. Site 100 was divided into four areas (Areas 1 to 4) for the remedial investigation and feasibility study. Based on investigations of Site 100 and human and ecological health risks, no action was required for Areas 1, 2, and a portion of Area 4, which is now designed separately as Site 102. Investigations revealed lead contamination in Area 3, attributable to surface runoff and deposition of lead from former skeet range activities in nearby areas.

The source of lead contamination was addressed during a removal action conducted in 2004. Because range operations ceased more than 30 years ago, sources of lead at the former skeet range are buried by clean sediment and cannot run off into the Chopawamsic Creek.

The basis for taking remedial action at Area 3 was to protect ecological receptors (e.g., birds and fish) from unacceptable risks associated with exposure to sediments.

The ROD, signed in 2011, recommended monitored natural recovery to allow natural deposition of clean sediment over contaminated sediment to reduce the concentrations of lead in surface sediments, as well as LUCs to minimize sediment disturbance, and LTM. The remedy is in place with the exception of signs for the “no wake zone.”



Figure 5: Site 100, Area 3 wetland area, looking west from Wounded Warrior duck blind south of the Quantico Inn

**The remedy for Site 100 will be protective of human health and the environment. LTM data collected to date indicate that actual exposure data are significantly less than the modeled exposure data used to select the remedy. The actual exposure data results in no unacceptable ecological risk in Area 3. Additional LTM**

**data will be collected and a re-evaluation of site risk will be included in the Year 5 LTM report. However, for the remedy to be effective long-term, the signs need to be installed to minimize potential disturbance of sediments.**

### Site 104 – Building 2113 Underground Tank Loading/Unloading Area

Site 104 is located at Building 2113, a former heating plant for MCBQ located along the Potomac River. It consists of the former concrete pad, sump, associated underground piping, and the loading/unloading area that served the Building 2113 Underground Tank. Site 104 is located approximately 75 feet south of Building 2113, and includes Building 69, formerly used as a motor pool where degreasers were used for cleaning activities.

Suspected sources of contamination at Site 104 include fuel supply activities, motor pool activities that occurred at Building 69, and flammable storage activities conducted in Building 1508. The basis for taking action at Site 104 is to protect hypothetical future residents and constructions workers from unacceptable risks from exposure to VOCs in groundwater.

A ROD was signed for Site 104 in 2014. Remedial actions consist of in situ enhanced bioremediation, LTM, LUCs, and five-year reviews.

The remedy has not yet been implemented. The LUC remedial design for Site 104 was finalized in August 2016. LUCs prohibit the use of groundwater as a potable water supply and restrict excavation. Potential petroleum contamination was observed during recent construction activities upgradient of Site 104. Therefore, this potential contamination will be investigated in 2018 to determine if there are impacts to the Site 104 remedy.

***The remedy at Site 104 is expected to be protective of human health and the environment upon completion. The interim exposure pathways that could result in unacceptable risks are being controlled.***



Figure 6: Site 104, Concrete pad (underground tank loading/unloading area), looking east

## PROTECTIVENESS SUMMARY

Of the five sites addressed in the Fourth Five-Year Review Report, one is protective of human health and the environment, three are expected to be protective based on additional actions and more LTM data, and protectiveness for one site cannot be determined until further information is obtained.

The fourth Five-Year Review Report also described sites currently under investigation as well as sites closed since the last Five-Year Review process. More information can be found by going to <https://go.usa.gov/xngKr> or reviewing the Fourth Five-Year Review Report at the information repositories listed below.

NAVFAC, MCBQ, VDEQ, and EPA have agreed to the steps for addressing the protectiveness at these sites. Together, they use sound science in making all Mission Cleanup milestone decisions leading up to, and in support of this Fourth Five-Year Review, which is an important milestone in ensuring long-term protection of public health and the environment.

## MISSION CLEANUP: Clean, Protect, Restore

### COMMUNITY INVOLVEMENT

The community was notified of the start of the Five-Year Review process through a public notice in the *Prince William Times* and the *Free-Lance Star* on July 27, 2016. The final Fourth Five-Year Review was signed on June 4, 2018.

### FOR MORE INFORMATION

For questions about the MCBQ ERP, contact:

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703-784-4030

Documents about the MCBQ ERP can be reviewed at:

Chinn Park Regional Library  
13065 Chinn Park Drive  
Prince William, VA 22193  
703-792-4810

John Musante Porter Memorial Library  
2001 Parkway Boulevard  
Stafford, VA 22554  
703-659-4909

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Online at: <https://go.usa.gov/xngKr>