



Environment and Natural Resources Trust Fund

2027 Request for Proposal

General Information

Proposal ID: 2027-457

Proposal Title: Resilience Adaptation Framework and Toolkit (RAFT)

Project Manager Information

Name: Matthew Tierney

Organization: U of MN - Center for Sustainable Building Research

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Project Basic Information

Project Summary: Develop a resilience adaptation toolkit technology to help engineers, architects, planners and community designers better understand the site-specific resilience risks and design opportunities that are best suited for their location.

ENRTF Funds Requested: \$1,464,000

Proposed Project Completion: July 31, 2030

LCCMR Funding Category: Resiliency (A)

Project Location

What is the best scale for describing where your work will take place?

Statewide

What is the best scale to describe the area impacted by your work?

Statewide

When will the work impact occur?

During the Project and In the Future

Narrative

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

This project addresses a critical technological gap in fostering coordinated resilient design across Minnesota. While there is a wealth of data and initiatives that aid in resilience design at many scales, these discrete resources lack:

- A comprehensive and coordinated set of data.
- Site-specific tools for ecological/spatial analysis at a granular scale.
- Rationalized preliminary resilience design guidance.
- The ability to tie individual projects to larger state, regional, and watershed-scale resilience goals and initiatives.

Given the team's expertise in both research and real-world design/engineering, we see an opportunity through this project to:

- Leverage and integrate existing state programs, resources and datasets related to resilience design and climate change into a single graphic user interface.
- Develop a series of geospatial analysis/queries that help determine and present a suite of effective resilience strategies that can be implemented at the building, district, and watershed scales for any project site.
- Enhance rural and urban communities' ability to coordinate and appropriately design infrastructural projects, individual building projects, and community-based resilience strategies by tying each individual project to larger watershed-scale and regional goals across Minnesota.
- Present resilience strategies that simultaneously preserve Minnesota's natural resources and increase risk tolerance statewide.

What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.

The Resilience Adaptation Framework and Toolkit (RAFT) creates a single publicly accessible graphic user interface that aids designers, engineers, and communities in identifying and coordinating resilience strategies. The toolkit will provide coordinated strategies that tie individual project design solutions to watershed, district, and building-scale goals. The toolkit seeks to aggregate, curate, and operationalize multiple digital datasets and resources related to climate change projections, ecological systems analysis, and hazard mitigation, in a single graphic user interface.

- Aggregate, curate, and operationalize a current patchwork of large and small-scale spatial and climate data into a single searchable database.
- Design a toolkit that analyzes and queries the database for specific combinations of resilience metrics and produces a dashboard of results for the watershed, district, and building scale of any project coordinate.
- Test the toolkit using a variety of real world projects around the state to determine its applicability across a spectrum of urban, semi urban, and rural conditions. During this process we will also develop the framework and process based guidance that will assist future teams who use the toolkit.
- Refine the toolkit based on feedback from the pilot testing and develop training and support.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

The toolkit offers anyone in the state (and potentially the larger bioregion) an improved understanding of a project site's natural resources and resilience risks and the ability to respond with a curated suite of resilience design strategies at large and smaller scales. The improved understanding of ecological, economic, and infrastructural risks and opportunities combined with a curated set of design strategies at the design/planning/implementation phases allows designers and communities a seamless integration with state/private design processes and enhances Minnesota's ecological and cultural resources. The toolkit will provide a single interface to design for a more resilient Minnesota.

Activities and Milestones

Activity 1: Assemble data sources into streamlined database. Develop detailed logic + specifications for the toolkit.

Activity Budget: \$500,000

Activity Description:

The team will study, sort, aggregate, and format various digital resources into a streamlined data set to be used as the backend of the toolkit's dashboard application. We will source various publicly available data including: Minnesota Pollution Control Agency's MIDS calculator, various "in development" custom GIS queries that are currently being developed within the project team, publicly-available GIS layers from the MN DNR, MNPCA, and MNDOT (among others), BWSR's One Watershed, One Plan, and the EQB's Environmental Assessment Worksheet (EAW) inputs as the pieces of the puzzle. The team proposes to use data that can be publicly accessible and able to be updated as the source data changes over time. Examples include but are not limited to: county level biological surveys (MBS), DNR/MNPCA data sets for land cover/waterbodies/watersheds, USGS Web Soil Survey maps, Metropolitan Council's Flood Risk and Extreme Heat screening tools, FEMA floodplain maps, and ESRI GIS layers, and more. With these resources sorted and formatted to work together as a suite of information, the team will develop algorithms and specifications to implement in the web-based design dashboard in Activity 2.

Activity Milestones:

Description	Approximate Completion Date
Develop database framework for data aggregation	June 30, 2028
Research, compile, and organize data/sources/logic for toolkit	December 31, 2028
Develop wireframe of toolkit frontend GUI and backend protocol	December 31, 2028

Activity 2: Development of prototype toolkit dashboard application.

Activity Budget: \$405,500

Activity Description:

Compile current geospatial data sets and unify the formatting for use in the toolkit application graphic user interface (GUI). Based on the data requirements identified in Activity 1, sets of geospatial (GIS) data will be compiled and prepared for use in the toolkit by experts at USpatial. We will utilize our extensive list of professional advisory committee members to test and "pilot" the tool in theoretical scenarios and real projects being developed at that time. We aim to test the toolkit at this stage on a range of projects (~5-8) with variable size, budget, location, typology of building, renovations, new construction and many more variables that will be defined during Activity 1. The aim of Activity 2 is to test the toolkit on a range of different scenarios across the state to see how it reacts to a myriad of circumstances that will likely be candidates in the future. This is preliminary testing to assure the toolkit can operate smoothly and produce reliable results before we test within a larger group of pilot sites/projects in Activity 3. This is a proof of concept testing phase that will be shorter and more iterative than the pilot testing in Activity 3.

Activity Milestones:

Description	Approximate Completion Date
Develop online graphic user interface (GUI)	June 30, 2029
Deploy prototype toolkit and test logic for GIS integration and multi-scale analysis	June 30, 2029
Pilot testing of online toolkit with internal team member projects and scenarios	August 31, 2029

Activity 3: Deploy the web-based application for prototype testing.

Activity Budget: \$308,500

Activity Description:

The effectiveness of the online interface relies on its usability within a design/planning process for a range of project types and scenarios. While Activity 2's aim was to provide a proof of concept and to assure the tool functions as expected with a small sample group, this activity uses close collaboration between team members and a series of pilot projects (provided through/by advisory committee members and the Minnesota B3 program) to test and document the process and effectiveness of the toolkit among a larger sample size (~12-15). We hope to gather valuable information on how the toolkit aids professionals and community designers in identifying and designing for the unique site-specific strengths, weaknesses, opportunities, and threats (SWOT) present in a variety of sites across the state. In the prototype toolkit dashboard application, users will define a "site" by drawing its border outline on a map. This will trigger the application to test the site against a range of criteria identified in Activity 1 and aggregate the results into a site-specific "report" with a suite of actionable resilience and climate adaptation management strategies. Through this activity, teams will develop a template for guiding others through the use of the toolkit.

Activity Milestones:

Description	Approximate Completion Date
Finalize graphic user interface design and break test	September 30, 2029
Develop templates to document each pilot site design process and distribute to pilot testing teams	February 28, 2030
Toolkit testing with pilot sites/scenarios. Mid-stream revisions to toolkit as needed.	February 28, 2030

Activity 4: Develop Final Report. Online, On-Demand Training Development.

Activity Budget: \$250,000

Activity Description:

Launch online resilience site planning toolkit/dashboard for public use. Record on-demand online training for the toolkit and site planning process for both non-professionals and professionals. Finalize template worksheets for a variety of project types and make them available within the online resources section of the website. Finalize report and release to LCCMR.

Activity Milestones:

Description	Approximate Completion Date
Develop online, on-demand trainings for professionals and communities	June 30, 2030
Develop resilience plan reports for test sites as case studies	June 30, 2030
Launch public online toolkit + supporting resources	June 30, 2030
Submit final report to LCCMR and hold public event	June 30, 2030

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Todd Smith	Minnesota Pollution Control Agency	Advisory Role - Principal Engineer MPCA - MIDS specialist	No
Len Kne	USpatial - UMN	Director - USpatial - Contributing directly to development of toolkit	Yes
Patrick Smith	Center for Sustainable Building Research	Researcher 6 - Project Collaborator	Yes
Richard Strong	University of Minnesota - College of Design	Advisory Role - Adjunct Faculty - Site and Water	No
Peter Macdonough	University of Minnesota - College of Design	Advisory Role - Adjunct Faculty - Site and Water	No
Jessica Rossi-Mastrocci	University of Minnesota - College of Design	Advisory Role - Landscape Architecture Faculty	No
Mike Trojan	Retired Hydrologist	Advisory Role - MIDS Specific Development - Hydrologist	No
Matthew Tierney, AIA	University of Minnesota - Center for Sustainable Building Research	Architect - Researcher 5 - Co-Principal Investigator	Yes
Researcher 5	University of Minnesota - Center for Sustainable Building Research	Project support for online toolkit	Yes
Researcher 2	University of Minnesota - USpatial	Project support for online toolkit	Yes
Researcher 5	University of Minnesota - USpatial	Project support for online toolkit	Yes
Benjamin Wichterman	University of Minnesota - Sponsored Projects Administration	UMN SPA - Fiscal Agent	No
Richard Graves	University of Minnesota - Center for Sustainable Building Research	Director - Project Management and Advisory	No

Eugene Park	University of Minnesota - College of Design - Graphic Design	Advisory Role - Graphic Design Faculty	No
Ryan Allen	Minnesota Department of Administration	Real Estate and Construction Services - Interim Division Director	No
Matt Metzger	Barr Engineering	ENV SP, PE - Senior Civil Engineer - Project Collaborator	Yes
Karen Ryberg	Barr Engineering	Senior Engineer - Project Collaborator - Climate science expertise	Yes
Advisory Committee Member	AIA National - Resilience and Adaptation Committee	Advisory Committee Member	No
Heidi Roop	University of Minnesota Climate Adaptation Partnership	Director - MCAP - Project Collaborator - Climate science expert	Yes
Advisory Committee Member	Bolton & Menk	Advisory committee member - Engineering and design expertise	No
Advisory Committee Member	AIA Minnesota	Advisory Committee Member - Architecture + Design Expertise	No
Researcher 3	Center for Sustainable Building Research	Project Collaborator - Design and Engineering expertise	Yes
Emma Fisher	University of Minnesota - Center for Sustainable Building Research	Administrative support	Yes
Dena Coffman	University of Minnesota Climate Adaptation Partnership	GIS Specialist	Yes
Stefan Liess	University of Minnesota Climate Adaptation Partnership	Climate Scientist	Yes
Samuel Potter	University of Minnesota Climate Adaptation Partnership	Climate data researcher	Yes
Advisory Committee Member	Emmons & Oliver Resources	Advisory Committee Member	No

Advisory Committee Member	Water Resources Center	Advisory Committee Member	No
Advisory Committee Member	Minnesota Design Center - Tom Fisher	Advisory Committee Member	No
Advisory Committee Member	Pierce Pini Engineers	Advisory Committee Member	No
Advisory Committee Member	Hammel Green & Abrahamson (HGA)	Advisory Committee Member	No

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.

We plan to publish portions of our work in various architectural, engineering, planning, and natural resource management journals and publications. We plan to record on-demand training videos to assist users in navigating the toolkit and utilizing it within various scenarios. The output from the toolkit could be used for various state and private reporting purposes and could have a significant impact on the ease of calculating and proving compliance with various rules and regulations. We anticipate various venues to continue to refine and present the usefulness of the toolkit well into the future. Please see our activity and milestones for additional information on how the team anticipates capturing the process and products of this research effort.

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?

The web-based toolkit developed through this project will be available free of charge to the public and will be maintained collectively into the foreseeable future by the Center for Sustainable Building Research, the University of Minnesota Climate Adaptation Partnership, U-Spatial, and the University of Minnesota at large.

Project Manager and Organization Qualifications

Project Manager Name: Matthew Tierney

Job Title: Co Principal Investigator

Provide description of the project manager's qualifications to manage the proposed project.

Matthew is a licensed Architect in Minnesota and has over a decade of experience conducting research in the professional architectural realm as well as designing various projects in Minnesota and around the world with sustainability and site-scale green/blue infrastructure solutions at the forefront. He has a wealth of experience working in the non-profit sector and has managed large federal, state and private projects during his career. He holds a Master of Architecture from the University of Oregon and a Master of Science in Architectural Research Practices from the University of Minnesota. He is a Research Fellow at the Center for Sustainable Building Research at the University of Minnesota and has teaching experience at the graduate and undergraduate levels. His research and built work focuses on site and water-based green/blue infrastructure and design solutions that result from a holistic understanding of ecological, cultural, and political surroundings. Through his professional work and grant-funded research, he has

developed online tools and rating systems with various partners to help evaluate projects and allow a broader, more accessible understanding of sustainable systems for all. He is the manager of the Site and Water sections of the Minnesota B3 Guidelines for Sustainable Design and has extensive experience working as an architect with adjacent disciplines including civil, environmental, and mechanical engineers, landscape architects, hydrologists, graphic designers, urban and rural planners, among others. He has developed a broad understanding of the ecological and cultural contexts of sustainability through his work in India, Kenya, Tanzania, Denmark, Mexico, and throughout the United States working alongside First Nations communities in the Pacific Northwest. Matthew is well-positioned and qualified to manage this interdisciplinary project team and to deliver a high-quality work product that will serve the diverse population of Minnesota and our shared natural resources for years to come.

Organization: U of MN - Center for Sustainable Building Research

Organization Description:

The Center for Sustainable Building Research's role is to transform the built environment in ways that provide for the ecological, economic, and social needs of the present without compromising those of the future. The work of the center is focused in six areas all of which are part of the Minnesota B3 Guidelines: Energy and climate change; Site and water systems; Sustainable materials for a healthy built environment; Measuring regenerative design; Equitable designs to provide sustainability for all; and Creating regenerative and resilient communities. The CSBR serves students, professionals and the community in many ways but this proposal seeks to address the need for everyone to be adequately equipped with "the practical skills, analytic abilities, philosophical depth, and moral wherewithal to remake the human presence in the world". USpatial is a research unit of the University of Minnesota that offers leading edge expertise in data management, and development of tools and digital systems related to GIS, remote sensing and spatial computing. Between the CSBR and U-Spatial, (among the many partner organizations from other disciplines) we believe we have a diverse team to competently develop a toolkit that will serve many people for years to come.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Patrick Smith - Researcher 6		UMN Center for Sustainable Building Research			17.51%	0.15		\$21,948
Matthew Tierney - Researcher 5		Co Principal Investigator - UMN Center for Sustainable Building Research			17.46%	1.2		\$150,379
Len Kne - Director		UMN - U-Spatial			17.51%	0.21		\$39,516
U-Spatial Researcher 3 (GIS Specialist)		Support for Online Toolkit (Web Development and Integration)			24.41%	1.98		\$218,937
CSBR Researcher 5		Support for online toolkit (Data Sourcing, Programming, and Integration)			17.51%	0.6		\$77,981
U-Spatial Researcher 5 (Geospatial Developer)		Support for online toolkit (GIS and MIDS online integration)			25.82%	1.44		\$204,275
Richard Graves - Director		Co Principal Investigator - UMN Center for Sustainable Building Research			17.51%	0.21		\$52,752
Heidi Roop - Director		University of Minnesota Climate Adaptation Partnership			18.63%	2.1		\$57,840
Emma Fisher		Center for Sustainable Building Research - Project Support			15.96%	0.06		\$7,215
Samuel Potter - Researcher 5		University of Minnesota Climate Adaptation Partnership			20.88%	0.93		\$109,325
Stefan Leiss - Climate Scientist		University of Minnesota Climate Adaptation Partnership			21.18%	0.99		\$135,950

Dena Coffman		USpatial + MCAP GIS Specialist			19.03%	0.93		\$101,141
CSBR Researcher 2		Support for development of toolkit - UMN Center for Sustainable Building Research			17.71%	0.9		\$80,574
							Sub Total	\$1,257,833
Contracts and Services								
Barr Engineering	Service Contract	Contributing to the development and implementation of an online toolkit				1.35		\$197,167
							Sub Total	\$197,167
Equipment, Tools, and Supplies								
							Sub Total	-
Capital Equipment								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
	Miles/ Meals/ Lodging	Travel expenses for this project will include mileage, lodging and per diem for 7 site visits.	Purpose of travel will be to review building/construction sites statewide.					\$5,000
							Sub Total	\$5,000
Travel Outside Minnesota								
							Sub Total	-
Printing and Publication								

	Publication	Printing and binding of 20 booklets for pilot project teams. Printing and mounting of 10 large display boards for public presentations.	Purpose is to disseminate the research and toolkit.					\$4,000
							Sub Total	\$4,000
Other Expenses								
							Sub Total	-
							Grand Total	\$1,464,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
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Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
In-Kind	Minnesota Pollution Control Agency - Todd Smith and MPCA Staff	If LCCMR grant funding is secured and project moves forward, MPCA will offer In-kind services of 1-3 staff for the duration of the project to support MIDS specific development and online implementation for the duration of the project. (~80hrs @\$125/hr)	Pending	\$10,000
In-Kind	MN BWSR - Dan Shaw and Julie Westerlund	If LCCMR grant funding is secured, BWSR will assist the project team with the development and implementation of the online toolkit over the duration of the project. (~80hrs@\$125/hr)	Pending	\$10,000
			State Sub Total	\$20,000
Non-State				
In-Kind	Richard Strong - Professional Services	If LCCMR grant funding is secured and project moves forward, Richard will offer in-kind professional services to support development of the online toolkit for the duration of the project. (~80hrs @\$125/hr)	Pending	\$10,000
In-Kind	Jessica Rossi-Mastrocci - UMN College of Design (Landscape Architecture)- Professional Services	If LCCMR grant funding is secured and project moves forward, Jessica will offer in-kind professional services to support the development of the online toolkit for the duration of the project. (~80hrs @\$125/hr)	Pending	\$10,000
In-Kind	Peter MacDonough - Professional Services	If LCCMR grant funding is secured and project moves forward, Peter will provide in-kind professional services to support the development of the online toolkit. (~80hrs @\$125/hr)	Pending	\$10,000
In-Kind	Richard Graves - Professional Services	Richard Graves, CSBR Director (2% FTE, 36.6% benefits, for 3 years)	Secured	\$15,072
In-Kind	Eugene Park - UMN College of Design (Graphic Design) -Professional Services	If LCCMR grant funding is secured, Eugene will assist the project team with the development and implementation of the online toolkit over the duration of the project. (~80hrs @\$125/hr)	Pending	\$10,000
In-Kind	Advisory Committee Member TBD - American Institute of Architects - Minnesota	If LCCMR grant funding is secured, AIA MN will assist the project team with the development and implementation of the online toolkit over the duration of the project. (~80hrs@\$125/hr)	Pending	\$10,000
In-Kind	Bolton & Menk - Advisory Committee Member	If LCCMR grant funding is secured, Bolton & Menk will assist the project team with the development and implementation of the online toolkit over the duration of the project. (~80hrs@\$125/hr)	Pending	\$10,000
In-Kind	HGA - Advisory Committee Member(s)	If LCCMR grant funding is secured, HGA will assist the project team with the development and implementation of the online toolkit over the duration of the project. (~80hrs@\$125/hr)	Pending	\$10,000
In-Kind	University of Minnesota Application Hosting	Hosting of application and data on UMN resources (Recurring annually)	Pending	\$10,000
In-Kind	Pierce Pini - Advisory Committee Member - Rhonda Pierce	If LCCMR grant funding is secured, Pierce Pini will assist the project team with the development and implementation of the online toolkit over the duration of the project. (~80hrs@\$125/hr)	Pending	\$10,000

In-Kind	Advisory Committee Member TBD - American Institute of Architects - National	If LCCMR grant funding is secured, AIA National will assist the project team with the development and implementation of the online toolkit over the duration of the project. (~80hrs@\$125/hr)	Pending	\$10,000
In-Kind	Emmons & Oliver Resources - Advisory Committee Member - TBD	If LCCMR grant funding is secured, EOR will assist the project team with the development and implementation of the online toolkit over the duration of the project. (~80hrs@\$125/hr)	Pending	\$10,000
In-Kind	Minnesota Design Center - Advisory Committee Member - Tom Fisher	If LCCMR grant funding is secured, the Minnesota Design Center will assist the project team with the development and implementation of the online toolkit over the duration of the project. (~80hrs@\$125/hr)	Pending	\$10,000
In-Kind	UMN Water Resources Center - Advisory Committee Member	If LCCMR grant funding is secured, the Water Resources Center at UMN will assist the project team with the development and implementation of the online toolkit over the duration of the project. (~80hrs@\$125/hr)	Pending	\$10,000
			Non State Sub Total	\$145,072
			Funds Total	\$165,072

Total Project Cost: \$1,629,072

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: [add708de-4ab.pdf](#)

Alternate Text for Visual Component

Top Left-Project Dashboard: Watershed-Scale Prototype

Top Right-Decision Tree (Macro/Micro)

Lower Left-Watershed>District>Building Scale Dashboard Prototype

Lower Right-Digital Sankey Diagram (Sankeymatic): MIDS + Contextual GIS Input and User Defined Goals.

All - Prototype graphics for understanding and visualizing resilience design strategies at the watershed, district, and building scales...

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
Letter of Support - Barr Engineering	1dbcde30-5ab.pdf
Letter of Support - Pierce Pini Engineering	6b6d6a45-f09.pdf
Letter of Support - Water Resources Center	16b3cad8-37e.pdf
Letter of Support - Saint Paul	651b5fb6-4d9.pdf
Letter of Support - Hennepin County	73876c3e-50e.pdf
Letter of Support - Bolton & Menk	76d5f1f4-566.pdf
Letter of Support - Richard Strong	94dadb59-e4a.pdf
Letter of Support - Jessica Rossi Mastrocci/UMN Landscape Architecture	ada4b15f-07b.pdf
Letter of Support - HGA	014e960d-1e4.pdf
Letter of Support - EOR	bb51e46a-a5c.pdf
Letter of Support - AIA MN	bac54036-8b9.pdf
Letter of Support - AIA National	84eff53b-dbc.pdf
Letter of Support - Eugene Park/UMN Graphic Design	3b47e83c-4cc.pdf
Letter of Support - MDC	0f746de0-58a.pdf
Authorization Letter	0dec52fa-6e0.pdf
Financial Capacity - Tax Status	b047fc78-148.pdf
Financial Capacity - IRS Support Letter	94b275f9-e18.pdf
Financial Capacity - IRS 147C	5997bc23-8d0.pdf
Financial Capacity - Good Standing	bf7bde08-3cb.png

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Do you understand that travel expenses are only approved if they follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

Yes, I understand the UMN Policy on travel applies.

Does your project have potential for royalties, copyrights, patents, sale of products and assets, or revenue generation?

Yes

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

Yes

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF? If so, describe here (1) the source and estimated amounts of any revenue and (2) how you propose to use those revenues:

Yes, Any royalties, copyrights, patents, or sale of products and assets will be reinvested into the project.

Does your project include original, hypothesis-driven research?

No

Does the organization have a fiscal agent for this project?

Yes, Sponsored Projects Administration

Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing \$10,000 or more or large-scale stream or wetland restoration?

No

Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services (as defined in Minnesota Statutes section 299C.61 Subd.7 as "the provision of care, treatment, education, training, instruction, or recreation to children")?

No

Provide the name(s) and organization(s) of additional individuals assisting in the completion of this proposal:

Emma Fisher - Center for Sustainable Building Research (CSBR),(UMN), Benjamin Wichterman - Sponsored Projects Administration (SPA), (UMN)

Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements

Yes, I understand