

POSTER PRESENTATIONS – MGWA SPRING CONFERENCE, APRIL 22, 2015

MINNESOTA WATER RESEARCH DIGITAL LIBRARY (MnWRL)

CHRISTINE YAEGER

MINNESOTA DEPARTMENT OF AGRICULTURE - ST. PAUL, MN

PROBLEM/SOLUTION:

- Minnesota has a long history of water research by different agencies and organizations, with publications scattered across multiple websites, so not readily accessible by water professionals, researchers, and citizens.
- Minnesota stakeholders, including stormwater managers, agricultural groups, a Clean Water Council work group, and the Clean Water Fund State Interagency Research Team, identified the need for a centralized inventory of current water research.
- The Minnesota Water Research Digital Library (MnWRL) is a tool developed to unearth and organize these publications so that decades of relevant research can be fully utilized.

APPROACH:

- MnWRL is a shared resource, so we share governance and responsibility. We are inviting organizations and agencies to contribute by **curating** and **entering** publications from diverse water topics into MnWRL.

MnWRL BRINGS VALUE TO YOU:

- Increases your efficiency because relevant research is gathered in one place and state-funded projects are consolidated together.
- Creates opportunities for more connections between researchers, funders, and practitioners.
- “Daylights” quality reports that are under the desk, in the file cabinet, on the network, or hidden on the website, for public use.
- Expands impact and reach of your publications and projects to new audiences.
- Join alongside other engaged professionals who are already contributing through Steering Team leadership and are exploring further partnership:
 - Including: MN Department of Health, MN Department of Agriculture, MN Pollution Control Agency, Board of Water and Soil Resources, Freshwater Society, Minnesota Corn Growers, and University of Minnesota Libraries.

CONCLUSIONS:

- MnWRL (www.mn.gov/water-research-library) is a user-friendly, searchable inventory of over 1,350 water research articles relevant to Minnesota. Use MnWRL to search, share, and coordinate today!

GROUNDWATER EDUCATION - PUBLIC OUTREACH IN ANOKA COUNTY

GRETCHEN SABEL, RETIRED

ANOKA COUNTY GROUND WATER TASK FORCE

ABSTRACT:

Anoka County is the fourth-most populous county in Minnesota, with a population of 330,844 in 2010. Groundwater is the key source of water for residents and businesses throughout most of Anoka County. The Anoka Sand Plain acts as a groundwater recharge zone for Anoka County and the metropolitan area. As growth and development proceed, the sustainability of groundwater resources will increasingly depend upon water conservation and the management and protection of surface water infiltrating into groundwater resources. The Anoka County Water Task Force is gearing up for a water resources conservation and sustainability initiative and is looking for examples of successful public education initiatives and people to join us as we develop a campaign tailored for Anoka County.

PRESENTER BIOGRAPHY:

Education: MPA, Humphrey School, University of Minnesota; BS, University of Cincinnati

Experience: Employed by the State of Minnesota from 1978 to 2014; principally working in water quality programs of the Minnesota Pollution Control Agency. Also previously employed by the Minnesota Environmental Quality Board and the US Environmental Protection Agency.

AFFILIATIONS:

- Anoka County Water Task Force (chair)
- League of Women Voters ABC (program chair)
- Andover Open Space Commission (chair)
- Minnesota Ground Water Association (past officer)

DETECTING TERMINUS ADVANCE AND VELOCITY OF HUBBARD GLACIER ALASKA, USING IMAGE CORRELATION TECHNIQUES

JOE KRENZELOK

UNIVERSITY OF MINNESOTA

ABSTRACT:

Hubbard Glacier, located in Yakutat Bay Alaska is the largest tidewater glacier in North America. Unlike any other glaciers in Alaska, Hubbard Glacier is in an advancement phase. Looking at imagery dating back as far as 1978 shows that Hubbard Glacier has been continually advancing, with no signs of stopping. There have been two instances in recent history where Hubbard Glacier has advanced far enough to close off Russell Fjord, turning it into a lake which is constantly fed with stream runoff from the surrounding mountains. Both instances ended in the terminus of Hubbard Glacier giving way, creating a glacial outburst flood. However, a closure could also lead to Russell Lake overflowing into the Situk River, creating possible flooding of the Yakutat people's infrastructure. In order to study this phenomenon, glacier velocity, terminus advance, and calving rate data was collected from Landsat imagery for the 2002 closure and was compared with recent years. Using the Landsat imagery in conjunction with CIAS image correlation software, velocities were obtained for the terminus of the glacier every other year from 2002 to 2014. These velocities were averaged for the entire glacier as well as for different areas of the terminus. From the data collected, Hubbard Glacier generally shows surges of velocity in the spring, with the largest surge having a velocity of 12.63 meters a day in 2010. Terminus advance was detected by digitizing the terminus each year and calculating how far it had moved. The general increase in velocity from year to year seems to be analogous with the advance of the terminus. While a prolonged surge in 2002 was able to close off Russell Fjord, three bigger surges with shorter durations in the years 2008, 2010, and 2012 were not able to quite close off the fjord. However, the trend of terminus advance seems to be increasing, meaning another closure is forecasted to happen in the near future.

INDUSTRIAL WATER CONSERVATION POTENTIAL IN THE NORTH AND EAST TWIN CITIES METROPOLITAN AREA

MICHAEL JOST, PROGRAM COORDINATOR

MINNESOTA TECHNICAL ASSISTANCE PROGRAM

BRIAN DAVIS, SENIOR ENVIRONMENTAL SCIENTIST

METROPOLITAN COUNCIL

ABSTRACT:

The Minnesota Technical Assistance Program (MnTAP), in the School of Public Health, Division of Environmental Health Sciences, at the University of Minnesota, is investigating opportunities for water conservation by industrial water users located in the Department of Natural Resources-delineated North & East Metro Groundwater Management Area (N&E Metro GWMA). MnTAP is using a combination of information and outreach strategies as well as site assessments and intern projects to raise awareness of industrial water use, and implement conservation strategies with major water users.

This 12 month effort is supported by Clean Water Funds allocated by the Legislature with project management support from the Metropolitan Council Water Supply Planning Group.

In collaboration with the Metropolitan Council, MnTAP is defining industrial water conservation potential within the project geographical boundaries. Water use data is being used to locate and classify individual industrial users. Outreach strategies are being used to engage industries in onsite water conservation assessments conducted by MnTAP. Information gathered will be used to support three 2015 summer interns at industries located within the N&E GWMA.

LITHOLOGIC, PETROLOGIC, AND GEOCHEMICAL INVESTIGATION OF THE LOWER LAKE VERMILION FORMATION

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STUDENT, ST. CLOUD STATE UNIVERSITY

ABSTRACT:

The Lake Vermilion Formation is a Late Archean metavolcanic and metasedimentary formation located in northeastern Minnesota. The outcrops investigated are located on highway 169 approximately seven miles southwest of Tower, MN, and include lithologies interpreted to be the oldest within the sequence. The lithologies investigated lie on the northern side of the Wahlsten Fault, a strike slip fault with an east-west orientation. Lithologies include: (1) Felsic meta-tuff/volcaniclastic unit composed of fine to medium (0.5-2.0 mm) tephra, which form strata ranging from lamina to medium beds (0.1-3.0 cm thick). Massive beds as much as 5m thick are also present. (2) Intermediate-mafic schist, fine to medium grained, strongly lineated, with porphyroblasts of amphibole. (3) Mafic metabasalts interbedded within meta-tuff and schist. (4) Mafic hypabyssal, high-level sills. While primary depositional features are present, all of these lithologies form lens-like bodies, which have been disrupted and sheared.

All these lithologies have been metamorphosed to greenschist-amphibole facies. Geochemical data (whole-rock geochemical analyses) support field interpretations and appear to indicate a series of juxtaposed volcanic-derived units that include both continental arc-derived felsic volcanic material, as well as basaltic material of oceanic arc origin. The geochemical data and petrologic observations also indicate several intrusive events that exhibit different chemical and mineral compositions. Based on field evidence from bedding within the felsic volcanics, the younging direction is to the south. Basaltic flows are most abundant to the north, and transition to felsic volcaniclastic rocks, which are more abundant in the south. These observations suggest that the lithologies mapped in this outcrop record tectonic juxtapositioning of packages of volcanic rocks that range from basaltic through to felsic, possibly capturing a snapshot of magma evolution over time.

EDUCATION:

- Expected Graduation: B.A. (Earth Science), St. Cloud State University, May 2015

AFFILIATIONS:

- Geological Society of America (GSA)