

**Environment and Natural Resources Trust Fund
2017 Request for Proposals (RFP)**

Project Title:

Soil Kitchen-Minnesota

ENRTF ID: 097-C

Category: C. Environmental Education

Total Project Budget: \$ 218,814

Proposed Project Time Period for the Funding Requested: 2 years, July 2017 – June 2019

Summary:

Soil Kitchen-Minnesota builds a mobile framework for on-site screening of soil lead and soil quality. Experts and citizens create datasets and implement improved recommendations for food production and public health.

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Sponsoring Organization: U of MN

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Location

Region: Statewide

County Name: Hennepin, Ramsey

City / Township:

Alternate Text for Visual:

Soil Kitchen starts with on-site soil screening in partnership with community organizations and provides interpretation and environmental education through interaction with University and community experts, which results in building a citizen-science dataset of soil lead and soil quality and improved implementation and management recommendations for food production and public health.

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____ %



Environment and Natural Resources Trust Fund (ENRTF)

2017 Main Proposal

Project Title: Soil Kitchen-Minnesota: Urban Soil Lead and Soil Quality Education through Citizen Science

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I. PROJECT STATEMENT

Lead is a legacy contaminant that continues to impact urban public health – the total lifetime earnings burden of childhood lead poisoning in Minnesota has been estimated at \$1.9 billion (2014 dollars). The largest reservoir of lead in the urban environment is soil (largely from leaded paint and gasoline inputs), which can be remobilized and contribute to chronic low levels of lead exposure that have been linked to health impacts. With ongoing growth in urban agriculture, citizens need access to education and management recommendations in order to make data-driven decisions to reduce risk and improve soil quality. **Soil Kitchen-Minnesota is a traveling, recurring series of community engagement, environmental education and citizen-science events focused on soil lead screening**, urban soil quality, and related aspects of the urban environment.

- This proposal expands the engagement, scope and outreach capacity of ongoing, smaller-scale, proof-of-concept work, which has received overwhelming response from citizens and community partners. With LCCMR funding, 20 events will be conducted in the two year project period (July 2017- June 2019), **directly reaching a projected audience of over 2,000 citizens**, in addition to thousands more through website development and social media.
- In partnership with community organizations, **each Soil Kitchen event connects** University of Minnesota **faculty with citizens** by offering on-site soil screening for lead, arsenic and other soil properties.
- Citizens arrive with soil samples and, while waiting on-site for screening results and interpretation, are invited to explore additional aspects of the urban environment through educational displays and programming.
- Each submitted sample is assigned a number and citizens are asked to place a pin with that number on a map (identified to the block scale, with no personally identifiable information collected). This data is later compiled and allows the growth of an anonymous citizen-science database of lead concentrations and related properties (arsenic, pH, organic matter and texture) in urban soils. The growing database is visualized and made publicly available through an accessible website.
- **Citizens receive interpretation, education and best management practice recommendations that they can implement, improving best practices for reducing lead risk and improving urban soil quality.**
- The goals of this LCCMR project are to: 1) complete the design and build-out of a mobile, engaging, soil screening and education space, 2) conduct 20 Soil Kitchen events, and 3) **building an accessible web platform which allows researchers, agencies and the public to view the results.**

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Design and Build-Out of Mobile Soil Kitchen

Budget: \$72,300

Design and Build-out of Soil Kitchen: a mobile intervention that travels to community events where it unfolds as an on-site soil-screening laboratory, public engagement and environmental education space. This installation will be designed for long-term use (beyond the LCCMR project dates) to be fully mobile and transportable in a trailer, with considerable effort spent on generating an engaging and educational experience for the participating citizen. The design and build-out budget includes personnel time for a lead designer/project manager (95 days), an industrial designer/lead builder (75 days), and a graphic designer (14 days) [\$49,800]. The budget includes a trailer and costs for all other materials [\$18,500].

Outcome	Completion Date
1. <i>Build Out of Mobile Soil Kitchen Installation</i>	<i>February 1st, 2018</i>
2. <i>Development and Enhancement of Public Engagement Materials</i>	<i>April 15th, 2018</i>



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Activity 2: Conduct 20 Soil Kitchen events, evaluate and analyze results

Budget: \$128,485

20 total Soil Kitchen events will be conducted with community organizations in the Twin Cities and urban areas across Minnesota (Moorhead, Rochester and Duluth) between July 2017 and June 2019. Based on preliminary work, these events are projected to result in a minimum of 2,000 direct citizen contacts during the project period. The budget for these events includes summer salary for UMN faculty [\$17,732], 2 years of a UMN graduate research assistant to oversee event planning, data collection, website development, program evaluation and results analysis [\$86,495], a community liaison (100 hours/year) [\$9,000], facilitation of a “water bar” at each event, linking urban environmental perspectives on soil and water [\$9,800] and event expendable materials [\$2,800], and travel costs [\$2,658].

Outcome	Completion Date
1. 10 Soil Kitchen Events October 2017 – July 2018	July 2018
2. 10 Soil Kitchen events July 2018 – June 2019	June 2019

Activity 3: Accessible Website Development, data mining and database utilization

Budget: \$18,029

A publicly accessible website will be developed to visualize the large-scale patterns in the citizen-science database generated by these events. The database contains no personally identifiable information as none is collected during the sample intake and screening process. The data will be publically accessible and can be mined to ask research questions related to soil lead and corollary properties affecting its behavior or distribution. 1 semester for a UMN Computer Science research assistant to complete website development and database platform [\$18,029].

Outcome	Completion Date
1. Website Development	April 15 th , 2018
2. Analysis and display of growing citizen-science dataset of urban soil properties	Ongoing

III. PROJECT STRATEGY

A. Project Team/Partners

Project Partners Receiving Funds:

- Dr. Nic Jelinski, Assistant Professor, UMN Department of Soil, Water and Climate [\$211,432]; Julie Weisenhorn, Associate Extension Professor, UMN Department of Horticultural Science [\$7,382].

Project Partners Not Receiving Funds:

- Gardening Matters, Minnesota Collaborative Lead Abatement Network (M-CLEAN), Minnesota Department of Health.

B. Project Impact and Long-Term Strategy

20 events will be conducted in the two year project period (July 2017- June 2019), directly reaching a projected audience of over 2,000 citizens, in addition to thousands more through website development and social media. Each of these direct and indirect contacts represents a citizen who has gained knowledge of risks and challenges surrounding lead and soil quality in urban environments and can implement recommendations and best practices. After the project period the established framework will be established and sustainable with minimal funds. Therefore, even beyond the LCCMR project period, we anticipate an average of 500-600 citizen contacts in 15-18 events hours per year. The project is sustainable indefinitely at a rate of approximately \$140/event for 6 events per year (a total of about \$840/year with in-kind work and donations).

C. Timeline Requirements

The two-year project period will start in July 1, 2017 and end on June 30, 2019. Final project reports will be finalized by June, 2019.

2017 Detailed Project Budget

Project Title: Soil Kitchen-Minnesota: Urban Soil Lead and Soil Quality Education through Citizen Science

IV. TOTAL ENRTF REQUEST BUDGET 2 years

BUDGET ITEM (See "Guidance on Allowable Expenses", p. 13)	AMOUNT
Personnel:	
UMN Personnel: Nic Jelinski, PI - Two weeks of summer salary and fringe for Project Year 1 and Project Year 2 (\$5175 x2)	\$ 10,350.00
UMN Personnel: Julie Weisenhorn, Co-PI - Two weeks of summer salary and fringe for Project Year 1 and Project Year 2 (\$3691 x2)	\$ 7,382.00
UMN Personnel: Graduate Research (Project Assistant), database organization, screening facilitation, partner engagement, etc., citizen science work. Year 1 (2017 - 2018): Academic + Summer. Salary = \$23,192; Fringe = \$19,364. Year 2 (2018 - 2019): Academic + Summer. Salary = \$23,775; Fringe = \$20,164.	\$ 86,495
UMN Personnel: Website Development (Graduate Assistant - U Spatial or Computer Science), 1 semester (2017 - 2018 Academic Year) = \$8,611 Salary, \$9,418 Fringe.	\$ 18,029
Professional/Technical/Service Contracts:	
Community Liaison Consultant - 100 hours each (at \$45.00/hour) for 2 years	\$ 9,000.00
Mobile Soil Kitchen Architecture Lead Designer and Project Manager: Competitive Bid (760 hours, or 95 days at 8 hours/day x \$30/hour. Design the soil kitchen mobile installation, outreach, collaboration and planning with scientists, community organizers and end-users for public events.	\$ 22,800
Industrial Designer and Lead Builder: Competitive Bid (75 days x 9 hours/days = 675 hours x \$40/hour). Materials acquisition, design and building of soil kitchen mobile installation piece.	\$ 27,000
Work Progress, Water Bar: Facilitate water bar at each event, research of local drinking waters and water bar supplies (14 events x \$700/event)	\$ 9,800
Graphic Designer: Work with Lead Designer on the development, design and printing of large maps and materials for public engagement in the Soil Kitchen mobile installation. (80 hours x \$50/hr)	\$ 4,000
Equipment/Tools/Supplies:	
Materials for Build-out of Mobile Soil Kitchen: Trailer (\$4,000), Materials (\$14,500): Lumber, metal, shingles, bio-plastics, paint, solar panels, energy storage converter, water collection and filtration systems, hardware, furniture, tools, printing costs	\$ 18,500
Materials for Soil Kitchen events (\$140 per events x 10 events/year x 2 years): Bags, reagents, printed materials for public consumption, datasheets, sample processing materials.	\$ 2,800
Travel:	
<u>Lodging</u> : Moorehead, Mankato, Duluth (\$100 lodging x 2 rooms x 6 nights (2 night each)) = \$1,200 Total; <u>Transportation</u> : Truck rental for Moorehead, Mankato and Duluth events (6 days total, 2 days each) + Twin Cities Events (17 days total, 1 day each) \$46/day x 23 days = \$1,058 Total; <u>Mileage</u> = 0.37/mi x 352mi (Duluth) = \$130.24 + 0.37/mi x 190mi (Rochester) = \$70.30 + 0.37/mi * 538mi (Moorehead) = \$199.06 = \$400 Total	\$ 2,658
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$ 218,814

V. OTHER FUNDS (This entire section must be filled out. Do not delete rows. Indicate "N/A" if row is not applicable.)

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State \$ To Be Applied To Project During Project Period:	N/A	N/A
Other State \$ To Be Applied To Project During Project Period:	N/A	N/A
In-kind Services To Be Applied To Project During Project Period:	N/A	N/A
Funding History: 2015-2016 UMN Institute for Advanced Studies Research and Creative Collaboratives grant - seed money to begin Soil Kitchen-Twin Cities preliminary events in 2016	\$ 12,000.00	Encumbered
Remaining \$ From Current ENRTF Appropriation:	N/A	N/A

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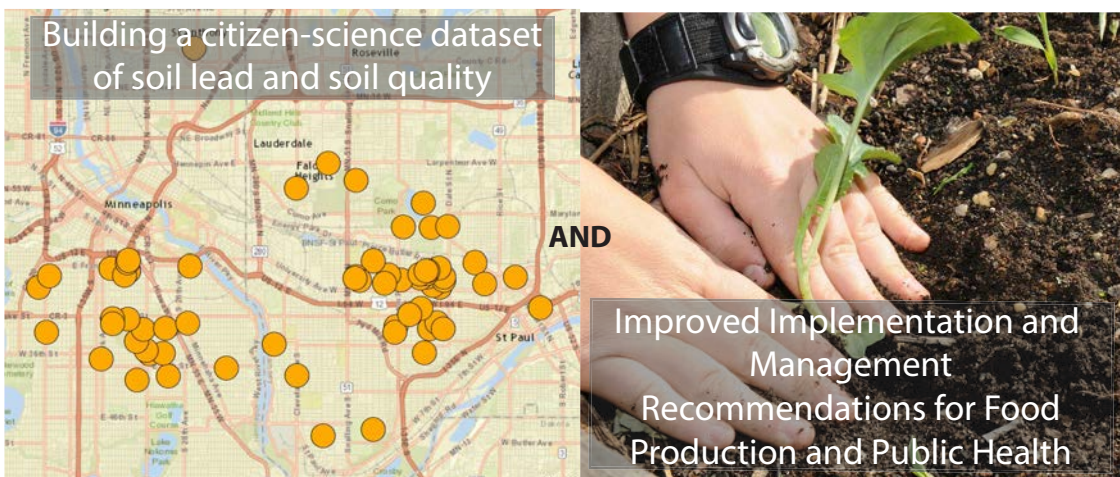
Soil Kitchen starts with...



and provides....



which results in....



Soil Kitchen-Minnesota: Urban Soil Lead and Soil Quality Education through Citizen Science

Project Manager Qualifications

Nic Jelinski is an Assistant Professor in the Department of Soil, Water, and Climate at the University of Minnesota. He has more than 5 years of experience managing research and fellowship dollars from federal and state funds at the University of Minnesota and more than 10 years of experience conducting research on soil properties in relation to soil management. Additionally, Jelinski has served for 8 years in the US Army Reserves, 4 of which have been spent as commander of a Preventive Medical Detachment focused on aspects of soil and water contamination, foodborne illness, and industrial hygiene related to public health interventions in military settings.

Organizational Qualifications

The University of Minnesota (UMN) is Minnesota's research university. UMN changes lives through research, education, and outreach. Faculty and staff at UMN seek new knowledge that can change how we all work and live. At UMN, students do research alongside top professors in all majors. UMN prepares students to meet the great challenges facing our state, our nation, and our world. UMN faculty and staff utilize their expertise to meet the needs of Minnesota, our nation, and the world. UMN partners with communities across Minnesota to engage our students, faculty, and staff in addressing society's most pressing issues.