

1995 Project Abstract

For the Period Ending June 30, 1997

This project was supported by the MN Future Resources Fund

Title: Sugarloaf Site Assessment and Interpretation

Project Manager: Patricia Maus

Organization: Sugarloaf Interpretive Center Association (SICA)

Address: 31 West Superior Street #401

Duluth, MN 55802

Legal Citation: ML 95, Chp. 220, Art. [none], Sec. 19, Subd.7i.

Appropriation Amount: \$70,000

Statement of Objectives

Survey and document site characteristics, habitat, species, local and regional cultural history, and develop interpretive materials to share the findings with the public. This work strengthens knowledge of North Shore ecology and geology and provides a baseline for long-term monitoring; developing interpretive materials; definition of the relationship between natural and human ecology; data for the demonstration projects. The strength of this project is the integration of unique physical and cultural/historical systems to produce an interpretation of natural and human ecological relationships on the North Shore. The project is enhanced by the ability to demonstrate the nature of the relationships with a geographic information system (GIS).

Overall Project Results

The project results are 44 products including: nine scientific reports (geology, breeding birds, bird migration, land cover, vascular plants, soil, vertebrates and invertebrates, bryophytes, lichens), nine GIS map data layers and a data base, bibliography, archival resources catalog, six slide presentations (3 in CD ROM format and three in slide carousels), 24 page trail guide interpreting 17 trail stops marked with signs, two field guide outlines, a grade 5-7 lesson plan, three table top displays each with a corresponding color brochure. The bryophyte survey revealed a significant finding: there are three bryophyte species at the site never before found in Minnesota!

Project Results Use and Dissemination

There is a large audience - general public, tourist, resident, academic - for this project's North Shore information. Requests for use began only a few months into the biennium, well before the numerous products were complete. We anticipate this demand will continue. The project's GIS map products are featured on the NRRI's world wide web page and in a recent article in *NRRI: NOW*; a UMD geography class used the map layers in a classroom assignment; the project has been featured in two national academic conference poster sessions and a regional conference display - a third national conference presentation will occur this autumn; North Shore residents and tourists have seen project displays, reports and maps at two annual John Schroeder Days events in Schroeder, MN and SICA annual meetings; production of the voluntary 10 minute project summary video utilized the Duluth Public Access Community Television (PACT) studio resulting in the video being repeatedly broadcast on cable at no charge, introducing untold numbers of viewers to the Sugarloaf project and site. The project utilized the DNR program for youth called Minnesota Conservation Corps involving about 20 high school students to work on the one mile trail over two seasons. Lesson plan distribution includes schools in the North Shore's three county area. The GIS data is housed at and accessible from the Grand Portage Natural Resources GIS Lab.

Date of Report: July 1, 1997
LCMR Final Work Program Update Report

I. Project Title and Project Number:

Sugarloaf Site Assessment and Interpretation #C36

Project Manager: Patricia Maus

Agency Affiliation: Sugarloaf Interpretive Center Association (SICA)

Mail Address: SICA

31 West Superior Street #401

Duluth, MN 55802

Phone: (218) 724-2209

A. Legal Citation: ML 95, Chp. 220, Art. [none], Sec. 19, Subd. 7i.

Total biennial LCMR appropriation: \$70,000.

Balance: \$-0- with \$70,000 liquidated

Appropriation Language Sugarloaf Site Assessment and Interpretation

This appropriation is from the future resources fund to the commissioner of natural resources for an agreement with the Sugarloaf Interpretive Center Association for inventories, native habitat restoration, and the interpretation of the natural and cultural characteristics of Sugarloaf Cove. The data collection must be coordinated with the department of natural resources natural heritage program. Reasonable public use and access must be provided. This appropriation must be matched by \$30,000 of nonstate money.

B. Status of Match Requirement:

Match Required: \$30,000.

Amount Committed to Date: \$30,100

Match Spent to Date: \$30,064.20 liquidated

II. Project Summary: The strength of this project is the integration of unique physical and cultural/historical systems to produce an interpretation of natural and human ecological relationships on the North Shore. The project is enhanced by the ability to demonstrate the nature of the relationships with a geographic information systems (GIS).

The local name "Sugarloaf" is applied to a place and a specific geologic feature on the North Shore of Lake Superior approximately 73 miles northeast of Duluth on Highway 61 in Schroeder Township. Generally, the North Shore is characterized by a relatively straight and rocky shoreline with little indentation. The 34 acre Sugarloaf tract of land, however, includes

- a rocky point (Sugarloaf Point) projecting northeastward into Lake Superior
- a low flat portion that connects the point to the main shoreline (the tombolo)
- a steep southeast facing slope that parallels the main shoreline
- a nearly flat terrace at the top of the land nearest the highway

Between the point and the main shoreline is a large cove (Sugarloaf Cove) which ends in a northeastward facing pebble-to-cobble beach. A small stream crosses the southern corner of the property and enters the lake very near the southwestern property line.

The state of Minnesota purchased Sugarloaf in 1988. In 1992, 3.5 acres of the beach and shoreline were designated a Scientific and Natural Area by the Department of Natural Resources.

The remaining acres offer a superb opportunity to interpret complex North Shore geology and biota and the variety of human uses which have occurred on the site over time. Therefore, the natural and cultural characteristics of Sugarloaf Cove area will be inventoried and interpreted to enhance stewardship among North Shore residents, visitors, and students.

III. Six Month Work Program Summary. The project anticipated 42 products from twenty-one specialists and contractors. The final results are 44 products. The 44 include nine GIS map data layers, three CD ROM slide presentations added, a leaflet expanded to a trail guide, and one field guide eliminated. Anticipated demolition of one building was dropped because the building now stands within the expanded SNA placing it under the jurisdiction of the DNR. Results of the bryophyte survey revealed a significant finding: there are three bryophyte species here never before found in Minnesota! The project's map products are already featured on a world wide web page and in a U of M publication; a UMD geography class has used the project's GIS products in classroom project applications; the project has been featured in two academic conference poster sessions and a conference display; North Shore residents and tourists have seen project displays at two annual John Schroeder Days events in Schroeder, Minnesota; cutting the one mile site trail utilized the state of Minnesota's DNR program for youth called Minnesota Conservation Corps (MCC); production of the voluntary but suggested 10 minute summary project video utilized the Duluth Public Access Community Television (PACT) studio resulting in the video being repeatedly broadcast on cable at no charge, introducing untold numbers of viewers to the Sugarloaf project and site. SICA is planning an event for autumn in two locations to celebrate the success of this project. An overall project report will be available at that time.

The project has been virtually problem free. One time setback was experienced when an initial education products contractor was replaced; however, the result was positive: the two replacement contractors (a writer and a designer) quickly determined that the 14 educational/interpretive products planned were inefficiently sequenced and under-funded for quality products to be written, designed and fabricated to an accepted professional standard in the time remaining. The contractors proposed rearranging the work sequence resulting in the most complex nine products to be created first, allowing the writer and designer to draw upon them for the products to follow. Additionally, a workprogram amendment was approved to redirect funds from cancelled building demolition to augment funds needed to produce the educational products. The result is, in spite of the time hurdle, the 14 interpretive products increased to 16, with two in outline form, and only one product eliminated. A notable and unexpected benefit is the digitizing and scanning technology the educational designer brought to the interpretive products; specifically, beyond the three traditional slide-presentation products she created, these three shows are also in the desirable CD ROM format.

·Standard field methods will be used to ground-truth the 34 acre site through the use of transects and grid-sampling.

·Botanical surveys will be carried out at least twice during the growing season, in order to catch species that may be inconspicuous or difficult to identify at some times.

·Observations will be recorded in field books and located on large-scale aerial photographs.

·A digitized version of the map will be generated, with overlays for the various classes of information.

·Special features will also be documented on color slides and videotape where appropriate.

·Botanical and bird and animal lists will be developed, keyed to the various habitat types. Those species identified as Endangered, Threatened, or Special Concern will be especially noted and integrated with the MN DNR's Heritage Program database.

·Comparisons will be made with other SNA's and RNA's and impacted sites on the North Shore. The contract scientists will prepare their own maps and reports.

A.2.c. Materials: Routine field expenses such as auto mileage, field books, etc. will be necessary, as well as enlargement of the air photos. Contractors will supply their own equipment where customary. A hand auger and other simple soil sampling equipment will be acquired, as will a standard plant press and storage cabinets and live traps for small mammals.

A.2.d. Budget:

Total Biennial LCMR Budget: \$14,700

LCMR balance: 0 with \$14,700 liquidated

MATCH: \$4,600

MATCH BALANCE: 0 \$4,600 liquidated

| | | |
|-------------------------|--------|-----------|
| Manager | \$2000 | Contract |
| Soil Scientist | \$1500 | Contract |
| Botanist/Ecologist | \$4000 | Contract |
| Lichens | \$1000 | Contract |
| Bryophytes | \$2500 | Contract |
| Zoologist | \$2000 | Contract |
| Ornithologist | \$3000 | Contract |
| Miscellaneous materials | \$800 | Materials |

| | | | |
|--------|----------|----------|--------|
| Travel | | \$2500 | Travel |
| | Subtotal | \$19,300 | |

A.2.e. Timeline:

| | 8/95 | 9/95 | 10/95 | 11/95 | 1/96 | 3/96 | 6/96 | 10/96 | 1/97 |
|---|----------|------|-------|-------|------|------|------|----------|------|
| PRODUCT #1 | <u>x</u> | | | | | | | | |
| Preliminary breeding bird report | | | | | | | | | |
| PRODUCT #2 | | x | | | | | | | |
| Report and map of habitat types | | | | | | | | | |
| PRODUCT #3 | | | x | | | | | | |
| Report and map of soils | | | | | | | | | |
| PRODUCT #4 | | | | | x | | | | |
| Preliminary-first season-report, terrestrial vertebrates survey | | | | | | | | | |
| PRODUCT #5 | | | | | x | | | | |
| Preliminary bird migration report | | | | | | | | | |
| PRODUCT #6 | | | | | | | | <u>x</u> | |
| Preliminary-first growing season-report, botanical survey | | | | | | | | | |
| PRODUCT #7 | | | | | | | | | x |
| Final report on botanical survey | | | | | | | | | |
| PRODUCT #8 | | | | | | | | | x |
| Final report on terrestrial vertebrates | | | | | | | | | |
| PRODUCT #9 | | | | | | | | | x |
| Final report on bird survey | | | | | | | | | |
| PRODUCT #10 | | | | x | | | | | |
| Preliminary lichen flora report | | | | | | | | | |
| PRODUCT #11 | | | | | | | | x | |
| Final lichen flora report | | | | | | | | | |
| PRODUCT #12 | | | | | x | | | | |
| Preliminary bryophyte habitats report | | | | | | | | | |
| PRODUCT #13 | | | | | | | | x | |
| Final bryophyte habitats report | | | | | | | | | |

A.2.f. Workprogram Update. This work results in original, illustrated survey report and field maps digitized into GIS data layers. This means specific features and data not systematically inventoried at this site in the past are available now in detail to the scientific/academic community, and also to the general public through the interpretive materials (produced in Object C) drawing upon this report. A notable result comes from the bryophyte survey at Sugarloaf Cove which reveals a significant finding: there are three bryophyte species here never before found in Minnesota! Future plans include ongoing monitoring for bird, mammal, plant, and weather data.

B. Title: Survey and Document Local and Regional Cultural History of Site.

B.1. Activity: The Sugarloaf Cove Scientific and Natural Area and site is part of a

local and regional context of environmental and cultural history. The exact nature of human-land relationships and social and cultural history is unknown at this time. The exact nature of resource development and the social and cultural institutions that accompany development require an exhaustive search of archival and field records.

B.1.a. Context within the Project: In order to develop an interpretive program and site plan for the property, the cultural features must be documented and mapped. The site is part of an area on the North Shore of Lake Superior known to have been once inhabited by American Indians. European contact and use of the area occurred with French, British, and later American fur trading. Other resources in the area including fish, lumber, and minerals attracted European and immigrant American resource development. Design of cultural history demonstration projects will require in-depth knowledge of local and regional economic, historical, and social relationships in the area.

B.1.b. Methods:

- Determine available resources in the local and regional area.
- Museums, libraries, and individuals will be contacted to locate and catalog germane archival resources.
- Construct selected bibliography of print, near print and primary resources.
- Standard field methods will be employed to collect and document known data.
 - site survey on foot
 - oral interviews
- In addition, new data sources will be identified, compiled, and documented.
- Topographical maps will be employed to identify the spatial nature of human uses of the area.
- Data will be digitized to produce a map indicating area development and location of human activities.
- All materials will be cataloged for future reference and project development.

B.1.c. Materials: Archival research, bibliography, interviews, and contacts with local and regional businesses and individuals will require travel expenses, audio tape and video cassettes, photocopying, photograph and field notebooks. Topographical maps will be required for digital mapping of features and their attributes. Storage of these collected materials will also be necessary.

B.1.d. Budget:

Total Biennial LCMR Budget: \$7,500 with \$7,500 liquidated

LCMR Balance 0

MATCH: \$5,000.

MATCH BALANCE: 0 with \$5,000 liquidated

| | | |
|-------------------------|--------|-----------|
| Manager | \$3000 | Contract |
| Historian | 4000 | Contract |
| Geographer | 3000 | Contract |
| Archeologist | 3000 | Contract |
| Miscellaneous materials | 1000 | Materials |
| Travel | 2500 | Travel |
| GIS Model (see Title D) | | |

Subtotal \$12,500

B.1.e. Timeline:

| | 3/96 | 6/96 | 9/96 | 1/97 | 6/97 |
|----------------------------|------|------|------|------|------|
| PRODUCT #1 | | | | | |
| Bibliography | x | | | | |
| PRODUCT #2 | | | | | |
| Field Work | | x | | | |
| PRODUCT #3 | | | | | |
| Archival Resources Catalog | | | | x | |
| PRODUCT #4 | | | | | |
| GIS Database | | | | | x |
| PRODUCT #5 | | | | | |
| Report: First Draft (3/97) | | | | | |
| Report: Final Draft | | | | | x |

B.1.f. Workprogram Update. This work results in an original, illustrated cultural survey report, an archaeology report, and field maps digitized into a GIS data layer. This means specific significant cultural features not systematically inventoried at this site in the past are available now in detail. Future plans include following up on the cultural geographer's suggestion of organizing an oral history project to interview senior employees of the Consolidated Paper Company, Inc. of Ashland, Wisconsin, together with former retired employees of the company in Minnesota. This work will reveal important history of the log rafting operation originating at Sugarloaf Cove. He also respectfully opined the archaeology report was incomplete, and recommended the historical record would benefit with an in-depth archaeological survey. For example, there was no mention in the archaeology report of the ship wreck just beyond the Sugarloaf Point, where a submerged vessel still lies.

C. Title: Development of Interpretive Materials. To provide interpretation for heightened public awareness of the physical and cultural characteristics of the North Shore of Lake Superior, Objective C will produce educational materials to address three public needs:

- specific information and local examples

- recognition of ecological relationships and social change
- increased participation in learning and doing

The materials will be used within SICA's educational program and will be offered to other organizations and public agencies. Each of the categories of interpretive materials and methods listed below will contain these emphases in different formats. Survey results obtained later in the biennium will provide topics for further interpretive materials beyond the scope of this project.

C.1. Activity: Developing published materials and guides.

C.1.a. Context within the project: Documentation of natural and cultural features of the site by survey and mapping (Objectives A, B) provides specific and thorough information for the production of interpretive materials (Objective C).

C.1.b. Method: Contracted writers and educators will use the Sugarloaf site survey, incorporating other knowledge and educational methods, to produce informational materials on specific topics, both for site interpretation and community education as defined by SICA and cooperating organizations. During development, materials will be reviewed and tried by cooperators and by others before final publishing.

C.1.c. Materials: Standard writing, editing, illustrating and printing services will be contracted. Consulting, proofing, and guidance from experts will be needed. Materials needed should be minimal.

C.1.d. Budget

Total Biennial LCMR Budget: \$18,950

LCMR Balance: -0- with \$18,950 liquidated

MATCH: \$2,350

MATCH BALANCE: 0 with \$2,350 liquidated

| | | |
|----------------------|------|----------|
| Manager | 4000 | Contract |
| Educational Writer | 4500 | Contract |
| Educational Designer | 3000 | Contract |
| Printing | 7800 | Contract |

Subtotal 21,300

C.1.e. Timeline:

| | 1/96 | 6/96 | 1/97 | 3/97 | 6/97 |
|-------------------------------|------|------|------|------|------|
| PRODUCT #1 | | | | | |
| Photo and map enlargements | | x | | | |
| PRODUCT #2 | | | | | |
| Lesson plan for classroom use | | | | x | |
| PRODUCT #3 | | | | | |
| Brochures | | | | x | |

PRODUCT #4

Site Field Guides

- 1) A Guide for Stewardship of the Land x
- 2) Natural History Survey—condensed version, FINAL x
 - Part a—Soils, habitat (x)
 - Part b—Geologic features (x)
 - Part c—Botanical, terrestrial vertebrate, bird (x)
- 3) A Cultural History of the Sugarloaf Area, including first person accounts of historical significance x

C1.f. Workprogram Update. Budget was amended. First contract was replaced which resulted in some time delay. Lost time was largely overcome thanks to the superb efforts of the writer and designer. The lesson plan, designed for grades 5-7, is applicable at a school, home, or the Sugarloaf location. We are eager for responses about the plan from educators on the North Shore, Wolf Ridge ELC, and selected schools in Duluth. A brochure was produced to accompany each of the three displays produced in c.2. The public cannot walk away with one of the displays, but each brochure reiterates the display content and can be carried away to review the information presented, or to share the information with someone else. Due to the complexity and amount of data in the surveys and reports produced from Objects A and B, the planned field guides on natural and cultural history are now in detailed outline form, not final form. Future plans include preparing the two guides for publication. Task Force members and the educational writer determined a field guide format on the subject of stewardship was a problematical pairing of format and subject; this field guide was postponed. Future plans include a thorough educational product on stewardship: a principle central to our organization and the site. Hindsight indicates educational product production is indeed complex work requiring appropriate provision of time. We pressed the writer and designer beyond appropriate limits and are deeply grateful for their understanding of our mistake in this area. In future, the writer and designer would be found among the first contractors sought, not the last.

C.2. Activity: Content development and construction of three displays.

C.2.a. Context within the project: Three displays on the topics geology, ecology, and cultural history will be designed and constructed for placement on a rotating basis in public places.

C.2.b. Method: The displays will incorporate photos, diagrams, maps, and information derived from field surveys and this project's published materials. Using professional museum construction and content standards, appealing visuals and text will be mounted on portable display panels for public access.

C.2.c. Materials: Portable display panels, photo enlargements, printed interpretive signs, and brochures will be used.

C.2.d. Budget:

Total Biennial LCMR budget: \$2,450
LCMR Balance: 0 with \$2,450 liquidated
MATCH: \$4,450
MATCH BALANCE: 0 with \$4,450 liquidated

C.2. Three Displays:

| | | |
|----------------------|--------|-----------|
| Educational Designer | \$2900 | Contract |
| Materials | 4000 | Materials |

Subtotal \$6900

C.2.e. Timeline:

| | 1/96 | 6/96 | 1/97 | 6/97 |
|------------------------|------|------|------|------|
| PRODUCT #1: Display #1 | | x | | |
| PRODUCT #2: Display #2 | | | x | |
| PRODUCT #3: Display #3 | | | | x |

C.2.f. Workprogram Update. Budget was amended. First contract was replaced which affected the amount of time needed to complete these products. Due in large measure to the superb talents of the writer/design team, the displays feature text, digitized photographs and maps. It is significant that the concept of relationships between natural features, cultural features and history are being offered to the public. The finished table top displays area already in use, including use at John Schroeder Days in Schroeder, Minnesota, on June 27, 28 and 29, 1997.

C.3. Activity: Production of presentation packages.

C.3.a. Context within the project: Three presentations will be developed from field surveys and from SICA's interpretive mission for delivery to audiences. Topics will include land stewardship, ecosystem dynamics, natural communities, and cultural histories.

C.3.b. Method: Scripts will be written and printed; and audio-visuals selected. Printed materials for distribution will be included. All will be packaged for use by presenters identified by cooperators and by collaborative members from the network of educational and interpretive organizations on the North Shore called Shorelink.

C.3.c. Materials: Audio-visuals, slides, charts, graphs, maps, and brochures. (Microphone, amplifier, and projectors will need to be rented at first until donated equipment is available).

C.3.d. Budget:

Total LCMR biennial budget: \$500
LCMR Balance: 0 with \$500 liquidated
MATCH: \$5,500
MATCH BALANCE: 0 with \$5,500 liquidated

| | | |
|----------------------|--------|----------|
| Educational Designer | \$3120 | Contract |
| Educational Writer | \$1000 | Contract |
| Materials | \$1880 | |
| Subtotal | \$6000 | |

C.3.e. Timeline:

| | 1/96 | 6/96 | 1/97 | 6/97 |
|-------------------------------------|------|------|------|------|
| PRODUCT #1: Presentation Package #1 | | x | | |
| PRODUCT #2: Presentation Package #2 | | | x | |
| PRODUCT #3: Presentation Package #3 | | | | x |

C.3.f. Workprogram update. The budget was amended. The two contractors brought technology to the work resulting in slide presentations in both a traditional "slide carousel" format for locations where that is the desired or only option, and the same slide images in a CD ROM format for presentation locations that desire or utilize only computer technology. The slides and corresponding scripts have been designed to be used as three separate presentations or one longer presentation with three parts.

C.4 Activity: Plan and implement site interpretation:

C.4.a. Context within the project: In conjunction with Objective D: Demonstrations, interpretation experiences will be designed for the visiting public.

C.4.b. Method: Based on site surveys and demonstrations of native plant and habitat restoration, the following will be developed: an interpretive trail, interpretive stations, and leaflets.

C.4.c. Materials: Construction materials, tools, and labor costs will be primarily subsumed under Objective D: Demonstrations. Cost of theme development and printed materials will be budgeted here.

C.4.d. Budget:

Total LCMR biennial budget: \$-0-
LCMR Balance: \$-0-
MATCH: \$3,500
MATCH BALANCE 0 with \$3,500 liquidated

| | | |
|------------------------|--------|-----------|
| Environmental Designer | \$1760 | Contract |
| Printing | 740 | Contract |
| Material | 1000 | Materials |
| Subtotal | \$3500 | |

| | | | | | | |
|-----------------------|-------------------------|-------------|-------------|-------------|-------------|-------------|
| | C.4.e. Timeline: | | | | | |
| | 1/96 | 6/96 | 1/97 | 4/97 | 5/97 | 6/97 |
| PRODUCT #1: | | | | | | |
| Leaflets | | | x | | | |
| PRODUCT #2 | | | | | | |
| Interpretive trail | | | | x | | |
| PRODUCT #3 | | | | | | |
| Interpretive stations | | | | | x | |

C.4.f. Workprogram Update. The first contract was replaced resulting in lost work time. Nevertheless, the one mile trail flagged and cut in the first season (July, 1996) with consultation and cooperation of SNA staff, now has 17 identified, marked and interpreted stops tied to one of three topics: ecology, natural or cultural history. Additionally, the leaflet was upgraded to a 24 page self-guiding trail guide in booklet format. Subsequent to site tours in May, 1997, senior citizen trail walkers requested "a place to sit down." Eight post and lintel style benches at overlook areas and appropriate locations on the trail meet this need. One 10 foot long wooden "bridge" assists visitors over a low, intermittent water-way. It is significant that high school aged participants with the Minnesota Conservation Crew assisted with the trail. Speaking with the kids and the crew leaders, this was the first time some of these young people had ever been on the North Shore! We hope they will return with their families: this is the significant outreach this project results in.

D. Title: Demonstration:

D.1. Activity: The strength of this project is the integration of unique physical and cultural/historical systems to produce an interpretation of natural and human ecological relationships on the North Shore. The project is strengthened by the ability to demonstrate the nature of the relationships with a geographic information system. Selected sites on the property will be analyzed for potential restoration and interpretation. These sites will include:

- the dense conifer plantations;
- the heavily disturbed alder lowland;
- the existing structures; and
- isolated cultural features within the site.

Experimental sites will be monitored and observed over a long-term period, beyond this biennium.

D.1.a. Context within the project: The Sugarloaf site exemplifies the nature of human interaction and modification of natural areas along the North Shore. Each modification, for whatever purpose, has altered to varying degrees the physical setting. The process of physical resource restoration will require land treatments to return much of the site to a natural, self-perpetuating condition. Some of the results should be applicable to other North Shore sites. Potential restoration of historical and cultural uses of the Sugarloaf site provides an opportunity for documentation of human use of the North Shore. This knowledge adds to the literature of the region.

D.1.b. Methods: Relationships between natural site modification and human uses will be identified with the use of the GIS. The GIS database will serve as a tool for monitoring response to land treatments and for human use documentation. Natural site restoration will include

- preparation
- treatment, and
- monitoring for success in achieving the desired outcomes.

Specific methods of land treatment will depend in part on the natural resource inventory, as well as the desired outcomes for each disturbed habitat type. It is possible that some of the artificially-filled lowland area may be excavated to restore an original wetland. Because this will be a long-term project, it cannot all be accomplished in this biennium, but a substantial part of it will be completed within the biennium. Critical areas within the site which attest to human land use and cultural preferences will be identified and monitored to assess potential impacts due to increased visitation to the site. Specific methods include:

- Identification of spatial and ecological relationships between physical and cultural systems within temporal contexts with the use of GIS software;
- Test plots will be established and desired plant species to be propagated will be hand planted;
- Existing conifer plantations will be thinned and perhaps interplanted with other species;
- Records (including GIS database) will be kept on all areas treated, with date(s) and type of treatment;
- Interpretive materials and exhibits related to these experiments will be documented (Objective C);
- Potential for archeological excavation will be assessed;
- Potential and desirability for restoration of standing structures will be determined;
- Critical areas of historic/cultural significance will be identified and monitored for deterioration with visitation;
- Records on all cultural features will be kept (including the GIS)
- Documentation of spatial and ecological relationships will produce a manuscript for later interpretive and decision-making purposes; and
- Interpretive materials and exhibits relating to historical/cultural research will be developed (Objective C).

D.1.c. Materials: A modest amount of hand equipment such as wheelbarrows, planting spades, trowels, shears, saws, etc. will be required. Heavier equipment will be rented or contracted. Materials for interpretive signage are included in the budget.

wheelbarrows, planting spades, trowels, shears, saws, etc. will be required. Heavier equipment will be rented or contracted. Materials for interpretive signage are included in the budget.

Total Biennial LCMR Budget: \$26,300

MATCH: \$3,600

| | | | |
|--------------------|----------|-----------|-------------|
| Manager | \$3000 | Contract | |
| Consultant (g/b)* | 1000 | Contract | *(geologic/ |
| Consultant (c/h)** | 1000 | Contract | biological) |
| Materials (g/b) | 400 | Materials | |
| Travel (g/b) | 700 | Travel | |
| Travel (c/h) | 1200 | Travel | |
| GIS | 19000 | Contract | |
| Subtotal | \$26,300 | | |

8/95 11/95 2/96 3/96 11/96 4/97 5/97 6/97

Preliminary plan for site restoration plots— 10/95

Progress report and map, first season—

Plan for second season **x**

Progress report and map, second season x

Final report and map xDocumentation, signage **x**

x

17

Project Deliverables and Estimated Cost

Objective A. Survey and document site characteristics, habitat, and species.

Objective B. Survey and Document Local and Regional Cultural History of Site

Objective C. Development of Interpretive Materials

18

| | | | | |
|-----------------------|-----------------|--------|--------|------|
| Field Guides | 3/97, 6/97,6/97 | 4900 | 3850 | 1050 |
| Brochures | 6/97 | 13,300 | 12,000 | 1300 |
| Displays | 6/97 | 6900 | 2450 | 4450 |
| Presentation Packages | 6/97 | 6000 | 500 | 5500 |
| Leaflets | 1/97 | 900 | -0- | 900 |
| Trail | 4/97 | 1000 | 0- | 1000 |
| Interpretive Stations | 5/97 | 1600 | -0- | 1600 |

| | | | | |
|------------------------------------|--|----------|----------|----------|
| Subtotals | | \$37,700 | \$21,900 | \$15,800 |
| Objective D. Demonstration. | | | | |

| | Date | Total | LCMR | Match |
|----------------------------------|-------|----------|----------|--------|
| Preliminary plan | 10/95 | \$1700 | \$1700 | \$-0- |
| Progress rpt, map, first season | 2/96 | -0- | -0- | -0- |
| Plan for second season | 3/96 | 1200 | -0- | 1200 |
| Progress rpt, map, second season | 11/96 | 1200 | -0- | 1200 |
| Final rpt and map | 5/97 | 1200 | -0- | 1200 |
| Documentation, signage | 5/97 | 2000 | 2000 | -0- |
| GIS map | 1/96 | 6500 | 6500 | -0- |
| GIS database | 4/97 | 12500 | 12500 | -0- |
| Subtotals | | \$26,300 | \$22,700 | \$3600 |

VI. Evaluation:

The success of our project will be determined by the following measures:

1. The production of quality surveys, reports, and interpretive materials within the time frame indicated.
2. The responses of peers and cooperators.
3. Ability to meet needs expressed by cooperators and users of materials and information.
4. Public response to materials and attendance at demonstration, displays, and presentations.
5. Long range: Contribution to the growing awareness of critical long range planning and policy for land use.

VII. Context Within the Field:

A) Natural history: The geological features of the Sugarloaf site were the primary reason for the establishment of the Scientific and Natural Area including the point and beach. The ancient volcanic bedrock, common to most of the North Shore, is of great scientific interest, and Professor J. C. Green has included Sugarloaf Point in many professional field trips and guides as well as a research paper. The detailed study in the current project will add to our

understanding of the geological processes associated with the Midcontinent Rift 1.1 billion years ago, and will tie in with geological maps and guides for the North Shore State Parks now being completed by Green for the Department of Natural Resources.

The biological inventory of the site will also be the first of its kind for the ecologically important North Shore. The data obtained will be integrated into the DNR's Heritage Program and will complement inventories for SNA's in other parts of the state.

B) Cultural history: Historical and cultural systems, interacting with the geological and biological features of Sugarloaf, present a challenging opportunity for understanding human endeavor and natural change on this site.

Dr. Martha Henderson's specializations in

- human ecology
 - land tenure
 - public land management
 - American Indian studies
- and her relevant research in
- land management
 - forestry
 - land/recreation public policy, and
 - ethnographic studies with American Indians

address the cultural and historical aspects of the Sugarloaf site. Her field study experience combined with her GIS technology experience and use offer the wide range of methods necessary for inventory and interpretation of the site.

The tangible products resulting from this project will be the first multi- discipline study (geologic, biologic, environmental, and cultural/historical) of its kind on the North Shore. This ground-breaking work bridges traditional field methods of research and state-of-the-art computer mapping technology.

C) Interpretive Materials: Minnesota has been at the forefront of environmental education for decades. Much of the successful environmental education today, both for students and the general public, is transmitted though established organizations such as

- schools, colleges, and environmental learning centers,
- public information services
- conservation associations of long standing.

Sugarloaf data, with its immediate relevance to other North Shore locations, will provide tangible and locally familiar examples to current Minnesota programs. SICA will use this basic information in its public interpretive programs, on-site and in the community. This project will provide a model for others through the materials and methods we devise and report.

VIII. Budget Context:

A) For the period ending June 30, 1995:

1) The 22 board members of Sugarloaf Interpretive Center Association represent many communities of the North Shore, and additionally, Duluth, and the Twin Cities. Of diverse

professional background and age, they have brought serious consideration to this LCMR Grant Proposal because they see it enabling the mission they feel so committed to. Portions of six board meetings held from September, 1993, to November, 1994, have discussed and evaluated this critical plan.

2) Additionally, LCMR Task Force members, a committee of the board, have readily donated professional expertise, many hours, long distance calls, travel, correspondence, postage, printing, photocopying, software, and computer time and expenses.

B) During the period beginning July 1, 1995:

1) The SICA board members will continue to participate and assist as needed in this project's realization.

2) The LCMR Task Force members will continue the active role of donating professional expertise to direct and complete this project.

3) Computer Donation: SICA will seek an in-kind donation of computer hardware and software in order to store and reproduce the data inventory.

4) Data Management Area: SICA will seek an in-kind donation of space overhead, and utility expenses for data management.

IX. Dissemination:

- SICA published materials which will be distributed to schools, universities, libraries, and all other educational and public service organizations upon request at no charge beyond postage and handling

- SICA's public interpretive programs which will showcase findings and consistently update the public on survey, mapping, and test plot results

- SICA displays in public settings and upon request, at conferences and other group meetings

- free interpretive demonstrations about Sugarloaf will be available to the public

- supplying GIS mapping results of the site to the statewide GIS network

- professional publications and conference participation which accrue from this natural history and cultural history survey

X. Time:

All products as described in this project can be completed within the biennium. The scientific and historical surveys will provide baseline inventory and potential for comparison in subsequent years as SICA's work continues.

XI. Cooperation with Other Organizations:

SICA's existence and function is built on a network of interaction and cooperation with other agencies, institutions, and organizations along the North Shore and beyond. Support for the proposal has been strong and consistent.

Cooperators and Role

From SICA's inception it has appreciated the co-sponsorship of public presentations on the North Shore, in Duluth, and in the Twin Cities. Shared hosting of SHORELINK network meetings regularly occurs along the Shore. Membership support from many sister organizations and residents on the North Shore is growing.

- Bay Area Historical Society, Silver Bay

Bay Area Historical Society Vice President, Patricia L. Reed, has sent a letter stating support of the LCMR project as proposed, with particular interest in the cultural aspects.

- Lake County Historical Society, Two Harbors

Lake County Historical Society administrator, Jeff McMorrow, has specifically proposed assistance to SICA with a letter of support citing enthusiasm for the cultural history component of the LCMR project.

- Minnesota Department of Natural Resources

SICA welcomes the excellent opportunity of collaboration with the professionals who comprise the department. Their expertise, counsel, and research resources will significantly aid the objectives anticipated. Robert Djupstrom is known to many of us at SICA by his work in the SNA program, for example, and he is appreciated as our project liaison to the DNR.

- Minnesota Extension Service

Educator, Robert E. Sopoci, stated his "heartly endorsement" of the educational purposes of the LCMR project of SICA. He states he is "excited" about the Extension Services' participation.

- Northeast Minnesota Historical Center

Archival, map, photograph and print collections of the Center are resources important to the cultural history of the Sugarloaf area. Staff of the Center has offered professional counsel and assistance toward the bibliography and cataloging tasks identified in the LCMR proposal. Pat Maus, Administrator of the Center, also serves on the board of SICA, comprising its archives committee.

- Wolf Ridge Environmental Learning Center

In President Jack Pichotta's letter of support, he accurately restated the fact of Minnesota's leadership position in matters of environmental education. He enthusiastically placed the LCMR proposal by SICA in the context of that critical work; stating further, that research and documents produced at Sugarloaf would provide a "case study of land use that will enhance our [Minnesotans] position [as leaders.]" He states specifically that assistance will be ours in development and dissemination of educational materials.

Amount of time the project manager will be spending on the project:

Based on the budget amounts totalling \$10,500 in this proposal, the project manager will work 525 salaried hours at \$20 per hour.

Percent of time each cooperator will be spending by objective:

| Cooperator | % time | Objective |
|---|--------|-----------|
| Minnesota Extension Service | 100% | A, C,D |
| Minnesota Department of Natural Resources | 100% | A, C,D |
| Northeast Minnesota Historical Center | 100% | B,C |
| Wolf Ridge Environmental Learning Center | 100% | B,C,D |
| Lake County Historical Society | 100% | B,C |
| Bay Area Historical Society | 100% | B,C |

XII. Reporting Requirement:

Semiannual six-month workprogram reports will be submitted not later than January 1, 1996, July 1, 1996, January 1, 1997, and a final six-month workprogram update and final report by June 30, 1997. We welcome any additional opportunities to report to legislators and citizens.

XIII. REQUIRED ATTACHMENT:

1. Qualifications of Principal Investigators:

- Vitae
- Relevant Publications

2. Project Staffing Summary