

Environment and Natural Resources Trust Fund (ENRTF) M.L. 2017 LCCMR Work Plan

Date of Submission: 9/14/2016

Date of Next Status Update Report: 12/31/2017

Date of Work Plan Approval:

Project Completion Date: 6/30/2020

Does this submission include an amendment request? No

PROJECT TITLE: Minnesota Geological Survey Geologic Atlases for Water Management

Project Manager: Dale Setterholm

Organization: Minnesota Geological Survey, University of Minnesota

Mailing Address: 2609 Territorial Road

City/State/Zip Code: St. Paul, MN 55114-1009

Telephone Number: (612) 626-5119 Email Address: sette001@umn.edu

Web Address: http://www.mngs.umn.edu

Location: statewide -work will occur in multiple counties including Lake, St. Louis, Aitkin, Cass, Olmsted, Dodge,

Kandiyohi, Rock, Nobles, and others not yet determined.

Total ENRTF Project Budget: ENRTF Appropriation: \$4,729,000

Amount Spent: \$0

Balance: \$4,729,000

Legal Citation: M.L. 2017, Chp. xx, Sec. xx, Subd. xx

Appropriation Language:

[To be inserted following the MN Legislative Session in Spring 2017. This will be blank for the initial submission and will be provided to you at a later date.]

Page 1 of 8 11/30/2016 Subd. 03a - DRAFT

I. PROJECT TITLE: Minnesota Geological Survey Geologic Atlases for Water Management

II. PROJECT STATEMENT: Geologic atlases provide maps and databases essential for improved management of ground and surface water resources. This is foundational data that supports water management activities to the benefit of drinking water and aquatic habitat. 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. Geologic 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. The program goal of atlas coverage statewide has benefited from long-term support of LCCMR to accelerate the work.

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 (funded separately) and focused on hydrology. 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 are required to provide funds or in-kind service, typically by establishing accurate locations for water wells. The construction records of water wells are a fundamental data source that describe subsurface conditions, and also tell us where the population is obtaining water.

Atlases enhance natural resource management and regulation, and facilitate wise use of water resources. They support water management activities for sustainable water use and protection and improvement of water quality such as: permitting, land use planning, wellhead protection, remediation, nutrient management, monitoring, modeling, and well construction. Atlas information is used by citizens, local government, counties, and state agencies (SWCDs, MDH, DNR, MPCA, Ag). The atlases document existing conditions so that changes in the water system can be recognized and evaluated. A User's Guide to geologic atlases supports and educates users of all backgrounds.

This project continues an effort to provide county geologic atlases statewide. The first atlas was initiated in 1979. Funding from ENRTF in the early 1990s and from 2007 to the present has greatly accelerated production (see attached map). At this time 48 of the 87 counties (55%) have a completed Part A atlas, or a project underway (30 complete, 13 underway, 3 revised, 2 revisions underway). Annual funding of \$1,927,000 (aggregate from all sources) would achieve statewide coverage in about 11 years. We are creating atlases at a rate of about 5 per year.

rate of about 5 per year.		Ü	•	J
III. OVERALL PROJECT STATE	JS UPDATES:			
Project Status as of 12/31/2	017:			
Project Status as of 6/30/20	18:			
Project Status as of 12/31/2	2018:			
Project Status as of 6/30/20	19:			
Project Status as of 12/31/2	019:			
Project Status as of 6/30/20	20:			
Overall Project Outcomes a	nd Results:			
IV. PROJECT ACTIVITIES AND	OUTCOMES:			

ACTIVITY 1: Initiate new geologic atlases, and complete any unfinished atlases from previous grants.

2

Description: Current atlas projects in St. Louis, Lake, Olmsted, Dodge, Cass, Aitkin, Hennepin, Rock, Nobles, and Kandiyohi counties are those most likely to need funding from this grant to sustain progress. Other current projects in Wadena, Becker, Hubbard, Isanti, and Brown counties will likely finish before this grant starts, or will be finished with funding from other sources.

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 geophysical surveys, pit excavations, and 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 work will begin in counties that have committed as cooperators and have begun the well location task. Contact will be made with new 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.

Summary Budget Information for Activity 1: ENRTF Budget: \$4,729,000

Amount Spent: \$0

Balance: \$4,729,000

Outcome	Completion Date
1. Completion of atlases initiated on prior grants (see list above). St. Louis and Lake may	12/31/2019
not be completely finished by this date.	
2. Continuing digital release of geologic mapping and databases for subproject areas of	2 of 3 bedrock
the Lake and St. Louis project. The series of subprojects that cover parts of these	subprojects, and 2 of
counties allows us to put more people on the job with fewer delays. This will also allow	4 surficial
us to complete and digitally publish subproject maps much sooner than maps of the	subprojects by
entire county.	1/1/2018
3. Progress on new atlas projects (mapping and associated databases). Projects are	6/30/2020
waiting for attention in Pipestone, Lincoln, Lac Qui Parle, and Otter Tail counties.	
Discussions are underway with several other counties likely to pursue atlas projects.	
We especially pursue those where water sensitivity, population, growth, water growth,	
or other management issues are present.	

Activity 1	1 St	atus	as	of	12	/31/	/2017	:
------------	------	------	----	----	----	------	-------	---

Activity 1 Status as of 6/30/2018:

Activity 1 Status as of 12/31/2018:

Activity 1 Status as of 6/30/2019:

Activity 1 Status as of 12/31/2019:

Activity 1 Status as of 6/30/2020:

Final Report Summary:

V. DISSEMINATION:

Description: Every atlas is produced in portable document format, as geographic information systems files, and in printed form. The digital files are available as a DVD, and are also available from the University of Minnesota Digital Conservancy, and via link from the MGS web page

http://www.mngs.umn.edu/county_atlas/countyatlas.htm. Each project culminates with a meeting held in the project area to present the results to the county staff, and any other interested parties. At these meetings the products are described, access to the products is explained, and examples of applications of the products to common resource management situations are demonstrated. The products of subprojects in St. Louis and Lake counties are being released in digital form immediately following technical review. When all the subproject areas are complete county-wide compilations will be created and distributed digitally and in print. 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. We are currently contacting earth science teachers and other educators about using available printed atlases in classroom exercises. Atlas products are also displayed and explained at educational events for SWCD staff and onsite sewage treatment system contractors.

Status as of 12/31/2017:
Status as of 6/30/2018:
Status as of 12/31/2018:
Status as of 6/30/2019:
Status as of 12/31/2019:
Status as of 6/30/2020:
Final Report Summary:

VI. PROJECT BUDGET SUMMARY:

A. Preliminary ENRTF Budget Overview:

*This section represents an overview of the preliminary budget at the start of the project. It will be reconciled with actual expenditures at the time of the final report.

Budget Category	\$ Amount	Overview Explanation
Personnel:	\$ 3,345,625	A team of 20 to 25 MGS staff; includes 26 to
		31.8% fringe cost depending on class
Professional/Technical/Service Contracts:	\$ 818,750	\$687,500 for drilling; \$131,250 for analytical
		services; both chosen by competitive bidding
Equipment/Tools/Supplies:	\$ 106,250	Core boxes, Giddings Probe expendables, other
Capital Expenditures over \$5,000:	\$ 34,000	Dedicated transport for geophysical logging
Printing:	\$ 175,000	Competitive bid for offset printing
Travel Expenses in MN:	\$ 249,375	Meals less than \$46, lodging less than \$142,
		vehicle rentals from University Fleet
Other:	\$	
TOTAL ENRTF BUDGET:	\$ 4,729,000	

Explanation of Use of Classified Staff: N/A

Explanation of Capital Expenditures Greater Than \$5,000: Dedicated transport for geophysical logging equipment, some of which was purchased on LCCMR grants. This equipment is deployed about 200 days per year and supports County Geologic Atlases, other MGS research (including some supported by LCCMR), and also supports MN Dept. of Health well construction regulation.

Total Number of Full-time Equivalents (FTE) Directly Funded with this ENRTF Appropriation: about 42 FTE

Total Number of Full-time Equivalents (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation: drilling contract 3.3 FTE; printing contract 0.5 FTE; analytical services contract 1 FTE; total 4.8 FTE

B. Other Funds:

	\$ Amount	\$ Amount	
Source of Funds	Proposed	Spent	Use of Other Funds
Non-state			
USGS STATEMAP cost share	\$315,000	\$	pending, CGA mapping cost-share
USGS Great Lakes cost share	\$75,000		pending, CGA mapping cost-share
State			
DNR contract	\$820,000	\$	pending, CGA mapping, drilling augmentation
Clean Water Funds	\$250,000		pending, CGA mapping
TOTAL OTHER FUNDS:	\$1,460,000	\$	

VII. PROJECT STRATEGY:

A. Project Partners: Under a separate workplan and budget DNR Waters and Ecological Services is receiving funds to work on Part B of County Geologic Atlases, and county partners will supply in-kind services.

Partners receiving ENRTF funding

• None in this round of funding. DNR Waters and Ecological Services has grants in place.

Partners NOT receiving ENRTF funding

- DNR Waters and Ecological Services produces Part B of the county geologic atlases- funded separately.
- County partners participate in establishing well locations. They are self-funded.

B. Project Impact and Long-term Strategy:

C. Funding History:

Funding Source and	M.L.	M.L.	M.L.	M.L.	M.L.	M.L.	M.L.
Use of Funds	2007	2008	2009	2010	2011	2013	2015
	or	or	or	or	or	or	or
	FY08-10	FY09-12	FY10-13	FY11-14	FY12-14	FY14-16	FY16-18
ENRTF Benton and	\$400,000						
Chisago CGAs							
ENRTF Blue Earth,		\$706,000					
Nicollet, Sibley CGAs							
ENRTF Anoka and			\$820,000				
Wright CGAs							
ENRTF Sherburne and				\$1,130,000			
Morrison CGAs and							

5

related research					
ENRTF Redwood,			\$1,200,000		
Meeker, Brown					
ENRTF Wadena,				\$1,200,000	
Hubbard, Becker					
ENRTF St. Louis, Lake,					\$2,040,000
Olmsted update,					
Kandiyohi, Aitkin					
Clean Water Funds		\$305,000			
(Houston, Winona)					
Clean Water Funds				\$1,230,000	
(Cass, Isanti, Hennepin					
update, Dodge, other)					

VIII. REPORTING REQUIREMENTS:

- The project is for 3 years, will begin on 07/01/2017, and end on 06/30/2020.
- Periodic project status update reports will be submitted December 31 and June 30 of each year.
- A final report and associated products will be submitted between June 30 and August 15, 2020.

IX. VISUAL COMPONENT or MAP(S): see attached map of County Geologic Atlas Part A Status

6

Environment and Natural Resources Trust Fund M.L. 2017 Project Budget

Project Title: Minnesota Geological Survey Geologic Atlases for Water Management

Legal Citation:

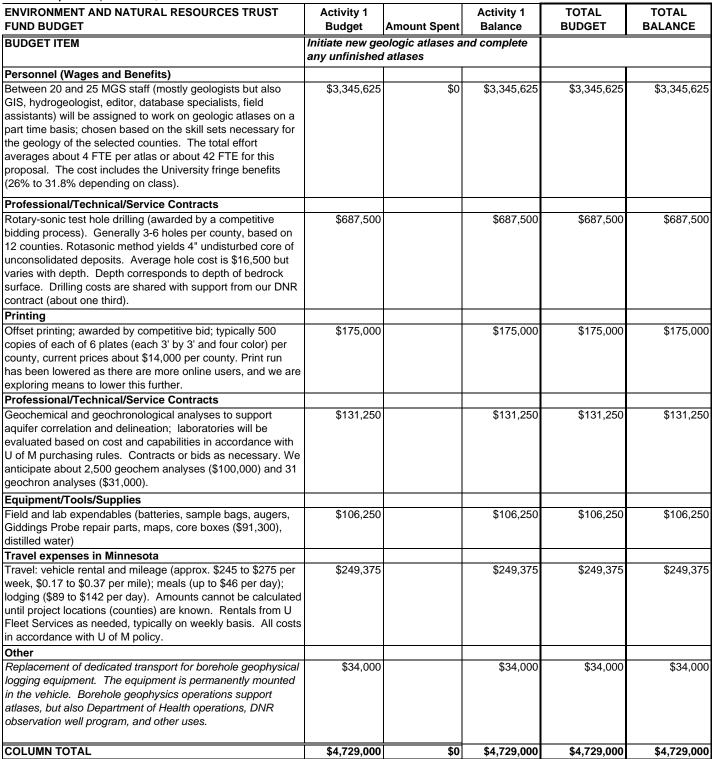
Project Manager: Dale Setterholm

Organization: Minnesota Geological Survey, University of Minnesota

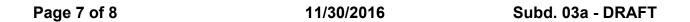
M.L. 2017 ENRTF Appropriation: \$ 4,729,000

Project Length and Completion Date: 3 Years, June 30, 2020

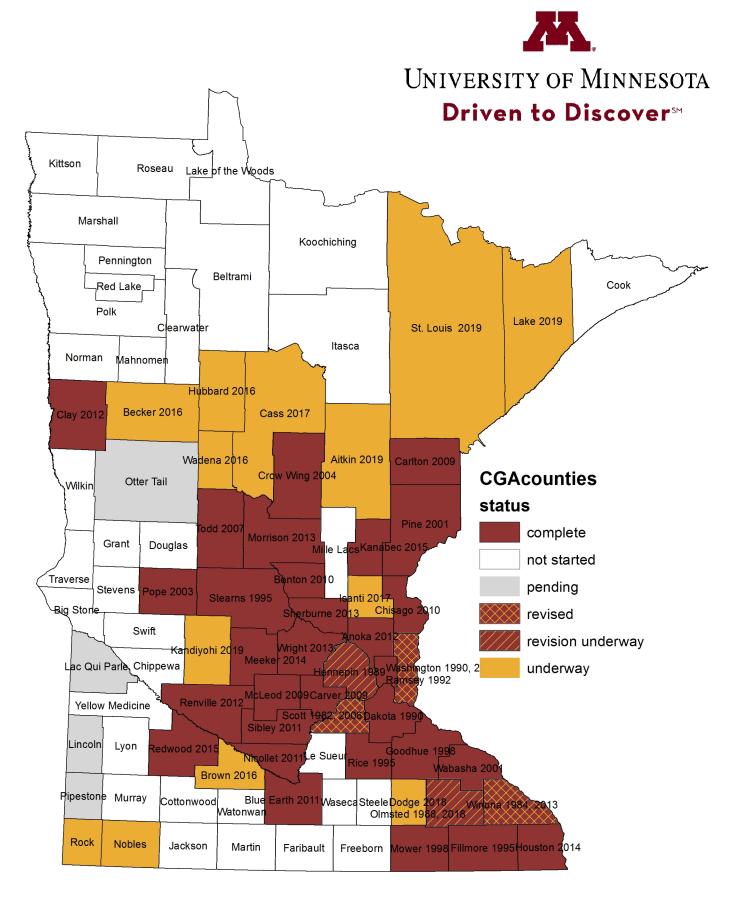
Date of Report: September 14, 2016



TRUST FUND



Status of Part A Geologic Atlases August 2016



Page 8 of 8 11/30/2016 Subd. 03a - DRAFT