

Technical Reviewers' Rating Summary

Proposal Number **G-56-01**
 Application Title **Agricultural Carbon Capture in Western North Dakota**
 Submitted By **ND Natural Resources Trust**
 Request For **\$500,000.00**
 Total Project Costs **\$1,051,000.00**

Section A. Scoring

Statement	Weight	G-56-01A	G-56-01B	G-56-01C	Avg. Score
1. Objectives	9	4	3	4	33
2. Achievability	7	4	1	4	21
3. Methodology	8	5	3	4	32
4. Contribution	8	4	2	4	26
5. Awareness / Background	5	4	3	5	20
6. Project Management	3	4	3	4	11
7. Equipment / Facilities	2	4	3	5	8
8. Value / Industry - Budget	4	4	2	5	14
9. Financial Match - Budget	4	4	2	4	13
Avg. Weighted Score		208	120	211	179
OVERALL					
FUND		X		X	
TO BE CONSIDERED					
DO NOT FUND			X		

Section B. Ratings and Comments

- The objectives or goals of the proposed project with respect to clarity and consistency with North Dakota Industrial Commission/Oil and Gas Research Council goals are:

“The proposal clearly defines the project goals which are consistent with the NDIC OGRC research goals.”

- Reviewer: G-56-01A

- Rating: 4 (Very Clear)

“Thank you for your acknowledgements. We aim to advance North Dakota carbon goals, first and foremost.”

- Applicant

“Goals are aligned in trying to figure out feasible carbon sequestration projects that are science based ”

- Reviewer: G-56-01B

- Rating: 3 (Clear)

“Thank you for your acknowledgements. We aim to advance North Dakota carbon goals, first and foremost.”

- Applicant

“Directly ties to the North Dakota carbon goals”

- Reviewer: G-56-01C

- Rating: 4 (Very Clear)

“Thank you for your acknowledgements. We aim to advance North Dakota carbon goals, first and foremost.”

- Applicant

2. With the approach suggested and time and budget available, the objectives are:

“Although the work scope is ambitious, the goals are quite achievable.”

- Reviewer: G-56-01A

- Rating: 4 (Most Likely Achievable)

“We are in the process of acquiring additional funds to continue this study beyond two years. We agree with reviewer G-56-01C, that additional work is needed, including correlation of eddy flux and soil data.”

- Applicant

“The protocols that they are suggesting are going to take more than the two years. the budget ask is for two years, I see they are suggesting additional years what happens when there is no additional funding to many unknowns”

- Reviewer: G-56-01B

- Rating: 1 (Not Achievable)

“We are in the process of acquiring additional funds to continue this study beyond two years. We agree with reviewer G-56-01C, that additional work is needed, including correlation of eddy flux and soil data.”

- Applicant

“timeline and budget allow for additional work to be included. Recommend additional work to verify current commercial models and correlate soil data to eddy flux data.”

- Reviewer: G-56-01C

- Rating: 4 (Most Likely Achievable)

“We are in the process of acquiring additional funds to continue this study beyond two years. We agree with reviewer G-56-01C, that additional work is needed, including correlation of eddy flux and soil data.”

- Applicant

3. The quality of the methodology displayed in the proposal is:

“The qualifications of the project team are well above average.”

- Reviewer: G-56-01A

- Rating: 5 (Well Above Average)

“The methods are based on published data and in accordance with the Ameriflux, a network of eddy covariance systems representing locations in North, Central, and South America (<https://ameriflux.lbl.gov>). We can discuss the option of not haying the reference grassland. Our rationale was that grass rarely stands without grazing or haying. We would just need to compensate the rancher, in the event we limited haying in the reference grassland.”

- Applicant

“the methodology seems to include a lot of assumptions,”

- Reviewer: G-56-01B

- Rating: 3 (Average)

“The methods are based on published data and in accordance with the Ameriflux, a network of eddy covariance systems representing locations in North, Central, and South America (<https://ameriflux.lbl.gov>). We can discuss the option of not haying the reference grassland. Our rationale was that grass rarely stands without grazing or haying. We would just need to compensate the rancher, in the event we limited haying in the reference grassland.”

- Applicant

“Would recommend a "do nothing" alternative be included, i.e. grassland with no grazing or harvest, zero management. Also, a small scale study be included to verify the dissolved organic C transport is negligible.”

- Reviewer: G-56-01C

- Rating: 4 (Above Average)

“The methods are based on published data and in accordance with the Ameriflux, a network of eddy covariance systems representing locations in North, Central, and South America (<https://ameriflux.lbl.gov>). We can discuss the option of not haying the reference grassland. Our rationale was that grass rarely stands without grazing or haying. We would just need to compensate the rancher, in the event we limited haying in the reference grassland.”

- Applicant

4. The scientific and/or technical contribution of the proposed work to specifically address North Dakota Industrial Commission/Oil and Gas Research Council goals will likely be:

“Although similar studies have been achieved in other ecosystems, the ability to develop ecosystem-specific data for North Dakota's grassland habitats will be a significant contribution to our understanding of carbon flux in this every significant part of North Dakota's agricultural industry.”

- Reviewer: G-56-01A

- Rating: 4 (Very Significant)

“We are determining the effect of a rotational grazing system on the carbon cycle. In addition to carbon fluxes, we will measure environmental and vegetation changes using continuous monitoring systems. Although management and conditions may change in different regions of the state, we expect the grazing "effect" to be evident among rotational grazing systems in other areas. With our initial two-year study, the environmental covariates will be modeled to simulate grazing effects on the carbon cycle over time and under different conditions to extrapolate beyond our single site. We currently oversee programs that assist land owners with cost-share for grazing system developments.”

- Applicant

“it to me does not seem scalable very limited in size and landscape type, high density paddock grazing is not finically feasible across typical ranch size and landscape in western ND”

- Reviewer: G-56-01B

- Rating: 2 (Small)

“We are determining the effect of a rotational grazing system on the carbon cycle. In addition to carbon fluxes, we will measure environmental and vegetation changes using continuous monitoring systems. Although management and conditions may change in different regions of the state, we expect the grazing "effect" to be evident among rotational grazing systems in other areas. With our initial two-year study, the environmental covariates will be modeled to simulate grazing effects on the carbon cycle over time and under different conditions to extrapolate beyond our single site. We currently oversee programs that assist land owners with cost-share for grazing system developments.”

- Applicant

“Very significant contribution to the potential carbon capture in the state”

- Reviewer: G-56-01C

- Rating: 4 (Very Significant)

“We are determining the effect of a rotational grazing system on the carbon cycle. In addition to carbon fluxes, we will measure environmental and vegetation changes using continuous monitoring systems. Although management and conditions may change in different regions of the state, we expect the grazing "effect" to be evident among rotational grazing systems in other areas. With our initial two-year study, the environmental covariates will be modeled to simulate grazing effects on the carbon cycle over time and under different conditions to extrapolate beyond our single site. We currently oversee programs that assist land owners with cost-share for grazing system developments.”

- Applicant

5. The background of the principal investigator and the awareness of current research activity and published literature as evidenced by literature referenced and its interpretation and by the reference to unpublished research related to the proposal is:

“It is obvious that the research team has the background and experience to develop a successful project.”

- Reviewer: G-56-01A

- Rating: 4 (Better Than Average)

“Al Frank, retired researcher at the ARS in Mandan, initiated carbon studies in grazed grasslands nearly 20 years ago, and carbon work under grazed grasslands have continued off and on over the years. Our proposal is unique because we aim to determine how rotational grazing alters carbon uptake when varying the season of use. We work with ranchers that believe strongly that altering season of use increases productivity. Further, our design includes an ungrazed control, which will help ranchers and industry understand the positive grazing effect on the net ecosystem carbon balance.”

- Applicant

“Mandan ARS has had a on going Eddy Flux study going on for a number of years grazing.”

- Reviewer: G-56-01B

- Rating: 3 (Adequate)

“Al Frank, retired researcher at the ARS in Mandan, initiated carbon studies in grazed grasslands nearly 20 years ago, and carbon work under grazed grasslands have continued off and on over the years. Our proposal is unique because we aim to determine how rotational grazing alters carbon uptake when varying the season of use. We work with ranchers that believe strongly that altering season of use increases productivity. Further, our design includes an ungrazed control, which will help ranchers and industry understand the positive grazing effect on the net ecosystem carbon balance.”

- Applicant

“Excellent quality cooperators and background work.”

- Reviewer: G-56-01C

- Rating: 5 (Exceptional)

“Al Frank, retired researcher at the ARS in Mandan, initiated carbon studies in grazed grasslands nearly 20 years ago, and carbon work under grazed grasslands have continued off and on over the years. Our proposal is unique because we aim to determine how rotational grazing alters carbon uptake when varying the season of use. We work with ranchers that believe strongly that altering season of use increases productivity. Further, our design includes an ungrazed control, which will help ranchers and industry understand the positive grazing effect on the net ecosystem carbon balance.”

- Applicant

6. The project management plan, including a well-defined milestone chart, schedule, financial plan, and plan for communications among the investigators and subcontractors, if any, is:

“While the project will require significant communications between a diverse team of experts, the team has provided a very clear path forward.”

- Reviewer: G-56-01A

- Rating: 4 (Very Good)

“A strong point of this project is the coordination that will be provided by the Natural Resources Trust, and the team research leadership experience brought by Dr. Phillips. As a research leader in New Zealand, Dr. Phillips and team published a seminal manuscript describing effects of grazing on carbon uptake in grasslands. Coordination among multiple stakeholders and researchers is understood.”

- Applicant

“going to take a tremendous amount of coordination among all groups involved”

- Reviewer: G-56-01B

- Rating: 3 (Adequate)

“A strong point of this project is the coordination that will be provided by the Natural Resources Trust, and the team research leadership experience brought by Dr. Phillips. As a research leader in New Zealand, Dr. Phillips and team published a seminal manuscript describing effects of grazing on carbon uptake in grasslands. Coordination among multiple stakeholders and researchers is understood.”

- Applicant

“”

- Reviewer: G-56-01C

- Rating: 4 (Very Good)

“A strong point of this project is the coordination that will be provided by the Natural Resources Trust, and the team research leadership experience brought by Dr. Phillips. As a research leader in New Zealand, Dr. Phillips and team published a seminal manuscript describing effects of grazing on carbon uptake in grasslands. Coordination among multiple stakeholders and researchers is understood.”

- Applicant

7. The proposed purchase of equipment and the facilities available is:

“

- *Reviewer: G-56-01A*

- *Rating: 4 (Well Justified)*

“The equipment will be required to support data collection at a working ranch. Many labs do not have the land base to complete a study of this scale.”

- *Applicant*

“going to have to buy the eddy flux equipment.Labs are established ”

- *Reviewer: G-56-01B*

- *Rating: 3 (Justified)*

“The equipment will be required to support data collection at a working ranch. Many labs do not have the land base to complete a study of this scale.”

- *Applicant*

“Minimal equipment needed.”

- *Reviewer: G-56-01C*

- *Rating: 5 (Extremely Well Justified)*

“The equipment will be required to support data collection at a working ranch. Many labs do not have the land base to complete a study of this scale.”

- *Applicant*

8. The proposed budget “value”¹ relative to the outlined work and the commitment from other sources is of:

“The cost share provided, both in-kind and direct funding is indicative of the team's commitment to this project. ”

- Reviewer: G-56-01A

- Rating: 4 (High Value)

“The Natural Resources Trust (Jesse Beckers) continually engages with several industry partners who are up-to-date on the progress of this proposal. There is interest in furthering support for this study once the project is initiated.”

- Applicant

“Industry partners very limited”

- Reviewer: G-56-01B

- Rating: 2 (Low Value)

“The Natural Resources Trust (Jesse Beckers) continually engages with several industry partners who are up-to-date on the progress of this proposal. There is interest in furthering support for this study once the project is initiated.”

- Applicant

“Could very easily generate that much additional revenue after implementation.”

- Reviewer: G-56-01C

- Rating: 5 (Very High Value)

“The Natural Resources Trust (Jesse Beckers) continually engages with several industry partners who are up-to-date on the progress of this proposal. There is interest in furthering support for this study once the project is initiated.”

- Applicant

9. The “financial commitment”² from other sources in terms of “match funding” have been identified:
“The match provided is significant both with respect to project completion and the potential significance of the project results.”
- *Reviewer: G-56-01A*
- *Rating: 4 (High Value)*
“We specified the dollar amounts from each partner. Please help us understand how the scope of the match is not well defined. ”
- *Applicant*
“most of the match is in kind and scope of the match is not well defined”
- *Reviewer: G-56-01B*
- *Rating: 2 (Low Value)*
“We specified the dollar amounts from each partner. Please help us understand how the scope of the match is not well defined. ”
- *Applicant*
“”
- *Reviewer: G-56-01C*
- *Rating: 4 (High Value)*
“We specified the dollar amounts from each partner. Please help us understand how the scope of the match is not well defined. ”
- *Applicant*

General Comments

“This project will provide critical North Dakota ecosystem-specific data that ultimately could be used to store significant amounts of carbon and may provide an additional source of income to our agricultural community. The goals are very supportive of the Governor's Carbon objectives. The teamwork and support of the OGRC to the agricultural community is a superb example of the NDIC's commitment to our two most important industries, energy and agriculture. The energy-agriculture nexus is fertile ground for research and will provide a strong foundation for a prosperous and sustainable future. ”

- Reviewer: G-56-01A

“there is on going research with eddy flux systems in ND already ie Mandan ARS seems would be better to piggy back with them. There has been other research done on different grazing practice in western ND related to C sequestration by Doctor Manske Dickinson Research Center. I believe the Oil and Gas Research council should be very cautious on picking a project that they would like to support in this field if any as there multiple projects and studies going on both on the academia side and private sector. AI technology and satellite imagery are moving fast in this space. Industry participation seems lacking I know the oil and gas industry is partnering with many projects in this space already other than petroleum council in kind for education purposes in this project industry participation seems inadequate. While I agree the upper Great Plains ha the potential to be the biggest carbon sink in North America or world for that matter and could be a great benefit to the AG and Oil and Gas industry I would vet many different projects before I would really decide who what where I would provide finical support to. ”

- Reviewer: G-56-01B

“good project with potential for wide spread impacts. Recommend some expansion of scope, including "do nothing" alternative and verification of dissolved C assumption. Also, additional model verification/comparison.”

- Reviewer: G-56-01C

1 “value” – The value of the projected work and technical outcome for the budgeted amount of the project, based on your estimate of what the work might cost in research settings with which you are familiar. A commitment of support from industry partners equates to a higher value.

2 “financial commitment” from other sources – A minimum of 50% of the total project must come from other sources to meet the program guidelines. Support less than 50% from Industrial Commission sources should be evaluated as favorable to the application; industry partnerships equates to increased favorability.