

# Fact Sheet

## COLD REGIONS RESEARCH AND ENGINEERING LABORATORY

To advance knowledge of the cold regions through scientific and engineering research and to employ that knowledge for the Army, Department of Defense (DoD), and the Nation is the mission of CRREL. Operating in cold regions requires appropriate doctrine, training, and equipment that often are very different from those used in more temperate conditions. These special requirements cover a broad range of military activities and can incur significant cost or capability penalties. The cold regions (the more than 30% of the earth's surface covered by ice or underlain with permafrost) present special challenges. Persistent and severe winter conditions occur in areas of Europe, Asia, and North and South America. Bosnia and Herzegovina and North and South Korea—areas of interest today—experience severe winter conditions that can significantly affect military operations. CRREL provides the technology to allow the Army and DoD to operate effectively in cold regions environments and thereby maintain national security and foster peace.

CRREL has an aggregation of unique facilities that are nationally and internationally recognized for their capabilities. The main laboratory houses 24 low-temperature research laboratories with a temperature range down to  $-50^{\circ}\text{F}$ . The 73,000-square-foot Ice Engineering Facility has three special-purpose research areas: a large low-temperature towing tank, a 100-foot-long refrigerated flume for modeling rivers, and a large hydraulic-model room for studying ice effects on civil works facilities, primarily locks and dams. The 29,000-square-foot Frost Effects Research Facility supports full-scale research on the impact of freeze-thaw cycles on pavements, foundations, and utility systems. The Civil Works Remote Sensing/Geographic Information Systems Center is involved in oil spill and flood mapping, as well as large-area environmental assessments critical to emergency response efforts. The Cold Regions Science and Technology Information Analysis Center serves as the Nation's corporate repository for cold regions science and engineering data. CRREL also has special purpose ice test facilities, clean rooms, low-temperature materials laboratories, a research permafrost tunnel in Fox, Alaska, and has access to a 133-acre permafrost research site at Fort Wainwright, Alaska.

Via various partnerships and multiple agency programs, CRREL has been able to sustain critical research and development efforts in many areas important to the military. Partners include the Navy, Air Force, DOT (FHWA and FAA), EPA, DOE, NASA, and NSF. Technology transfer to the private sector and other government agencies often is an inherent benefit of the partnerships. CRREL has developed more than 40 cooperative research and development agreements with non-federal partners that encourage technology transfer. The synergy of CRREL's research program is a model of partnering, dual utility, cost effectiveness, productivity, and—most importantly—positive impact on the military services.

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