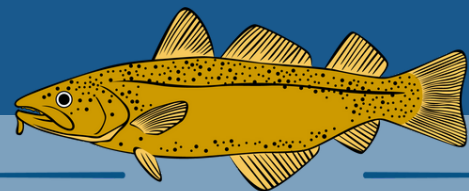
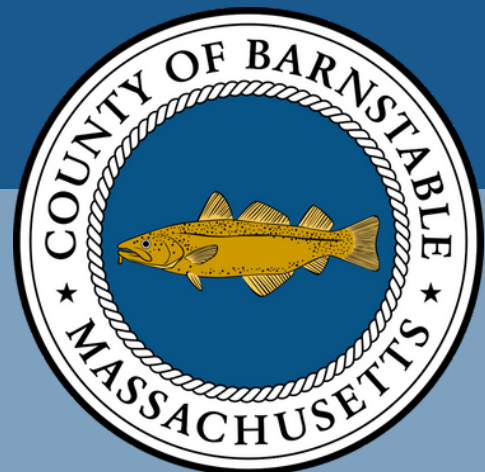


# Sole Source Aquifer Project Review of the Multi-Purpose Machine Gun Range Proposed by the Massachusetts Army National Guard to be Constructed at Joint Base Cape Cod

U.S. Environmental Protection Agency, Region 1

Presented by the Barnstable County Department of Health and Environment



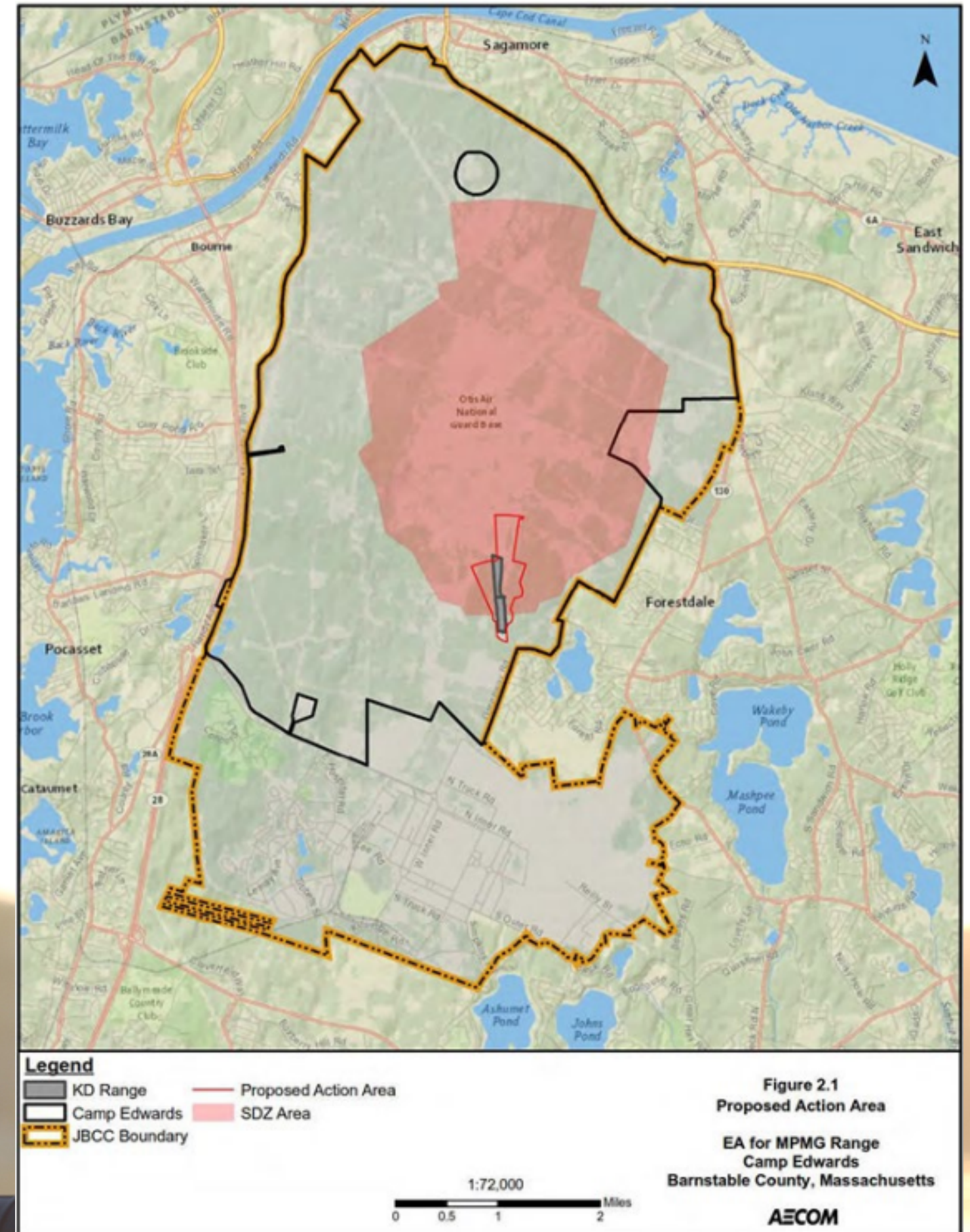
**BARNSTABLE COUNTY**  
DEPARTMENT OF HEALTH AND ENVIRONMENT





# Issue Summary

- The Massachusetts Army National Guard is proposing to construct a Multi-Purpose Machine Gun Range (MPMGR) at Joint Base Cape Cod (JBCC) to train and qualify soldiers in use of automatic machine guns.
- The U.S. Environmental Protection Agency (EPA) conducted an exhaustive assessment of the potential environmental and public health impacts of the machine gun range to Cape Cod's Sole Source Aquifer.
- EPA concluded that the proposed project may present a significant public health hazard based on the volume of potential contaminants that would be released to the environment, specifically in relation to the Sole Source Aquifer.





# Cape Cod's sole source aquifer

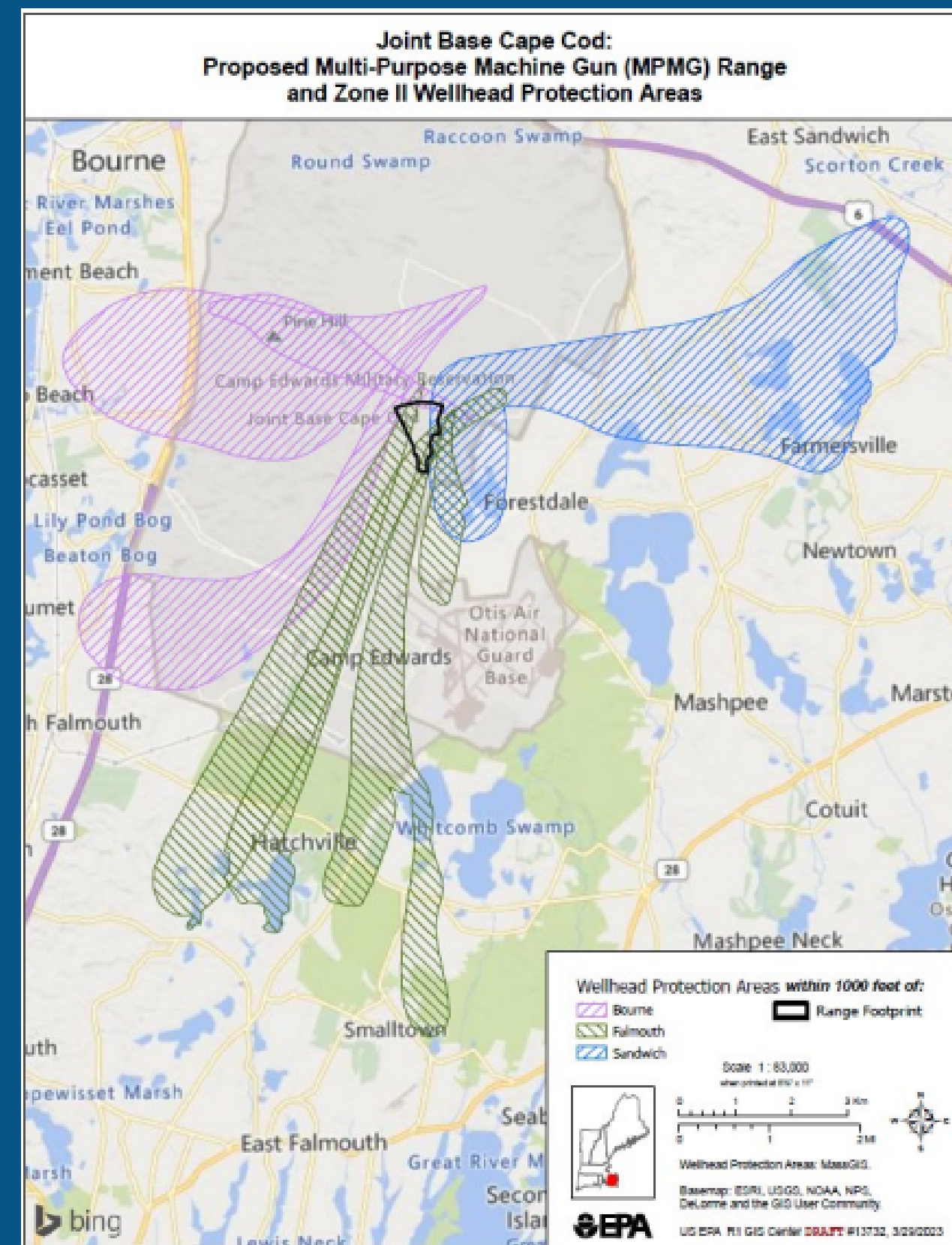
- The Cape Cod Aquifer is the ONLY source of drinking water to our region, hence the term "sole source".
- The Cape Cod Aquifer is glacial in origin and composed of highly permeable soil, which makes it susceptible to contamination.
- Any area designated as a sole source aquifer is protected by the U.S. Environmental Protection Agency under Section 1424(e) of the Safe Drinking Water Act of 1974.
- The Cape Cod Aquifer is divided into six recharge areas or "lenses".
- The groundwater in the area of Camp Edwards on Joint Base Cape Cod has been designated as the Upper Cape Water Supply Reserve, which is part of the Sagamore lens. It is protected under Chapter 47 of the Massachusetts Acts of 2002.
- The proposed machine gun range would be located over the Upper Cape Water Supply Reserve and the Sagamore Lens, the most productive part of the Cape Cod Aquifer.
- Groundwater in the area of Joint Base Cape Cod provides approximately 3 million gallons of drinking water per day to 12 community public water supply systems in the towns of Sandwich, Bourne, Falmouth, Mashpee, and the Mashpee Wampanoag Tribe.



# Proposed Multi-Purpose Machine Gun Range at JBCC

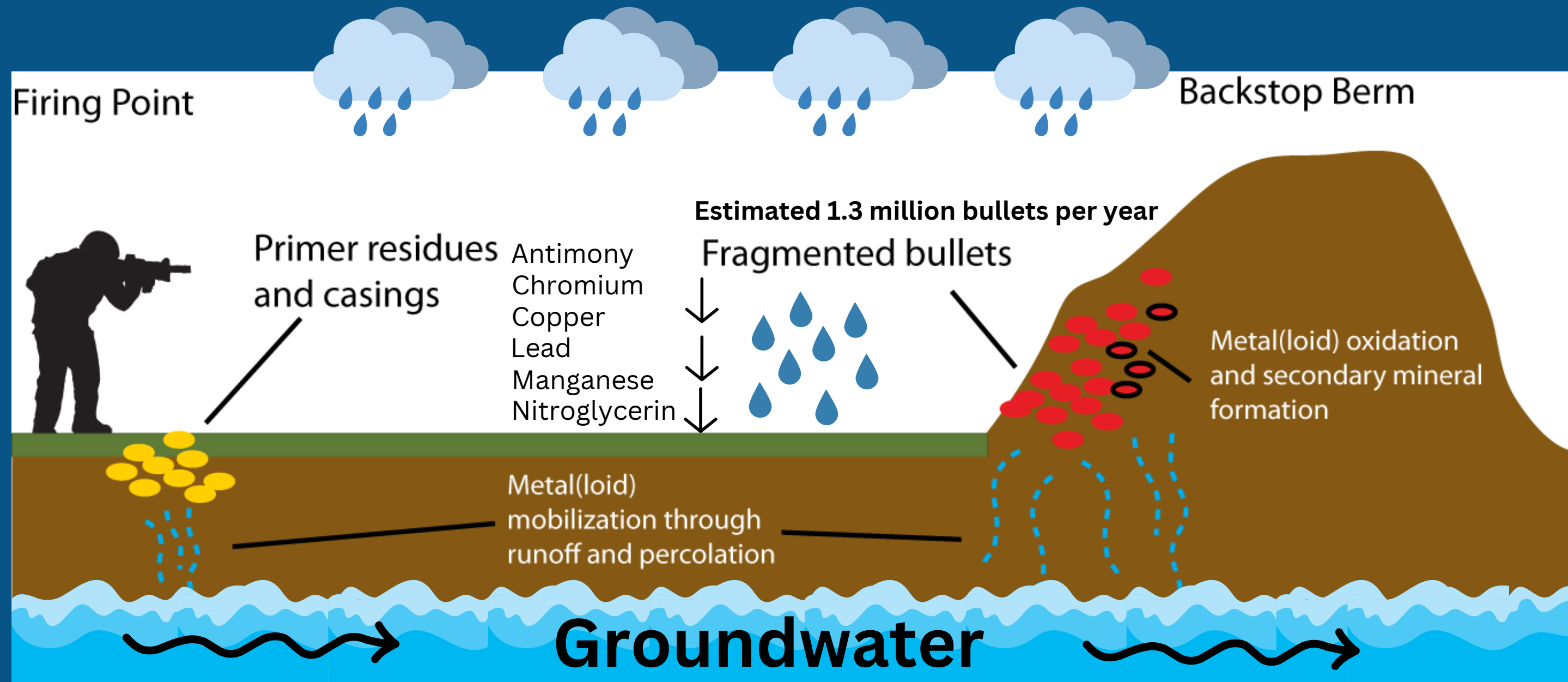
- The Massachusetts Army National Guard is proposing a multi-purpose machine gun range (MPMGR) at Camp Edwards on Joint Base Cape Cod to efficiently attain small arms training and weapons qualifications requirements within MA, eliminating extensive out of state travel and the associated expense.
- Phase I of the proposed range would consist of eight firing lanes spanning 138 acres within the Upper Cape Water Supply Reserve.
- Approximately 1.3 million bullets will be fired per year at the MPMGR, resulting in an almost 400% increase in the total number of bullets to be used annually across all ranges at JBCC.
- Potential sources of contaminants include compounds related to:
  - 1) Propellants deposited on the soil surface in the vicinity of firing lines
  - 2) Projectiles and penetrators deposited on the soil surface.

*Further explanation of propellants and projectiles on next slide*





# How does a machine gun range cause groundwater contamination?



"Assuming a 50 year timeframe, under proposed annual loading and assuming limited range mitigation, there could be more than 275 tons of bullet components released to the environment."

--EPA Draft Assessment



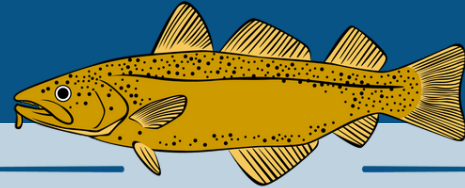
# Summary of EPA's Findings

- Groundwater monitoring data from two existing firing ranges on JBCC show the presence of contaminants including antimony, chromium, copper, lead, and manganese.
- While the existing releases are actively managed and there is no risk to public health associated with these ranges, there is concern that additional contaminants released by the proposed range would greatly increase mass loading and significantly impact the aquifer.
- Potential public health risks associated with exposure to drinking water with these contaminants at levels above health-based benchmarks include:

Bullet Component	Potential Health Impact
Antimony	→ Increased Cholesterol
Chromium	→ Allergic Dermatitis
Copper	→ Gastrointestinal Distress
Lead	→ Physical and neurological developmental delays in children
Manganese	→ Neurological Effects
Nitroglycerin	→ Headaches, dizziness, lightheadedness, tremors, confusion

- With the significant amount of resources being spent for groundwater remediation at JBCC (> \$1.4 billion) the cumulative impact of adding another contaminant source into the aquifer raises concerns regarding the ongoing groundwater restoration work presently underway.
- Unresolved major concerns include:
  - 1) No commitment for regular bullet retrieval
  - 2) Inadquate media monitoring
  - 3) Insufficient Best Management Practices to minimize the release of contaminants to the maximum extent feasible.
- EPA is uncertain that any combination of operations, maintenance, and monitoring practices can adequately reduce the potential to contaminate the aquifer so as to create a significant public health hazard.
- EPA determined that the proposed project insufficiently addressed environmental justice implications, climate change factors, and lack of environmental benefits.





# BARNSTABLE COUNTY

DEPARTMENT OF HEALTH AND ENVIRONMENT

The mission of Barnstable County Department of Health & Environment is to promote a healthy Cape Cod community through disease prevention and control, health and safety education, environmental protection and emergency preparedness.

We support the findings and recommendations put forth by the EPA that the proposed machine gun range at JBCC presents a significant hazard to Cape Cod's sole source aquifer, and therefore public health.



# Public Engagement Process

**EPA will accept public comments on this proposed decision for 60 days, until June 26, 2023. During this time, the public and interested stakeholders may submit written comments for EPA's consideration.**

Written comments may be submitted to:

**[R1SSAComments@epa.gov](mailto:R1SSAComments@epa.gov)**

EPA will also hold a public hearing to receive oral comments.

The public hearing will be held **May 24, 2023** at **7:00 PM\*** at the following address:

**Center for Active Living  
70 Quaker Meetinghouse Road  
Sandwich, Mass**

\*The formal public hearing will begin at 7:00 p.m. and will be preceded by a public meeting beginning at 6:30 p.m. Individuals with accessibility or translation requests may contact [Melanson.Kate@epa.gov](mailto:Melanson.Kate@epa.gov) for assistance.



***"The prospective and protective nature of the Sole Source Aquifer Program, along with the results of a comprehensive evaluation of the design and operations of the proposed machine gun range at Joint Base Cape Cod, has led EPA, in this case, to provisionally determine that the proposed Multi-Purpose Machine Gun Range has the potential to contaminate the aquifer so as to create a significant public health hazard."***

**--United States Environmental Protection Agency**