CRREL's Environmental Fate and Transport Geochemistry Mission

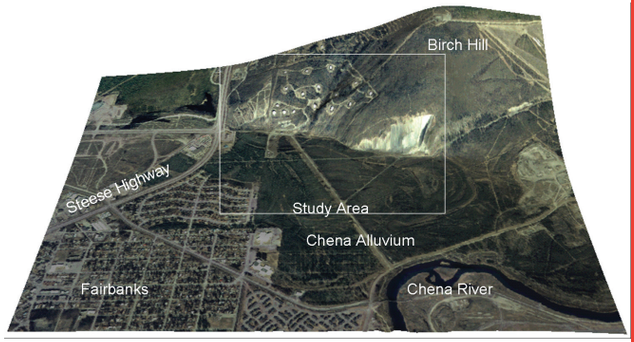
To sustain training and restore the environment by rapid assessment of fate and transport of military contaminants under extreme terrain conditions.

EFTG Challenges

EFTG successfully integrates geochemistry and hydrogeology by asking critical research questions including . . .

. . . how do military unique compounds behave in soil, sediment, and water?
. . . do terrain factors like geology and soils affect material distribution, fate, and transport?
. . . does range management (type of range, munitions, period of use, etc.) affect military unique compound distribution, fate, and transport?
. . . can these interactions be optimized to achieve range sustainability?

Fort Wainwright study area digital orthophoto



CRREL EFTG Facilities and Equipment

- Chemistry Laboratory
- Permafrost Tunnel (Fairbanks, AK)
- Cold Rooms
- Water-quality Laboratory
- Van-mounted Direct Push Soil Sampler

The Cold Regions Research and Engineering Laboratory (CRREL)

The Cold Regions Research and Engineering Laboratory (CRREL) in Hanover, New Hampshire and Anchorage and Fairbanks, Alaska is part of the US Army Corps of Engineers Engineer Research and Development Center (ERDC). Our mission is to solve interdisplinary, strategically important problems of the US Army Corps of Engineers, Army, Department of Defense, and the Nation by advancing and applying science and engineering to complex environments, materials, and processes in all seasons and climates, with unique core competencies related to the Earth's cold regions.

BUILDING STRONG®

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US Army Corps of Engineers ®

ENVIRONMENTAL FATE AND TRANSPORT GEOCHEMISTRY

Developing Protocols for Characterizing Sites

•

Identifying Fate of Explosives on Firing Ranges

•

Research on Military Unique Compounds in Complex Terrain

U.S. Army Engineer Research and Development Center
Cold Regions Research and Engineering Laboratory

Developing Protocols for Characterizing Sites

Groundwater tracer study

• Improved site characterization and monitoring methods for contaminated soils for remote and cold regions.

• Protocols for finding and characterizing explosive residues in soils and water.

• Development of laboratory methods and field screening analytical techniques.

• Volatile organic compound sampling, handling, and analytical methodologies.

Direct-push wells for groundwater sampling

Ground penetrating radar

Identifying Fate of Explosives on Firing Ranges

• Characterization of explosives on Department of Defense ranges.

• Incorporation of cold processes into models predicting the fate and transport of contaminants in soils and groundwater.

• Geotechnical and geothermal field and model assessments of processes affecting contaminant pathways and distribution.

• Geographic information system tools for contaminant data management.

Explosives sampling strategy

Tank live fire range, Camp Shelby, MS

Large caliber firing point

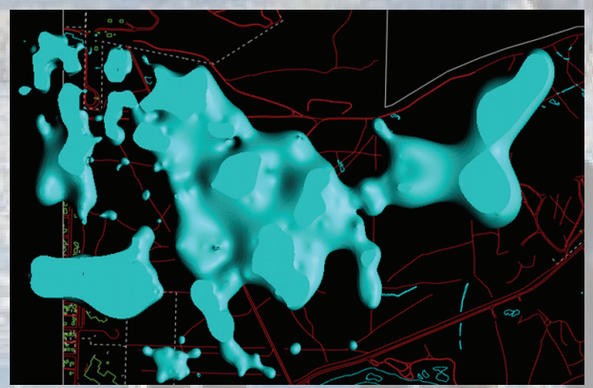
Research on Military Unique Compounds in Complex Terrain

• Research to mitigate the impacts due to permafrost degradation.

• Investigate seasonal and permanent frozen terrain interactions with military unique compounds.

• Research to understand how climate variability affects permafrost distribution.

Frost probing



Groundwater & contaminant transport flow model

TNT-contaminated range