



Environment and Natural Resources Trust Fund (ENRTF) M.L. 2013 Work Plan

Date of Status Update Report:

Date of Next Status Update Report: 12/31/2013

Date of Work Plan Approval: 6/11/2013

Project Completion Date: 6/30/2016

Is this an amendment request? No

PROJECT TITLE: County Geologic Atlases - Part A

Project Manager: Dale R. Setterholm

Affiliation: Minnesota Geological Survey, University of Minnesota

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Location: statewide (work will occur in 3 or more counties that have not yet been identified)

Total ENRTF Project Budget:

ENRTF Appropriation: \$1,200,000

Amount Spent: \$0

Balance: \$1,200,000

Legal Citation: M.L. 2013, Chp. 2, Sec. 2, Subd. 03b

Appropriation Language:

\$1,200,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to continue the acceleration of the production of county geologic atlases that define aquifer boundaries and the connection of aquifers to the land surface and surface water resources for the purpose of sustainable management of surface water and groundwater resources. This appropriation is available until June 30, 2016, by which time the project must be completed and final products delivered.

I. PROJECT TITLE: County Geologic Atlases - Part A

II. PROJECT STATEMENT: Geologic atlases provide maps and databases necessary for improved management of ground and surface water resources to the benefit of the people, fish, wildlife, and habitat that depend on water. County Geologic Atlases are specifically identified as essential data in the Statewide Conservation Plan, and in the efforts of the Environmental Quality Board, DNR Waters, and the Water Resources Center at the University of Minnesota to design a sustainable water management process.

Atlases:

- Define aquifer boundaries and the connection of aquifers to the land surface and to surface water resources to enable a comprehensive water management effort.
- Facilitate and enhance natural resource management, regulation, and wise use of water resources.
- Support management activities designed to evaluate sustainable water use and to protect or improve water quality such as: permitting, land use planning, wellhead protection, source water protection, planning and development of public and private water supplies, remediation and spill response, monitoring, modeling, addressing TMDL problems.
- Document existing conditions so that changes in the water system can be recognized, analyzed, explained, and remedied where appropriate.
- A complete geologic atlas consists of Part A constructed by the Minnesota Geological Survey (MGS) and focused on geology and the County Well Index, and Part B constructed by the DNR Division of Waters and focused on hydrology (not funded by this proposal). Local participation is a primary factor in determining which counties are chosen for this work, while ground water sensitivity, water demand, and the size of the population served are also considerations. The counties must request an atlas and provide funds or in-kind service.

This project continues an effort to provide county geologic atlases statewide. The first atlas was initiated in 1979 but the program languished without a reliable source of funding. Funding from ENRTF in the early 1990s and from 2007 to the present has greatly accelerated production (see attached map). This funding would cover the costs of 3 or 4 county atlases depending on their size, complexity, and location.

Users include local government units involved in environmental services, land use and water planning, and permitting; state and federal agencies responsible for water and mineral management and planning; contractors and other businesses, including well drillers, onsite wastewater treatment installers, road and building construction; and homeowners and cities with wells and wastewater treatment systems.

III. PROJECT STATUS UPDATES:

Project Status as of December 31, 2013:

Project Status as of June 30, 2014:

Project Status as of December 31, 2014:

Project Status as of June 30, 2015:

Project Status as of December 31, 2015:

Project Status as of June 30, 2016:

IV. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1: Create geologic atlases for 3 or more counties (yet to be named)

Description: Atlases begin with compilation of a database of subsurface information. The most abundant data source is the construction records of water wells. With the cooperation of the local project partner, accurate digital locations are established for these wells to support their use in mapping. Concurrently, geologists visit the project area to describe and sample landforms, and exposures of rock or sediment. An initial assessment of the geologic data is then completed to focus additional data gathering including shallow and deep drilling programs. Analysis of the complete data set is then completed and maps and associated databases are formalized and prepared for use in geographic information systems and distribution via DVD and web. Most of the products are also printed for use in the field and by users who prefer this format. As soon as the funds for this project are secured counties will be contacted to find willing and able local partners. This effort will begin with counties prioritized on the basis of need that may be driven by growth, resource demand, resource vulnerability, or opportunities for cooperation with other water management activities. When counties join this project progress and budgeting will be reported as Activity 1A, 1B, and 1C.

Summary Budget Information for Activity 1:

ENRTF Budget: \$ 1,200,000
Amount Spent: \$ 0
Balance: \$ 1,200,000

Activity Completion Date:

Outcome	Completion Date	Budget
1. Create database of well construction records to support the mapping, to document water use in specific aquifers, and to help resolve well problems	June 30, 2014	\$ 120,000
2. Complete any unfinished ENRTF supported County Geologic Atlas projects (ex: from 2010 appropriation).	June 30, 2016	\$ 100,000
3. Make progress on maps of bedrock geology, surficial geology, subsurface Quaternary geology, bedrock topography, and thickness of glacial deposits.	June 30, 2016	\$ 980,000

Activity Status as of December 31, 2013:

Activity Status as of June 30, 2014:

Activity Status as of December 31, 2014:

Activity Status as of June 30, 2015:

Activity Status as of December 31, 2015:

Activity Status as of June 30, 2016:

Final Report Summary:

V. DISSEMINATION:

Description: County Geologic Atlases are created in digital and print forms. Printed copies are useful in the field, and for users without computers. The printed copies are shared with the county, who in turn can distribute them to libraries, schools, townships, and other agencies. They are also distributed by the MGS map sales office. The atlas content is also provided as portable document files (pdfs) that can be accessed by free software, as geographic information system (GIS) files that can be accessed and manipulated to create new or customized maps by those with GIS software, and as GIS files that can be accessed by free GIS software. The digital files are available on a DVD, from the county, or from a digital conservancy through the MGS web site.

MGS provides project status reports to each county, and at the completion of our work we hold a workshop in the county to introduce the products and demonstrate their uses. A field trip is usually conducted to relate the map units to landforms and geologic materials at locations around the county.

Status as of December 31, 2013:

Status as of June 30, 2014:

Status as of December 31, 2014:

Status as of June 30, 2015:

Status as of December 31, 2015:

Status as of June 30, 2016:

Final Report Summary:

VI. PROJECT BUDGET SUMMARY:

A. ENRTF Budget:

Budget Category	\$ Amount	Explanation
Personnel:	\$ 885,000	approx. 11 FTE civil service and student workers
Professional/Technical/Service Contracts for drilling:	\$ 155,000	rotasonic drilling- awarded by bid process; costs generally range from \$30 to \$60 per foot (more expensive at depth) plus \$8 per foot for abandonment. This amount would likely drill about 9 holes- 3 per county averaging 200 feet deep. This is typically the minimal coverage and may be augmented if conditions require.
Professional/Technical/Service Contracts for printing:	\$ 45,000	bid process; typically 6 plates per county (size about 3' by 3'), four color, and 1,500 copies of each for 3 counties equals 27,000 maps
Equipment/Tools/Supplies:	\$ 30,000	expendables for field and laboratory work
Travel Expenses in MN:	\$ 85,000	food, lodging, vehicle rental from University Fleet as necessary for field work (typically weekly)
TOTAL ENRTF BUDGET:	\$ 1,200,000	

Explanation of Use of Classified Staff: MGS will utilize Civil Service staff and student workers. Our staffing level reflects our intention and our experience in obtaining grants and contracts to cover approximately 60% of our staff.

Explanation of Capital Expenditures Greater Than \$3,500: none

Number of Full-time Equivalent (FTE) funded with this ENRTF appropriation: approx. 11, cannot calculate until counties are chosen and staff are assigned based on skills required for those counties.

Number of Full-time Equivalent (FTE) estimated to be funded through contracts with this ENRTF appropriation: The number of staff and their time commitment to the printing and drilling contracts are

unknown to us. These are complex procedures with many variables, and many kinds of costs other than personnel.

B. Other Funds:

Source of Funds	\$ Amount Proposed	\$ Amount Spent	Use of Other Funds
Non-state			
STATEMAP, Great Lakes Geologic Mapping Coalition (both are federal cost-sharing)	\$ 65,000	\$	Will apply for funds as projects are developed- none are locked in at this time.
State			
Clean Water Legacy Funds	\$		DNR <u>may</u> provide funds to augment the rotasonic drilling program (more or deeper holes)
In-kind Services During Project Period: participating counties are expected to provide accurate locations of water wells. This dollar value is only an estimate of their costs, and will vary depending on which counties are selected.	\$90,000		
TOTAL OTHER FUNDS:	\$ 155,000	\$	

Add or remove rows as needed

VII. PROJECT STRATEGY:

A. Project Partners: Under a separate workplan and budget DNR Waters and Environmental Services will receive funds to work on Part B of County Geologic Atlases

B. Project Impact and Long-term Strategy: MGS is the geologic mapping agency of the state and is striving to provide comprehensive geologic mapping and associated databases at appropriate scales statewide as quickly as possible. The County Geologic Atlas program is the primary vehicle for completing this goal. Atlases are complete or under construction for 35 of the 87 counties in Minnesota. The MGS receives \$250,000 to \$350,000 per year from DNR Waters, and also leverages federal cost share dollars from the National Cooperative Geologic Mapping Program of the United States Geological Survey and the Great Lakes Geologic Mapping Coalition. MGS competes for these cost share dollars annually and they cover half of the costs of each map product incurred in that one-year window. MGS intends to propose project map elements for cost share and if successful may garner up to an additional \$125,000. MGS atlas development is also supported by Clean Water Funds (one grant of \$305,000 beginning July 2010 currently applied to Houston and Winona CGAs).

C. Spending History:

Funding Source	M.L. 2007 or FY08	M.L. 2008 or FY09	M.L. 2009 or FY10	M.L. 2010 or FY11	M.L. 2011 or FY12-13
ENRTF Benton and Chisago CGAs	\$400,000				
ENRTF Blue Earth, Nicollet, Sibley CGAs		\$706,000			
ENRTF Anoka and Wright CGAs			\$820,000		
ENRTF Sherburne and Morrison CGAs and related research				\$1,130,000	
ENRTF Redwood, Meeker, Brown					\$1,200,000

VIII. ACQUISITION/RESTORATION LIST: N/A

IX. MAP(S): N/A

X. RESEARCH ADDENDUM: N/A

XI. REPORTING REQUIREMENTS: Periodic work plan status update reports will be submitted not later than December 31, 2013, June 30, 2014, December 31, 2014, June 30, 2015, December 31, 2015. A final report and associated products will be submitted between June 30 and August 15, 2016 as requested by the LCCMR.

Project Title: MGS County Geologic Atlases (Part A) for Improved Water Management					
Legal Citation: M.L. 2013, Chp. 52, Sec. 2, Subd. 03b					
Project Manager: Dale R. Setterholm					
M.L. 2013 ENRTF Appropriation: \$1,200,000					
Project Length and Completion Date: 3 yrs. Complete 6/30/16					
Date of Update:					

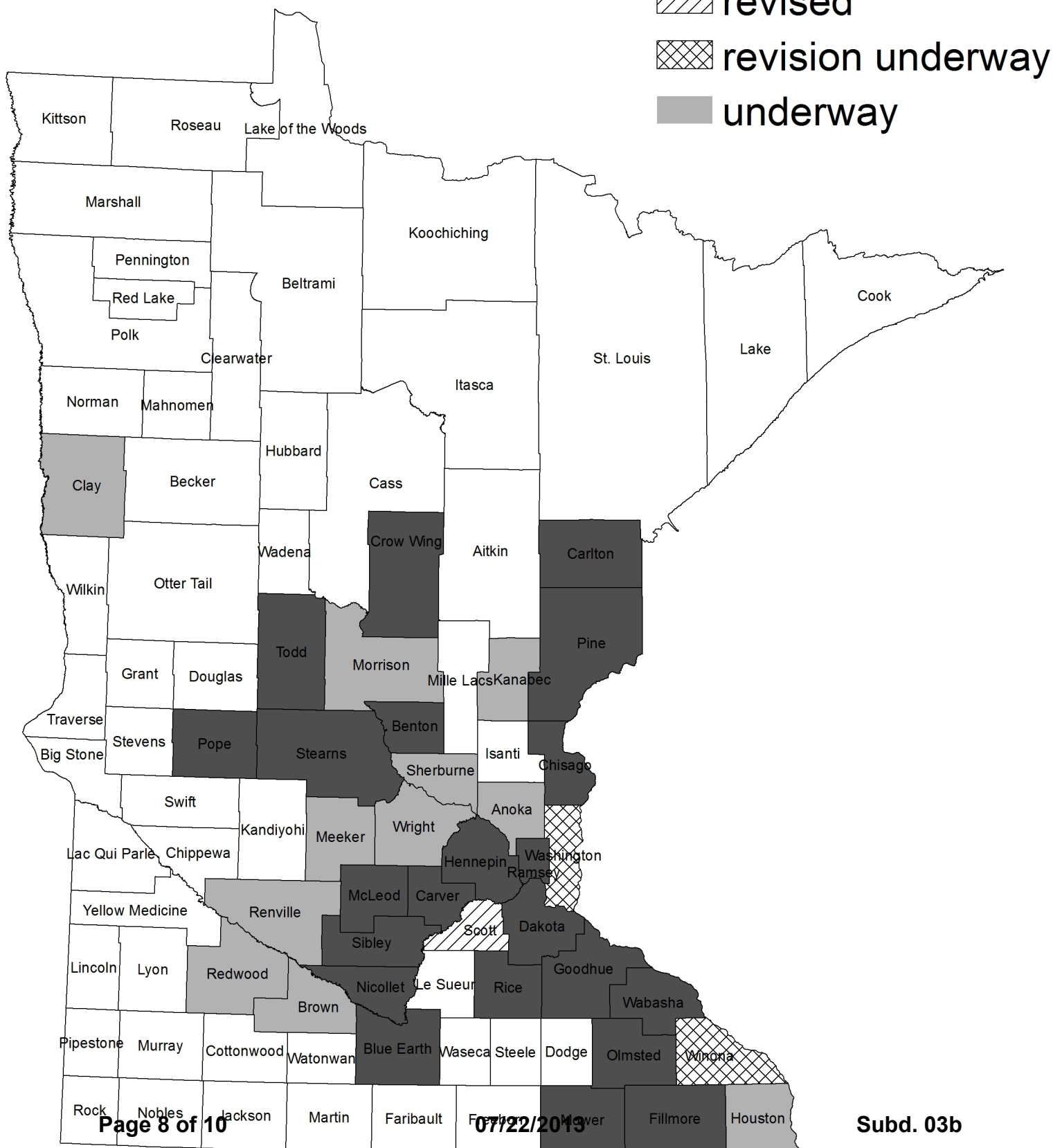
ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Activity 1 Budget	Amount Spent	Balance	TOTAL BUDGET	TOTAL BALANCE
BUDGET ITEM	<i>Create geologic atlases for 3 or more counties (yet to be named)</i>				
Personnel: Wages and Benefits					
Approximately 11 FTE in a team of database managers, surficial geologists, bedrock geologists, geophysicists, student lab technicians, editor, and GIS scientists. Salary 60.4%, fringes 39.6%, except for students (100% salary). Assignments will be made when project locations (counties) are chosen.	885,000			885,000	
Professional/Technical/Service Contracts					
Scientific drilling services TBD by bidding process; about 9 holes averaging 200' deep including abandonment; may be augmented as necessary	155,000			155,000	
Printing services TBD by bidding process (typically 6 plates, 1,000 copies, 3 counties; yields 18,000 3' by 3' maps in color	45,000			45,000	
Equipment/Tools/Supplies:					
photocopying, maps, publications, sample envelopes and bags, core boxes, pallet banding, sieves, batteries; age dating analysis; geochemical analysis; repairs to MGS equipment (soil probe, geophysical equipment, downhole camera); replacement parts as needed	30,000			30,000	
Travel expenses in Minnesota					
vehicle rental and mileage (approx. \$40 to \$47 per day, \$0.17 to \$0.37 per mile), mileage on MGS geophysics van (\$0.555 per mile); meals (up to \$46 per day); lodging (up to \$77 per day). Amounts cannot be calculated until project locations (counties) are known. Rentals from U Fleet Services as needed, typically on weekly basis.	85,000			85,000	
COLUMN TOTAL	\$1,200,000			\$1,200,000	

County Geologic Atlas

Part A Coverage

status

- complete
- not started
- revised
- revision underway
- underway



County atlas tasks and dependencies

