Environment and Natural Resources Trust Fund
2019 Request for Proposals (RFP)

Project Title: **ENRTF ID: 027-A**

Accelerated Aggregate Resource Mapping

Category: A. Foundational Natural Resource Data and Information

Sub-Category:

Total Project Budget: $ 1,380,979

Proposed Project Time Period for the Funding Requested: June 30, 2021 (2 yrs)

Summary:

To map the aggregate resource potential of 6 counties. Each county has passed a county board resolution requesting this work to be completed.

Name: Heather Arends

Sponsoring Organization: MN DNR

Title: Mineral Potential Section Manager

Department:

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Location

Region: Southwest

County Name: Chippewa, Kandiyohi, Lyon, Redwood, Sibley, Swift, Yellow Medicine

City / Township:

Alternate Text for Visual:

Status of DNR Aggregate Resource Mapping Program. Two counties are in progress, thirteen counties have requested mapping, and 46 countiess need aggregate resources information.

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____%
____ If under $200,000, waive presentation?			

PROJECT TITLE: Accelerated Aggregate Resource Mapping

I. PROJECT STATEMENT

The Aggregate Resource Mapping Program (ARMP) proposes to 1) identify and characterize aggregate resources in seven counties; 2) survey the location and status of reclamation of all gravel pits within each county 3) create geospatial information and databases at a scale of 1:100,000 4) provide technical support to counties regarding how to incorporate aggregate resources in planning, permitting, and reclamation; 5) disseminate data and maps to county staff, elected officials, and the public through on-line web mapping service: (https://www.dnr.state.mn.us/lands_minerals/aggregate_maps/online_maps/index.html). The seven counties include Kandiyohi, Swift, Chippewa, Yellow Medicine, Lyon, Redwood, and Sibley.

Aggregate resources are needed to maintain and repair critical and aging infrastructure. In rural areas, upwards of 90% of aggregates are paid with public tax money. While aggregate demand is associated with urbanization, rural areas are responsible for the largest network of roads. Rural areas are also confronted with unique issues that significantly impact access to and availability of aggregates, such as natural scarcity of high quality aggregates. Without locally available aggregates, the distance to transport aggregates directly increases the cost of publically funded projects and the carbon foot-print of construction projects. Knowing the location of all sources of aggregate as well as their quality is needed by local land use planners and elected officials to make informed decisions. For this reason, the Minnesota Association of County Planners and Zoning Administrators (MACPZA) supports the funding of aggregate mapping in their 2018 Legislative platform. In addition, the final recommendations of the 2017 Aggregate Resources Task Force Final Report supports funding for accelerated mapping of aggregate resources with the goal of completing the state in 10 years.

The Department of Natural Resources (DNR) is directed to map aggregate resources under MN Statute §84.94. Aggregate resource mapping is a cooperative effort between the DNR and the Minnesota Geologic Survey as well as the Minnesota Department of Transportation (Mn/DOT). Every effort is made to collaborate with these agencies, as well as local governments, to inform the data, interpretations, and final products generated by the DNR.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Data compilation and reconnaissance level field work

Geologists will compile all available and relevant gravel pit data, historic geologic maps, and reports. GIS personnel will compile available digital data. Four DNR project geologists will start mapping and field work.

ENRTF BUDGET: $273,500

Outcome	Completion Date
1. Historic digital data is compiled for 5 counties (two counties compilations are complete)	December 2019
2. Complete survey of gravel pits	September 2020

Activity 2: Conduct sampling for seven counties

Four geologists will conduct geologic fieldwork to collect samples and observations on aggregate deposits and landforms. This project will consist of 2-3 field seasons (depending on size of the county) and a field review. Supervisor will coordinate staff and equipment for field seasons. Geologist will survey gravel pits, collect geologic field observations, identify aggregate bearing landforms. Aggregate deposits will be explored and

confirmed with 80 to 150 drill holes per county and analyzed in laboratory. Assistants will help with fieldwork and delivering samples to MNDOT Aggregate Materials Laboratory.

ENRTF BUDGET: $677,500

Outcome	Completion Date
1. Drill and sample locations to characterize the quantity and quality of aggregate	September 2020
2. Ground-truth aggregate potential models and interpretations	September 2020
3. Process samples at the Hibbing sediment laboratory	January 2021

Activity 3: Create Map and Digital Products

During off seasons for field work, geologists will analyze the new data and the historic data. Geologists, with the assistance of GIS staff, will delineate and catalogue aggregate resource potential, identify aggregate resource trends, and produce draft aggregate maps. Draft maps will undergo a review process as well as be open for public comment. Supervisor will provide technical assistance to geologist; oversee project standardizations between counties; and relay project status updates to Counties.

ENRTF BUDGET: $318,811

Outcome	Completion Date
1. Field data processed and entered into DNR's information systems.	June 2021
2. Digital maps (GIS polygon data) created for aggregate resource potential, compiled sampling results (sieve analysis, deleterious lithology, and soundness)	June 2021

Activity 4: Delivering survey results

Provide interpretation of results from Activities 1 through 3 and deliver the final products and technical assistance to local governments.

ENRTF BUDGET: $111,168

Outcome	Completion Date
1. Provide workshops to counties, townships, and municipalities.	June 30, 2021
2. Final draft of maps and GIS products are available on DNR website.	June 30, 2021

III. PROJECT PARTNERS:

A. Partners receiving ENRTF funding NA

B. Partners NOT receiving ENRTF funding NA

IV. LONG-TERM- IMPLEMENTATION AND FUNDING:

ARMP information, data, and technical guidance have proven critical to local governments and the state. Currently ARMP is unfunded and is looking to the legislature to provide long-term sustainable funding until the state's aggregate resources are fully mapped. This priority reflects the recommendations coming from the 2017 Aggregate Resource Task Force Final Report.

V. TIME LINE REQUIREMENTS:

ARMP will complete the mapping of seven counties specified within this report and meet the objectives in Activities 1-4 by June 30, 2021.

2019 Proposal Budget Spreadsheet

Project Title: Accelerated Aggregate Resource Mapping

IV. TOTAL ENRTF REQUEST BUDGET 2 years

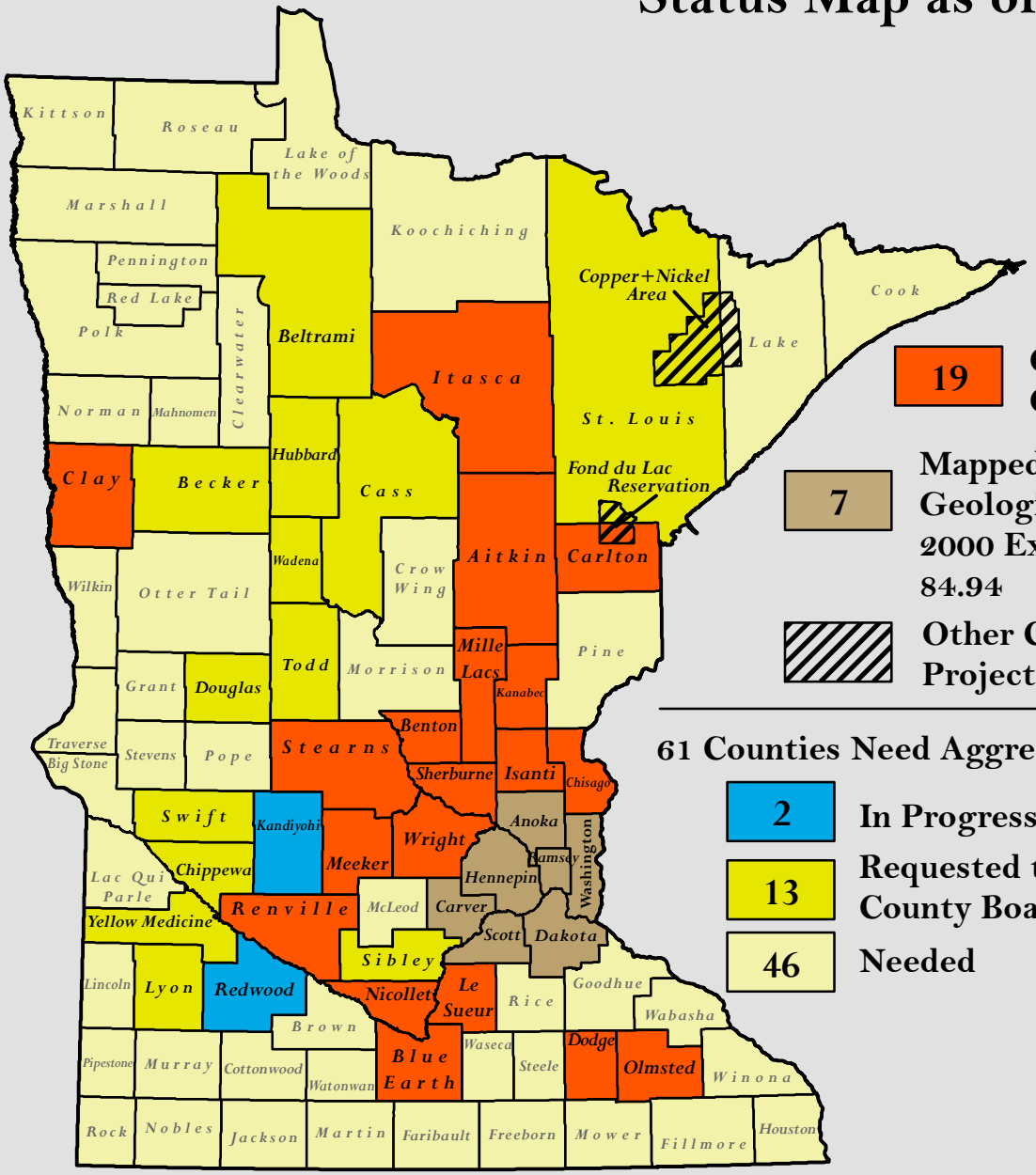
BUDGET ITEM	AMOUNT
Personnel:	
Geologist (4 unclassified - 4 FTE for 2 years)	$ 520,000
Program Supervisor (1 classified - 1 FTE for 2 years)	$ 170,000
GIS/Cartographer (1 classified - 1 FTE for 2 years)	$ 115,000
1 Student Worker (1 unclassified - 0.75 FTE for 2 years)	40,000
Field Technician (1 classified - 1 FTE for 2 years)	$ 90,000
Professional/Technical/Service Contracts:	
MN.IT service level agreements TBD	$ 20,000
Sample Analysis: Minnesota Department of Transportation - Material Laboratory. Submit samples to MN/DOT to be analyzed for frin and course gradations, lithologic testing, sulfacte magnesium, flat and/or elongeated particles, and other test demed necessary.	$ 200,500
Equipment/Tools/Supplies: Equipment is used from previous survey periods when at all possible (e.g. GPS units, drilling equipment, augers, cameras, communication/safety equipment, etc.) but replaced, repaired, or updated as necessary. Items such as batteries, sample bags, field notebooks, and hand held augers.	$ 30,000
Travel: Travel expenses for MN travel related to field survey in Acitivies 1 & 2. Travel expenses are subject to State of MN labor agreements and DNR policy. Most travel expenses are related to the 4-6 months of time when staff are conducting field work that requires food, transportation in seasonal DNR fleet vehicles, and lodging.	$ 100,000
Direct and Necessary: DNR's direct and necessary costs pay for activities that are directly related to and necessary for accomplishing appropriated projects. HR Support (~$22,901), Safety Support (~$4,744), Financial Support (~$13,657), Communication Support (~$1,251), IT Support (~$51,867), and Planning Support (~$1,059).	$ 95,479
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND $ REQUEST =	$ 1,380,979

V. OTHER FUNDS

General Fund FY18		
General Fund FY19 - there is currently a bill sumbitted to support general fund dollars for aggregate resource mapping - 450,000 for the first year and 950,000 until 2028.	$450,000.00	Pending

Figure 1 - Minnesota DNR Aggregate Resource Mapping Program

Status Map as of January 2018



19 Completed Counties

7 Mapped by Minnesota Geological Survey, 2000 Excluded from 84.94

Other Completed Projects

61 Counties Need Aggregate Data

2 In Progress

13 Requested through County Board Resolution

46 Needed

Completed and In Progress

COMPLETED	SHERBURNE	1987
	WRIGHT	1990
	ISANTI	1992
	CLAY	1997
	BLUE EARTH	1999
	NICOLLET	2000
	CHISAGO*	2001
	BENTON	2002
	DODGE	2002
	LE SUEUR	2003
	RENVILLE	2003
	ITASCA*	2004
	MEEKER*	2006
	MILLE LACS*	2008
	CARLTON*	2009
	FOND DU LAC RESERVATION*	2009
	OLMSTED	2010
	Cu+Ni PROJECT*	2010
	STEARNS	2011
	KANABEC	2012
	AITKIN	2014
IN PROGRESS	KANDIYOHI	2018^
	REDWOOD	2018^

Requested by County Board Resolution

SIBLEY	LYON
BECKER	DOUGLAS
SWIFT	CASS
YELLOW MEDICINE	HUBBARD
BELTRAMI	WADENA
ST. LOUIS	TODD
	CHIPPEWA

^ Expected Fiscal Year of Completion

* Funded in part or full by Minerals Coordinating Committee

Map Updated January, 2018

Minnesota Department of Natural Resources, Division of Lands and Minerals, Director Jose Miranda

05/05/2018

ENRTF ID: 027-A

Project Manager Qualifications and Organization Description

Project Manager:	Heather Arends
Affiliation:	Department of Natural Resources, Division of Lands and Minerals
Telephone Number:	651-259-5376
Title:	Mineral Potential Section Manager

Experience

Heather Arends has worked for the Department of Natural Resources for 20 years. She currently manages the Mineral Potential Section, which is responsible for managing the states 12 million acre mineral interests. Her previous responsibilities included supervising the Aggregate Resource Mapping Program where she oversaw the successful completion of half of the counties mapped by the DNR. She received a B.A. in Geological Science from the University of Minnesota, Morris and is currently working on completing M.S. in Geological Sciences from the University of Minnesota, Duluth.

Organization Description

The mission of the Minnesota DNR is to work with citizens to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for the commercial uses of natural resources in a way that creates a sustainable quality of life.

The Division of Lands and Minerals works to provide exceptional real estate and mineral expertise to enhance Minnesota's future, uphold strong environmental protections and support our economy by demonstrating the highest professional standards.