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PREFACE

Scientific and Natural Areas are areas of exceptional natural quality which have been formally designated for preservation, protection and management of the values inherent in their natural conditions. These values, which are for the public welfare, include use as living museums, sites for scientific study, areas for teaching natural history and conservation, places of historic or prehistoric interest and scenic beauty, and habitats for rare and endangered species of plants and animals.

The Scientific and Natural Area (SNA) system was established in 1969 and further defined by the Outdoor Recreation Act of 1975 (ORA). Nominated areas must substantially satisfy a set of rigorously drawn criteria outlined in the ORA to qualify for designation. At present there are 27 designated SNA's and several more are pending.

Helen Allison Savanna was acquired by the Nature Conservancy (TNC) because knowledgeable individuals reported that the oak savanna community is an important element of Minnesota's natural heritage. It was designated a State Scientific and Natural Area (SNA) in May of 1981. The 1979 inventory, a cooperative project of the Minnesota Department of Natural Resources (DNR) and the Nature Conservancy, described and thoroughly documented many of the tract's features. This information was used to develop a site management plan.

The purpose of this management plan is to describe the specific actions which will be taken in managing Helen Allison Savanna. Section I describes the general considerations which affect the management of the tract. First, TNC management guidelines are outlined. Then the Minnesota Scientific and Natural Area (SNA) Program, its policies, rules and regulations are described. State laws affecting management are also briefly outlined. Section II describes the site-specific detailed actions to be implemented on Helen Allison Savanna. Finally, guidelines for modifying and reviewing the plan are noted in Section III.

MANAGEMENT CONSIDERATIONS

Introduction

Management of this SNA will be a cooperative effort of the Nature Conservancy and the SNA program. TNC will have the primary responsibility for implementing this plan. SNA's role, for the present, will be to provide management assistance wherever possible; especially in monitoring and surveillance. SNA designation also provides the maximum legal protection and recognition for the preserve. All management objectives and procedures will be consistent with SNA policies.

The Nature Conservancy's Management Guidelines

TNC's management guidelines govern what management actions will be implemented on Helen Allison Savanna. The two primary TNC stewardship objectives are as follows:

> The primary objective is to maintain areas so that they sustain species, communities, and natural features that make significant contributions to the preservation of natural diversity. The secondary objective is to determine and promote land uses compatible with the preservation of natural diversity on the preserve, in order to foster local support for individual preserves and recognition by the general public of the values of natural diversity preservation.
>
> (Stewardship Guide for Preserve Committees, 1978)

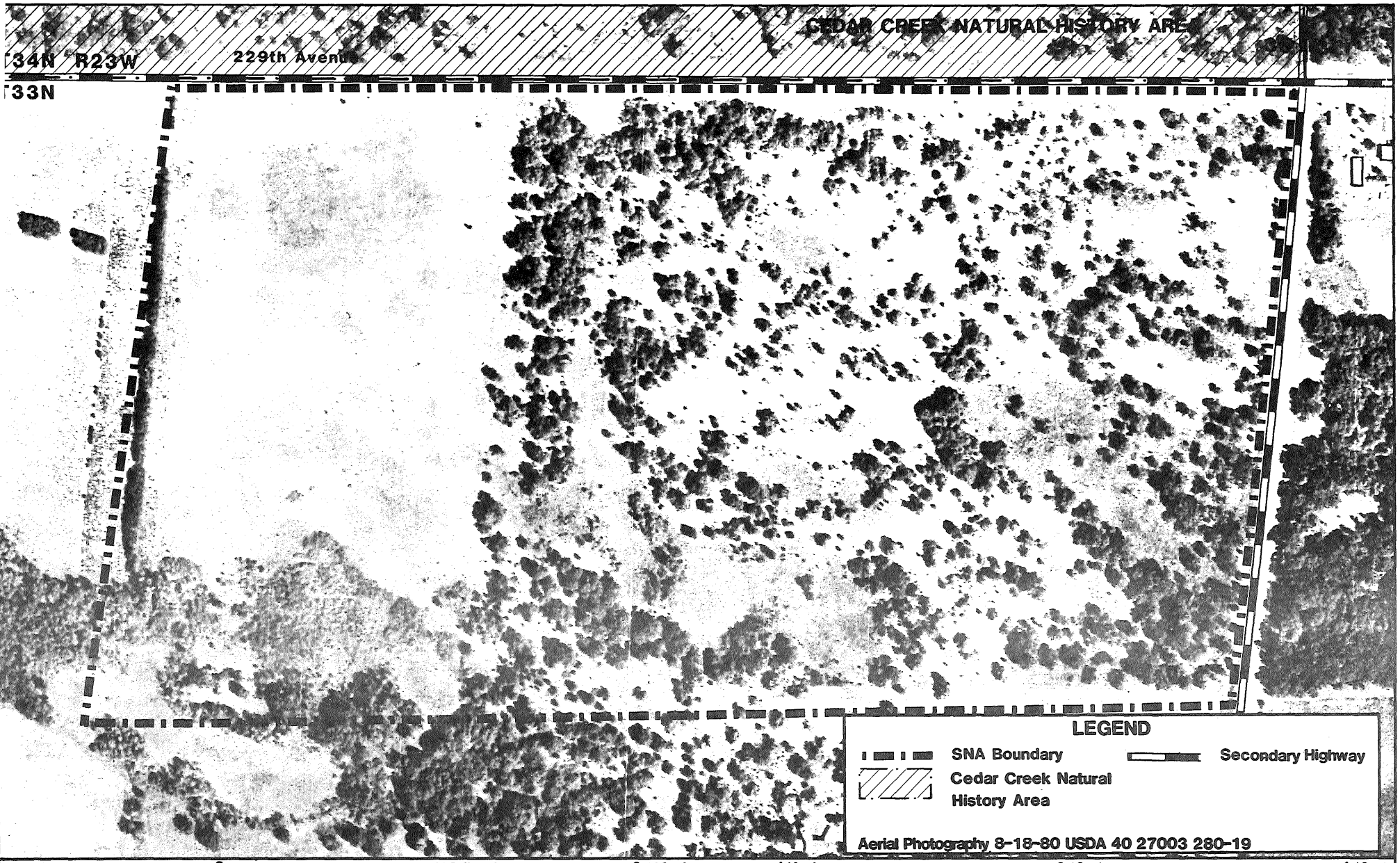
The primary objective, the ecological objective, is closely tied to determining which of the preserve's resources are most significant for preservation. The Minnesota Natural Heritage Program will play a major role in identifying which elements of the preserve are most significant. This assessment in turn determines how the preserve will be managed. For example, of an endangered species is the most significant element on the tract and that species requires a successional plant community, then management should be directed at perpetuating this successional stage in order to preserve the endangered species. If, on the other hand, the most significant element on the tract is a climax community then a different management program is necessary.

Management may be directed at species, communities, natural features, etc. In January, 1978 the Minnesota Chapter of TNC developed a Manual for stewardship of Nature Conservancy lands in Minnesota. The following guidelines are taken from this document.

If the occurrence of one or more species are determined to be significant on a preserve, TNC will:

1. MAINTAIN POPULATION LEVELS SO THAT THE SPECIES' CHANCES OF LONG TERM SURVIVAL ON THE TRACT REMAIN STABLE OR ARE IMPROVED.

Management to increase the population of any species should be integrated with perpetuating other native species and maintaining the tract as a diverse



HELEN ALLISON SAVANNA SNA

and naturally functioning system. There may be important ecological factors regulating the population size of significant species and it may not be desirable in all cases to attempt to increase populations.

2. MANAGEMENT OF SPECIES' POPULATIONS WILL BE ACCOMPLISHED PRINCIPALLY THROUGH MANAGEMENT OF THE SPECIES' NATURAL HABITAT AND THROUGH PROTECTION OF THE SPECIES FROM VANDALISM, POACHING AND SIMILAR THREATS.

Thus, managers generally will not use artificial means, such as direct control of natural predation, manipulation of food supply through food plots, or improvement of nesting habitat through plantings or artificial shelters to manage populations. Exceptions to this guideline should only be made in certain circumstances when special actions are necessary for the survival of a species or to redress an imbalance due to a factor such as predator extinction.

Management of plant communities should also be guided by an assessment of the preserve's communities. Where management is directed toward plant communities TNC will:

3. MAINTAIN OR RESTORE SELECTED PLANT COMMUNITIES AS NEAR AS POSSIBLE TO THE CONDITIONS THEY WOULD BE IN TODAY HAD NATURAL ECOLOGICAL PROCESSES NOT BEEN DISRUPTED. THIS GUIDELINE WILL BE ACHIEVED, TO THE EXTENT FEASIBLE, BY:

   A) PERPETUATING AND AS NECESSARY REESTABLISHING NATURAL ECOLOGICAL PROCESSES: AND
   B) MINIMIZING IMPACTS OF CHEMICAL, MECHANICAL AND SIMILAR ARTIFICIAL PROCESSES ASSOCIATED WITH HUMAN INFLUENCES.

Some preserves will be protected because they contain significant geological, hydrological or other natural features. The same Heritage Program methodology used to evaluate species and plant communities should be used to assess the importance of these features. TNC will:

4. MAINTAIN NATURAL FEATURES IN PRISTINE CONDITION AND PROTECT THEM FROM UNNATURAL CORROSION AND DETERIORATION. THIS WILL BE ACCOMPLISHED PRIMARILY THROUGH REGULATING THE LEVELS AND TYPES OF HUMAN USE AND IMPACTS THAT ACCELERATE CORROSION AND DETERIORATION.

In special instances steps may be taken to prevent or diminish even natural processes of deterioration in order to perpetuate significant natural features and other natural elements.

TNC's secondary objective, the social stewardship objective, is to foster local support for preserves and recognition by the general public of the value ofnatural diversity preservation. The future preservation of natural areas depends upon a constituency of users and supporters. TNC should foster the development of such a constituency by encouraging the appropriate use of preserves by educators, students, researchers, and other members of the general public. The management plan should identify appropriate types and levels of use, and specify programs to facilitate such use.

To achieve the above stewardship objective TNC will:

5. INVOLVE LOCAL RESIDENTS, USERS, AND OTHER INTERESTED MEMBERS OF THE PUBLIC IN DISCUSSIONS ABOUT STEWARDSHIP PLANNING AND IMPLEMENTATION.

6. PROVIDE INFORMATION ABOUT THE PURPOSE AND NATURAL QUALITIES OF THE PRESERVE TO THE LOCAL COMMUNITIES AND PRESERVE USERS.

7. KEEP THE PRESERVE AS FREE FROM HAZARDS TO USERS AS POSSIBLE.

8. CONDUCT STEWARDSHIP ACTIVITIES IN A WAY THAT MINIMIZES UNNECESSARY ANNOYANCES AND HAZARDS TO RESIDENTS NEAR THE PRESERVE.

9. UTILIZE PRESERVE DESIGN, SUCH AS THE PLACEMENT OF TRAILS, PARKING AREAS AND SIGNS, TO BOTH OPTIMIZE ACCESSIBILITY OF THE PRESERVE AND MINIMIZE UNDESIRABLE HUMAN IMPACTS TO THE EXTENT THAT SUCH DESIGN MEASURES DO NOT CONFLICT WITH OTHER PRESERVE OBJECTIVES.

10. PROMOTE APPROPRIATE RESEARCH AND EDUCATIONAL USE OF THE PRESERVE.

The two major stewardship objectives--ecological and social-- may at times conflict with each other. People crush vegetation, erode and compact soil, alter the behavior of wildlife and transport onto preserves the seeds of unwanted plants that stick to shoes and clothing. It is the Nature Conservancy's position that:

11. ECOLOGICAL CONSIDERATIONS SHOULD BE WEIGHED MORE HEAVILY THAN HUMAN CONSIDERATIONS WHEN THERE IS A THREAT THAT SIGNIFICANT NATURAL ELEMENTS ON A PRESERVE WILL BE ALTERED OR SIGNIFICANTLY DAMAGED.

The Minnesota Scientific & Natural Area (SNA) Program

Since the SNA Program is also involved in the stewardship of Helen Allison Savanna a description of the SNA Program management policies, rules and regulations, and pertinent legislation is included here. Helen Allison Savanna will be managed in accordance with these statutes, policies, rules and regulations.

The SNA Program is located in the Minnesota Department of Natural Resource's (DNR) Division of Fish and Wildlife. The Scientific and Natural Areas Act (M.S.A. 84.033) of 1969 created the program. It authorized the Commissioner of the DNR to acquire, designate and maintain SNA's, and to adopt pertinent rules and regulations governing the use of the areas.

The DNR issues rules and regulations governing the SNA's in 1973 (Minnesota Reg. NR 300-303). The rules and regulations, still in effect, cover permitted and restricted uses of SNA's, provide for environmental protection, prohibit certain uses and acts, and establish legal penalties for violations. The rules and regulations also state that the Commissioner of the DNR can restrict: 1) travel within the unit; 2) the hours of visitation; and 3) the number of visitors within the area at any given time.

In 1975 the Scientific and Natural Areas Act was amended by the Outdoor Recreation Act (ORA; M.S.A. 86A.05). This statute further defined and more adequately funded the program. It included SNA's within the Minnesota Outdoor Recreation System, defined the purpose of SNA's, delineated resource and site qualifications, provided for administration of the units, and classified SNA's into one of three "use designations": Research, Education and Public Use. The law states that only scientific, educational or public uses which do not impair or threaten the preservation objectives are to be allowed. Physical development is limited to facilities absolutely necessary for protection, research and education projects, and when appropriate for interpretive services. Finally, the statute requires plans be drawn up for each SNA. No development funds can be spent by the DNR until these plans have been approved.

To be designated an SNA, a site must: 1) contain elements of "exceptional scientific and educational value," and 2) "be large enough to preserve their inherent natural values and permit effective research or educational functions." The SNA designation process begins when an individual or group nominates an area. The SNA staff notifies the DNR Commissioner's Advisory Committee (CAC) on SNA's and the Minnesota Natural Heritage Program of all new nominations. The SNA staff then is responsible for conducting a field survey of the site to determine the site's qualities, vulnerability, extent of man-made disturbances and management practices which may be needed. The results of this field survey are forwarded to the Heritage Program which then evaluates the significance of the site's elements. Using the field survey data and the Heritage Program evaluation the CAC assesses the site and sends a recommendation to the SNA Program. Based on the CAC recommendation, the priorities for protection as established by the Heritage Program, and on other considerations, such as the opportunity to acquire the area, the SNA Program sets a priority for designating the area as a SNA. Recommended proposals are next sent to the Director of the Wildlife Section for approval. Finally, the proposal is passed on to the Commissioner of the DNR. If the Commissioner approves the site then the land rights are acquired either by fee simple purchase, lease, donation, or conservation easement. Once the Commissioner determines sufficient land rights have been acquired to administer the area as a SNA, it is formally designated. The formal designation includes the classification of the site as either a Research, Educational or Public Use Unit.

If and when Helen Allison Savanna is designated a SNA, the Outdoor Recreation Act requires that a master plan for the area be completed and approved. The SNA Program is responsible for completing the SNA plan. After the SNA draft plan is completed the CAC and DNR review and approve it. An announcement is then made to the public and other state agencies regarding the existence of the plan. Interested persons and agencies are invited to review and comment on the plan within thirty days of the announcement. Comments received by the DNR are reviewed and appropriate changes are made in the plan. Finally, the revised plan is submitted to the State Planning Agency for review. After the DNR reviews this agency's recommendations, and makes the necessary changes, the plan is officially approved.

In July, 1979 the DNR issued a policy statement on SNA's. These policies will affect the management of Helen Allison Savanna if and when it is designated. The policies are divided into Designation, Resource Management, and Human Use Management. To ensure the preservation of the SNA's elements of natural diversity it is the DNR's policy to:

1. IDENTIFY AND CATALOG THE NATURAL FEATURES OF THE AREA.

2. ENSURE THAT RESOURCE MANAGEMENT IS DIRECTED TOWARD PRESERVATION AND MAINTENANCE OF ALL SIGNIFICANT ELEMENTS OF THE AREA.

3. MANAGE THE AREA IN SO FAR AS POSSIBLE, TO PERPETUATE OR ESTABLISH NATURAL PROCESSES AND LIMIT THE EFFECTS OF HUMAN ACTIVITIES.

4. PROMOTE WISE STEWARDSHIP WITH USERS, LOCAL RESIDENTS AND SPECIAL INTEREST GROUPS.

To fulfill these general policies the DNR will:

5. MONITOR AND EVALUATE SNA MANAGEMENT PERIODICALLY TO DETERMINE IF MANAGEMENT OBJECTIVES ARE BEING ACHIEVED.

6. USE MANAGEMENT METHOD(S) CONSIDERED MOST NATURAL AND APPROPRIATE TO THE TOTAL ENVIRONMENT OF THE AREA AND:

   A) NOT USE COST ALONE TO DICTATE SELECTION OF THE APPROPRIATE MANAGEMENT METHODS:
   B) DESIGN MANAGEMENT PLANS TO ADDRESS THE ECOLOGICAL INTEGRITY OF THE AREA TO PREVENT MISMANAGEMENT:
   C) REMOVE EXISTING DEVELOPMENTS OR UNNATURAL OBJECTS UNLESS THEY ARE UNOBTRUSIVE AND NOT DETRIMENTAL TO THE PURPOSES FOR WHICH THE AREA WAS DESIGNATED OR OF HISTORIC VALUE.

7. PROHIBIT THE FOLLOWING:

   A) CUTTING OF GRASS, BRUSH, OR OTHER VEGETATION, THINNING TREES, REMOVAL OF DEAD WOOD AND WINDFALLS, OPENING OF SCENIC VISTAS OR PLANTING EXCEPT AS PROVIDED FOR IN THE MANAGEMENT PLAN:
   B) INTRUSIONS OF DEVELOPMENT ON, THROUGH OR OVER SNA'S UNLESS ESSENTIAL TO THE MANAGEMENT OF THE UNIT:
   C) MINERAL EXTRACTION, PEAT HARVESTING AND WATER INUNDATION OR APPROPRIATION:
   D) COLLECTION OF PLANT, ANIMAL, HISTORIC OR GEOLOGICAL SPECIMENS (EXCEPT BY PERMIT) OR ANY CONSUMPTIVE USE OF NATURAL RESOURCES:
   E) INTRODUCTION OF PLANT, ANIMAL OR OTHER OBJECTS, INCLUDING LIVE SEEDS OR DISEASE ORGANISMS, UNLESS EXPRESSLY PROVIDED FOR IN THE MANAGEMENT PLAN.

8. PROVIDE THE FOLLOWING:

   A) SPECIAL MANAGEMENT TO TRANSIENT SPECIES ONLY WHEN THERE IS A WELL DEFINED NEED:
   B) SPECIAL MANAGEMENT FOR BALD EAGLE NESTS AND COLONIAL WATER BIRD NESTING SITES WHERE APPROPRIATE:
   C) REVIEW OF DNR PERMITS AND ACTIONS TO MINIMIZE ADVERSE EFFECTS ON A DESIGNATED SNA.

9. INVOLVE USERS, LOCAL RESIDENTS, AND SPECIAL INTEREST GROUPS IN THE MANAGEMENT OF THE SNA AND ENFORCEMENT OF RULES.

10. ESTABLISH A WORKING RELATIONSHIP WITH ADJACENT LANDOWNERS SO AS TO MINIMIZE OR ELIMINATE THOSE LAND USE PRACTICES HAVING AN ADVERSE IMPACT ON THE SNA.

To ensure the preservation of SNA resources and provide for use of the area, it is the DNR's policy to:

11. LIMIT HUMAN USE ON SNA'S TO THE AMOUNT THE RESOURCE CAN TOLERATE WITHOUT DAMAGE TO SPECIAL FEATURES.

12. PROVIDE FOR THE INTERPRETATION OF THE SPECIAL FEATURES AND THEIR MANAGEMENT.

13. SEEK INPUT FROM USERS, LOCAL RESIDENTS AND SPECIAL INTEREST GROUPS IN DECISIONS REGARDING MOST SUITABLE USE(S).

14. REQUIRE USERS ENGAGED IN SCIENTIFIC STUDY TO MAKE INFORMATION OBTAINED ON THE SNA AVAILABLE TO THE DNR AND ENCOURAGE USERS TO MAKE THEIR STUDIES AVAILABLE TO THE SCIENTIFIC COMMUNITY THROUGH REPORTS OR PUBLISHED ARTICLES.

To fulfill these general policies the DNR will:

15. ENCOURAGE:

    A) ACTIVITIES WHICH CAN OCCUR EQUALLY WELL ON LESS VULNERABLE OUTDOOR AREAS TO BE CONDUCTED ELSEWHERE:
    B) SCIENTIFIC STUDIES, PHOTOGRAPHY, AND KEEPING OF PHENOLOGICAL RECORDS AND FAUNAL AND FLORAL LISTS FOR LONG TERM RESEARCH AND EDUCATIONAL BENEFITS;
    C) APPROPRIATE USERS AND PUBLIC SUPPORT RATHER THAN UNRESTRICTED PUBLIC USE.

16. PROHIBIT THE FOLLOWING ACTIVITIES UNLESS NECESSARY FOR MANAGEMENT PURPOSES OR SPECIFICALLY AUTHORIZED BY THE MANAGEMENT PLAN: COLLECTING PLANTS & ANIMALS, HUNTING, FISHING, CAMPING, PICNICKING, HORSEBACK RIDING, MOTORIZED VEHICLE USE WITH THE EXCEPTION OF PARKING FACILITIES AND SIMILAR ACTIVITIES.

17. ASSURE STRUCTURES, TRAILS AND SIGNS ARE AS SPECIFIED IN THE MANAGEMENT PLAN AND IN KEEPING WITH THE NATURAL SURROUNDINGS AND PRESENT ONLY SO FAR AS REQUIRED FOR RESOURCE PROTECTION AND PROVISION OF BASIC USER NEEDS.

18. ADAPT INTERPRETIVE TECHNIQUES AND MATERIALS TO THE USER.

19. LIMIT OR EXCLUDE USE FROM AN AREA FOR AN APPROPRIATE PERIOD OF TIME WHEN IMPORTANT NATURAL FEATURES ARE THREATENED AS A RESULT OF SUCH USE.

20. CLEARLY POST THE PROCESS FOR OBTAINING A VISITOR USE PERMIT WHEN REQUIRED, AT THE ENTRANCE TO THE SNA.

21. NOTIFY ADJACENT LANDOWNERS AND INTERESTED PARTIES PRIOR TO IMPLEMENTING MAJOR MANAGEMENT ACTIONS.

22. ERECT BOUNDARY SIGNS AS SPECIFIED IN THE MANAGEMENT PLAN TO DISCOURAGE ENCROACHMENT AND TRESPASS ONTO THE SNA AND ONTO ADJACENT PROPERTY BY SNA USERS.

23. REQUIRE A "PACK OUT WHAT YOU BRING IN" LITTER PHILOSOPHY AND ENFORCE LITTER REGULATIONS.

24. FENCE ONLY WHEN NECESSARY TO CORRECT PERSISTENT ENCROACHMENT OR TRESPASS PROBLEMS TO THE SNA OR ADJACENT PROPERTY.

25. REGULATE USE BY EMPLOYING, SINGLY OR IN COMBINATION, METHODS THAT INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

    A) NO ACCESS RESTRICTIONS;
    B) ACCESS BY PERMIT ONLY;
    C) ACCESS ON DESIGNATED TRAILS ONLY;
    D) TEMPORAL OR SPATIAL ZONING.

26. REQUIRE:

    A) REVIEW OF ALL RESEARCH PROPOSALS FOR THE SNA WITH EMPHASIS ON THE PROPOSED RESEARCH METHODOLOGY;
    B) IF NECESSARY, BONDING OF RESEARCHERS TO GUARANTEE CLEAN-UP FOLLOWING COMPLETION OF THE PROJECT(S).

Other Management Considerations

If and when Helen Allison Savanna is designated a SNA the lease will influence the management of the tract. The lease states:

1. Management planning is a joint and cooperative responsibility of the DNR and the Nature Conservancy.

2. The DNR will notify TNC thirty days prior to any proposed change in the rules and regulations. The Conservancy will then notify the DNR within thirty days if the change is acceptable or not.

3. The DNR will not cause or permit to be caused any act constituting harm or destruction of the unit.

4. The DNR shall not apply or permit application of any chemicals, including herbicide and insecticide, unless it has been provided for in the management plan or unless written permission has been first obtained from the Conservancy.

5. If consistent with the management plan, a permanent recognition sign shall be erected by the DNR on the unit.

6. Upon request the DNR shall provide TNC with an annual report on use management of the unit.

7. The Conservancy shall have access to the unit at any time.

8. TNC may, with the consent of the DNR, lease all or any portion of the unit for purposes consistent with the management plan.

9. Both TNC and the DNR can terminate the lease when there is a breach of the contract.

Finally, several Minnesota statutes may affect the management of Helen Allison Savanna. They include:

1. Collecting and taking of wild animals:

   Under state law (M.S. 98.48) special permits are required from the DNR, Division of Fish and Wildlife, for the collection or taking of protected wild animals.

2. Endangered species:

   The Endangered Species Act (M.S.A. 97.48B) states that no endangered wild animal may be taken except under special circumstances. The DNR, Division of Fish & Wildlife, may undertake programs or promulgate rules and regulations which also affect the management of endangered or threatened species.

3. Conservation of certain flowers:

   Under state law (M.S. 17.23) no member of the Orchid or Trillium families, or any species of Lotus (Nelumbo lutea), Gentian (Gentiana), Arbutus (Epigaea repens) or Lily (Lilium) can be taken or gathered in any manner from public land without the permission of the Commissioner of Agriculture - and then only for scientific and herbarium purposes.

4. Control of noxious weeds:

   It is the duty of all landowners, according to state law (M.S. 18.181), to eradicate or otherwise destroy all noxious weeds. Section 18.315 also states that towns and cities may take steps to control noxious weeds on state lands within the territorial limits of the towns or cities provided that the managing agency fails to take action within fourteen days of receiving notice to cut or control the weeds. The following plants are considered noxious weeds statewide: Field Bindweed; Hemp; Poison Ivy; Leafy Spurge; Perennial Sowthistle; Bull Thistle; Canada Thistle; Musk Thistle; and Plumeless Thistle.

II. MANAGEMENT ACTIONS FOR HELEN ALLISON SAVANNA

Introduction

This section describes the specific actions to be implemented on Helen Allison Savanna. The Actions are grouped into three broad categories: resource management actions, use management actions, and monitoring actions.[1] The resource management actions, in general, are primarily directed at inventorying, preserving, perpetuating, and restoring the tract's natural resources. Use management actions are directed primarily at the problems caused by, and needs of, the visitors. Monitoring actions are directed at insuring that both resource and use management actions are being effectively implemented, identifying unforeseen changes occurring on the site, and recording the results of management implementation. Under each management action there is a brief statement expanding on the action and the need for action. In parentheses there are numerical references to the various TNC guidelines and SNA policies each action is designed to carry out.

Within each of the resource, use and monitoring action categories the actions are subgrouped when possible according to function. The actions are not listed in order of priority.

Ownership modifications are of special concern to adjacent landowners, managing agencies, users and interested parties. Ownership modifications, including fee title purchase and conservation easements, which are taken to protect a resource, facilitate management, or enhance use are therefore listed separately after the management actions have been outlined. In addition, modifications whose purpose is to protect "new" resource(s) outside the tract are noted here.

RESOURCE MANAGEMENT ACTIONS

Action 1. Implement a wildfire suppression plan (TNC guideline 8; SNA policy 4)

Wildfires may threaten human health and property adjacent to the tract. However, the practices used to suppress wildfires may be more damaging to the site than the fire itself. Fire control should be to safely prevent the spread of the fire outside of the tract's boundaries, and be designed to minimize the damage produced by fire suppression activities. Several steps will be taken to achieve this goal.

Local fire authorities, the fire chief of the local fire department (East Bethel) and the DNR area forester, should be annually contacted about control methods to use should a wildfire start on or spread into the tract.[2] These authorities should be made aware of the nature of the tract and TNC's concern about what suppression methods are used on the site. They should be asked to consider using natural fire breaks and backfires, rather than heavy equipment and fire plows, to contain the fire. The fire authorities should have the names

[1] It should be noted that these categories are artificial: use management actions affect resource management actions and vice versa. However, for the purposes of discussion it is convenient to follow this convention.

[2] Representatives from the Cedar Creek Natural History Area should be invited to participate in these discussions.

and telephone numbers of the local volunteer manager (Alvar Peterson) and TNC preserve management coordinator to contact for assistance in the event of a fire. A map should be provided showing the tract's boundaries, access points, and fire breaks.

Adjacent landowners should also be provided with the names and phone numbers of the local fire department, volunteer manager and TNC preserve management coordinator to contact in case of a fire. If a wildfire does occur on the tract the neighbors can serve as an "early warning network", alerting the proper authorities. During extreme fire danger periods neighbors and visitors should be alerted to prevent man-caused fires and to be on the lookout for wildfires.

Finally, the perimeter firebreaks shown in Figure 1 on page 19 should be maintained to reduce the possibility of wildfires moving onto or off the preserve. The perimeter firebreaks must be annually disced or shallow plowed. One short firebreak shown in the figure extends into the adjacent owner's land. Permission will have to be granted from the adjacent landowner to clear this firebreak of brush, and to maintain it by discing or shallow plowing. (TNC's regional attorney must be consulted on the drafting of a letter of consent form for this firebreak.)

Action 2. Periodically burn segments of Helen Allison Savanna (TNC guidelines 3 and 4; SNA policies 2, 3, and 6).

Areas like Helen Allison Savanna are thought to have burned on a regular basis before white settlement.[3] After white settlement, however, fire was suppressed. Prescription burning reinstates a natural ecological process, regulates plant succession, maintains the tract's open character, suppresses brush, thins woodland, restores disturbed areas, removes built-up fuel (and thus reduces the wildfire hazard), suppressed alien (non-native) species, like Kentucky Bluegrass and Smooth Brome Grass, (which degrade the native plant community) perpetuates and stimulates fire-dependent native plants, and improves the habitat for certain animals.

Helen Allison Savanna is divided into three major fire units (See Figure 1).[4] The east unit is a demonstration area in which comparisons can be made on the effects of burning at various frequencies. The unit is subdivided into four compartments: all the compartments are burned the first year, then three are burned the second year, two the third year, and one the fourth year. The cycle is repeated on the fifth year--all the compartments are burned. The first burn conducted on the east unit was in 1962.[5] In 1979 three compartments were burned, so in 1980 two compartments will be burned. All the burns in the east unit should occur between April 10 and 25 in an average year. The central burn unit is divided into two compartments by a firebreak. The management of Helen Allison

[3] See for instance J.T. Curtis, The Vegetation of Wisconsin (Madison: Univ. of Wisconsin Press, 1959), and R. Daubenmire, Ecology of fire in grasslands, Advanc. Ecol. Res. 5(1968), 209-266. A survey at the preserve prior to the initiation of prescribed burning revealed old charred stumps. This also suggests the occurrence of fires in the past.

[4] The following prescription burn plan was developed by Dr. D.B. Lawrence and by Mart Heitlinger, TNC Minnesota Coordinator of Preserve Management. The plan was based on: 1) their knowledge and experience in burning similar areas; 2) an assessment of the tract's vegetation, species composition, and soils; and 3) the conditions required to safely burn the areas.

[5] This was the first prescribed burn conducted on a TNC preserve in the U.S. A fire history for the tract is on file at TNC. See also Figure 1.

Savanna should strive to retain as many components of the savanna community as possible, including species decreased by fire. Since the west and east sides of the preserve are already under intensive fire management, the central burn unit assumes a species reservoir function. The fire prescription for this unit should be conservative.

Fire prescription information needs:

-response of vegetation in the eastern fire unit to the different fire frequencies used there

-relationship between fire and the maintenance of the existing lichen assemblege

-moisture conditions of the wetlands (burning under droughty conditions could potentially eliminate some species like tussock sedge)

-pre-burn vegetation sampling of central unit

Initiating the fire program: Early spring burns are a predictable and conservative method of introducing fire to the central burn unit. Periodic sampling based on the pre-burn sample must be conducted to evaluate fire effects and to refine the burn prescription. Fire frequency on the central burn unit will be low. When monitoring indicates that the first compartment has recovered, the second compartment can be burned, if necessary. (see also discussion of west burn unit).

Burn compartments: It is recommended that the central burn unit be divided into two burn compartments. Each should include a representation of the following habitats:

-active blowout
-old blowout
-wetland
-savanna
-denser oak groupings

Lichens: It may prove practical to use some indicator group(s) like lichens to serve as a measure of fire effects and recovery for fire sensitive species.

The west unit is to be restored to prairie by burning every second year in even numbered years, about May first. This unit was first burned in 1974. (It will be interesting to discover whether or not oak trees can reestablish themselves in an area burned with this regularity.)

TNC procedures for prescription burning should be followed for all planned burns: 1) a prescribed burning proposal must be prepared and approved by authorized TNC personnel; 2) all conditions described in the proposal, including the crew, fire boss, equipment, weather, firebreaks, DNR permits, courtesy notifications, and publicity, must be in effect for the burns to occur. Following a burn, a prescribed burning report must be submitted to the Nature Conservancy Office. (See Appendix III, Procedures for prescription burning, in the Manual for stewardship of Nature Conservancy lands in Minnesota, for more information.)

Action 3. Collect baseline data and establish a system in the central burn unit to study the impact of prescribed burns on the tract's lichens and vascular flora (TNC guidelines 1, 3, and 4; SNA policies 2 & 3).

The central burn unit has never had a prescription burn since TNC acquired the tract. It is important to be able to measure the effects and record the changes caused by the burns on the unit's lichens and vascular flora. Scientists don't know how detrimental the burns will be to the lichens. Therefore, a lichenologist should be requested to: 1) conduct a careful inventory of the area's lichen flora, with special attention to the corticolous (bark-dwelling) species; and 2) establish a system to monitor quantitative and qualitative changes which may accompany fire management. The lichenologist conducting this study should review the prescribed burn plan for the central unit and make recommendations as he sees fit. Similarly, the effects of prescribed burning on the unit's vascular plants and succession needs to be documented. Several additional releve plots will have to be set up in the central unit to accomplish this. An expert should also be asked to help TNC establish a system to monitor the qualitative and quantitative changes which accompany burning.

Action 4. Hand pull Mullein, Goatsbeard, Sweetclover and Hoarry Allyssum which are growing on the tract (TNC guidelines 3, 4, and 8; SNA policy 3).

These four non-native plant species have been identified growing on disturbed areas in or adjacent to the tract on the roadside. If left uncontrolled the non-native plants will spread over the area. The four species should be hand pulled, before seed development, in late June and again in late July; pulling must be repeated without fail if this effort is to be successful. Removing the seed source by hand pulling will enable native species to reestablish themselves in the disturbed areas. Mullein occurs on the old field. Suppression of this species will accelerate the recovery of the old field to native species. Sweetclover and Hoary Allyssum occur along the north and east roads; the southeast corner also has an infestation of Hoary Allyssum. (Another non-native plant, Smooth Brome, also occurs along the roadsides, although it doesn't appear to be invading the natural area. However, action may be required in the future to control this species.) If Sweetclover, Mullein, or Hoary Allyssum are discovered elsewhere on the tract immediate action should be taken to pull them. If old stalks or plants in seed are pulled, they should be carefully transported off the preserve so seeds aren't scattered over the area. No herbicides or other chemicals are to be used to control the weeds without the written consent of TNC's regional director of land stewardship.

Action 5. Study the possibility of introducing Lupine and the Karner Blue butterfly onto Helen Allison Savanna.

There are no TNC guidelines or SNA policies which justify this action. Indeed, in general this type of action is not endorsed for natural areas. However, in this case the action is justified because the species to be introduced is rare, (The Karner Blue butterfly is on the federal list of threatened species) the introduction will be done in a disturbed area, and impacts are not anticipated for the rest of the natural area. The Karner Blue butterfly and an associated population of Lupine occur along a roadside approximately one mile northwest of Helen Allison Savanna. Although the plant is also present in the Cedar Creek Natural History Area, the butterfly is not known to occur anywhere

else in Cedar Creek. If the Lupine and the butterfly can be successfully transplanted onto the Helen Allison Savanna then the insect will have a better chance of survival in the local area. Two separate breeding populations, one of which is on a permanently protected preserve, will help insure that the Karner Blue butterfly continues to breed in the area. Therefore, it is proposed that, first, one or more places in Helen Allison Savanna's old field be planted with Lupine taken from the Cedar Creek Natural History Area. Then, when conditions are appropriate, some Karner Blue butterflies in an immature or dormant stage can be introduced to the Lupine on the field. Robert Dana has observed that lupine is generally associated with Zimmerman soils. This is the case with the CCNHA lupine populations. This soil type does not occur in Helen Allison Savanna. The upland soils of the preserve are Sartell soils. It is questionable whether lupine can be established on the preserve. Sartell soils, however, are quite similar to Zimmerman soils. If the problem is primarily germination, plants rather than seeds could be used to establish the lupine. Without natural lupine regeneration it is not clear how permanent a refuge Helen Allison Savanna could provide for the Karner Blue butterfly. No action should be taken, however, until the feasibility, methodology, and possible detrimental side-effects of the introduction have been examined. Preservation activities for the Karner Blue Butterfly should ideally be part of a coordinated protection effort that includes the Cedar Creek Natural History Area (CCNHA). Lupine sites occurring here should be considered for transplanting the butterfly if a comprehensive preservation attempt is to be made. A management agreement with the CCNHA needs to be established. Robert Dana, of the Department of Entomology, Fisheries and Wildlife, University of Minnesota, and possibly other authorities, should be consulted about the Lupine and Karner Blue introductions. Also, it will be necessary to coordinate this activity with federal authorities in the Endangered Species Program, U.S. Fish and Wildlife Service, and with officials in the Cedar Creek Natural History Area.

Action 6. Develop jointly with the Cedar Creek Natural History Area a policy on hunting feral animals (TNC guidelines 3, 4, 7, and 8; SNA policy 3).

It will probably be necessary for the Cedar Creek Natural History Area to develop a policy on what to do about feral animals, and TNC may wish to participate in the formulation of this policy. Individuals in the vicinity of the savanna are known to shoot wild dogs on sight. In 1978 a wild dog was found dead on the preserve, indicating the no hunting signs may not have any influence in this matter. TNC's present position is that uncontrolled hunting by the public on Helen Allison Savanna is unacceptable under any circumstances. If it proves necessary to remove stray dogs or cats from the tract, because the feral animals are detrimentally affecting the tract or affecting adjacent landowners' property, then the local police, Animal Humane Society employees, or the local DNR conservation officer should be requested to take care of the problem. Managers should make this position known to adjacent landowners and individuals suspected of hunting feral animals if this problem continues (See Action 22).

Action 7. Census deer population levels.

Deer were observed to have well used trails crossing Helen Allison Savanna from north to south during the fall, winter, and spring of 1981-82. Deer also used the blowouts during the fall rut. Browse sign was frequent throughout the tract. Because of the openness of the preserve, deer are not likely to concentrate here.

Control of deer populations (if desired because of conflicts like browsing damage) cannot be effectively exercised on Helen Allison Savanna alone. If the CCNHA allowed a hunt to control deer populations, opening the SNA to hunting at the same time would probably not result in any significant difference in the number of deer killed. Because of this it does not seem appropriate to make an exception to SNA and TNC no hunting regulations.

A record should be kept of deer population levels to better assess their impact on the preserve. This can be done in cooperation with the DNR Division of Wildlife's annual deer census.

Action 8. Collect additional information on the tract's flora (SNA policy 1).

Actions 8-10 are necessary to identify significant and sensitive resources, obtain baseline data, and identify opportunities, problems and trends for management. The data are also valuable for research purposes. Action 8 is a supplementary inventory which will focus on those plants not collected or thoroughly surveyed heretofore: the non-vascular plants, such as mosses and other cryptogams (See also Action 3). Species which are identified in this inventory, and not identified in 1979, should be added to the site's annotated plant list.

Action 9. Inventory the tract's amphibians and reptiles (SNA policy 1).

The 1979 inventory did not thoroughly examine the savanna's reptiles and amphibians. This information will result in a more complete resource baseline for the tract. The inventory should follow the methodology and procedures outlined in the 1979 SNA inventories.

Action 10. Collect additional information on Helen Allison Savanna's butterfly population (SNA policy 1).

Robert Dana has done some initial work on the site's butterflies, but a more detailed, systematic inventory could be conducted in the area. (A copy of this initial work is on file at the Minnesota Chapter of TNC.)

II. USE MANAGEMENT ACTIONS

Action 11. Erect a smooth one-wire fence on the western border, repair the fence on the south side, and maintain all of the tract's fences (TNC guidelines 3, 4, and 9; SNA policies 2, 3, 7 (E), 17, and 24).

These fences are necessary to mark the tract's boundary and to prevent snowmobiles and horseback riders from entering the tract. The western border has posts already in place, but lacks a wire. The fence on the south side apparently is in need of repair. Fences should be inspected monthly to determine that no objects are leaning on the fences, brush is not covering the fences, posts are firm, and wires are adequately strung.

Action 13. Develop and implement a Parking Plan

Visitor access is an important management consideration. Two county blacktop roads border the preserve. The level of traffic on Co. Rd. 26 on the north

boundary is higher than Co. Rd. 15 on the east border. Average vehicle speeds along Co. Rd. 26 are also faster than Co. Rd. 15 next to the preserve. Vehicles traveling north on 15 are slowing for a stop and those traveling south on the same road have just started.

Shoulder parking is allowed on both roads. Co. Rd. 26 has the widest shoulder.

The Anoka County Highway Department has suggested that shoulder parking would be safest along Co. Rd. 15.

Car Parking: Car parking is recommended along the west side of Co. Rd. 15.

Bus Parking: Buses can pull into a private road entrance on the north side of Co. Rd. 26 near the western end of the preserve. This road is part of the CCNHA. Upgrading the fence here may be required.

Action 15. Post new signs on all the tract's boundaries and maintain the signs (TNC guidelines 3, 4, 7, 8, 9 and 10; SNA policies 3, 7, 16, 16 and 22).

All of the tract's boundaries should be posted to prevent inadvertent encroachment by adjacent landowners, to minimize unauthorized activities (e.g., hunting), and to identify the area's boundaries to users and managers. The signs should be set no more than one-tenth mile apart; if visability is obstructed they should be set closer together. At corners posts should be set so that signs are nearly touching and at the same angle as the boundary line. All signs and posts should be checked annually and repaired and replaced when necessary. As noted above, the new signs are an experiment: if problems develop on the tract then the signs may have to be changed.

Action 16. Repair and possibly relocate the registration box.

Because of the easy access to this preserve, it is difficult to get meaningful visitor use information from a registration system. Such a system is most effective where there is restricted access. If visitor information were offered at the registration station, greater registration would be expected. This station should be in a conspicuous spot, a short distance into the preserve, easily identified on a map or explained to a person inquiring about the tract. A Nature Conservancy registration box is present in the southeast corner, but most visitors do not know the box is there. Thus the registration box should be placed in a more conspicuous spot. The registration box should be checked bi-weekly during the spring, summer and fall to see that adequate copies of maps, brochures, registration sheets and other relevant information notices (including notices on upcoming events, the nearest DNR or volunteer information source, the SNA rules and regulations and/or TNC rules and regulations) are present. It is particularly important that registration sheets be collected and kept for analysis.

Finally, the registration box should be annually touched up with Olympic wood stain. Other maintenance actions should be taken as required.

Two sets of 5 x 7 standardized comment cards will also be kept in the box. One set of cards will be available for users to write comments on management and use of the tract (e.g., problems observed on the site, proposals for management, evaluation of the managers). The other set of cards will be available for visitors to write observations on the site's natural features. These cards will ask: the observer's name and address; what species were observed; the number of individuals seen; where the species were observed (space can be left for a sketch); and other remarks (e.g., presence of nesting activity, territorial behavior, identifying marks of unknown species). The back of the cards will have instructions and note the purpose of the cards. A list of those species which are of particular interest to managers and scientists could also be included here. The registration sheets and the comment/observation cards can provide valuable monitoring data to managers. It is, therefore, important to collect the cards and the registration sheets, and keep them for analysis.

Action 17. Develop and distribute a map showing the tract's boundaries and general features of interest (TNC guidelines 6, 7, and 10; SNA policy 12).

This map should be distributed to users, adjacent landowners and interested parties until a Helen Allison Savanna brochure is developed. The map can be used to increase visitor appreciation of the area, and answer questions which visitors and landowners may have.

Action 18. Develop and distribute a brochure on Helen Allison Savanna (TNC guidelines 4, 6, 7, and 10; SNA policies 3, 4, 7, 9, 12, 15, 16, 23 and 26).

The brochure should include an accurate map of the area, a description of Helen Allison Savanna's history, natural features and significance, and a discussion of the impacts caused by people. It shall describe the Nature Conservancy-SNA Program (if appropriate), note conducted tours, promote a "pack out what you bring in" litter philosophy, identify people to contact for more information about the site, and encourage visitors to register, provide comments, and become involved in managing the area. Finally, the brochure should note Nature Conservancy and/or SNA rules and regulations governing use, including the requirement that all researchers obtain permission prior to conducting research on the area.

Action 19. Conduct guided field walks on Helen Allison Savanna (TNC guidelines 5, 6, and 10; SNA policies 4, 12, 13, and 15(C)).

The guided walks can be used to educate visitors about the area's resources, inform visitors about the Nature Conservancy-SNA Program (if appropriate), obtain visitor feedback on management, and make visitors feel like land stewards -- involved in managing the site and responsible for its well-being.[6] The number of conducted tours depends on time and money limitations, and the impact of the tours on the area. Late May through October are ideal times to lead walks on the tract. News releases should be sent to the local media to publicize the walks, and a reporter(s) should be periodically asked to participate in the walks.

[6]See also Action 22.

Action 20. Encourage local middle and secondary schools, regional education institutions, and researchers to use the site if appropriate (TNC guidelines 6 & 10; SNA policies 4, 12, and 15).

Colleges and universities, such as Anoka-Ramsey Community College, scientific research groups and researchers in the Twin Cities metropolitan area, the Minnesota Environmental Education Board's regional coordinator, and all secondary schools within a five to ten mile radius of Helen Allison Savanna should be periodically contacted. These groups should know of the site's existence, its potential for teaching such topics as native flora and fauna, ecology and geology, and the names of whom to contact for more information (i.e., the local volunteer manager, TNC preserve management coordinator, DNR regional naturalist). An effort should be made to meet annually with all teachers and researchers who express an interest in the site. Educational and research opportunities can be promoted at these meetings. However, the sensitivity of the resources and user responsibility in caring for the land must also be stressed. Use should only be encouraged if appropriate, i.e., if such use cannot occur equally well on other less vulnerable areas. All teachers and researchers should be aware of site rules and regulations, such as the need to obtain a permit prior to collecting or conducting research in the area, before they step onto the tract. Before a class comes to the tract, teacher workshops should be held so that the teachers are trained and well-informed about the area. When the class comes to the site managers or scientists should, if possible, also be present to assist the teachers.

III. MONITORING ACTIONS

Action 21. Maintain contact with Mr. Alvar Peterson, the area's present volunteer manager (TNC guidelines 1, 2, 3, 4, 5, 6, 7, 8 & 10; SNA policies 1, 2, 3, 4, 5, 7, 9, 10, 13, 15, 16, and 21).

Mr. Alvar Peterson can be contacted at: The Cedar Creek Natural History Area, 2660 Fawn Lake Drive NE, Bethel, MN 55005 (tel.: 612-434-5131). Volunteer managers preferably live within four miles of the site, and must have the time, interest and willingness to become intimately involved with the protection and management of the area. The manager's job is primarily to: 1) maintain the registration box supplies and collect registration sheets; 2) periodically monitor the tract for signs of misuse or management problems and communicate them to the Nature Conservancy and the DNR (a "watchdog" function); 3) facilitate communications between managers, local residents, and other parties; 4) aid managers when requested; and 5) orient new managers to the preserve and the local community.

Action 22. Hold periodic meetings for the local residents (TNC guidelines 5, 6, 7, 8, and 10; SNA policies 3, 4, 5, 9, 10, 13, and 21).

Meetings will be publicized through news releases sent to the local media (A reporter might also be asked to attend). They will be held at least once per year at a time and place convenient for local residents, perhaps in conjunction with a field trip or other activity; special circumstances, such as the implementation of a major management action, may warrant more than one meeting. These meetings can be used to enlist support for project work (e.g., monitoring), as a forum to discuss management decisions, problems, and actions, or to encourage landowners to adopt various practices. It is particularly important that

adjacent landowners and frequent users be present at these meetings since their actions can have a large impact on the tract and vice versa. All comments regarding management should be recorded.

Action 23. Maintain close contact with all scientists who are using the site for educational and research purposes (TNC guidelines 4, 5, and 6; SNA policies 1, 2, 3, 4, 5, 9, 12, 13, and 15).

Scientists, as trained observers, can provide valuable information and insights on managing the site. Data gathered from scientific studies are also important for monitoring the site. Thus all scientists using the site will be annually contacted and consulted about their studies, data, and conclusions. Researchers should also be consulted about natural changes and human impacts they discover while on the tract, and be encouraged to offer input into managing the tract. Finally, research information should be accumulated, stored in a site file, and shared with interested parties.

Action 24. Contact the local DNR conservation officer (C.O.) and request his assistance in managing the site (TNC guidelines 2, 3, and 4; SNA policies 4, 7, 16, and 23).

This action should be taken at least once per year. Since the C.O. is the primary natural resource enforcement officer, it is important to bring the site to his attention and familiarize him with its resources and problems. This action is also necessary to obtain advice on management, such as on enforcement activities.

Action 25. Develop and maintain a close relationship with local and regional government officials, natural resource management professionals, and other appropriate individuals (TNC guidelines 5, 6, and 8; SNA policies 4, 5, 9, 13, and 21).

Local and regional governmental officials (e.g., the major, county assessor, county board members) and resource management professionals (e.g., the county extension agent, DNR area wildlife manager, Soil Conservation Service district conservationist, U.S. Fish & Wildlife Service managers) should be annually contacted and informed about the site. These individuals are all concerned with natural resources in their respective capacities. They should be aware of the site, its importance, and major management actions which are planned for or being implemented on the tract. This action can help eliminate public suspicions and misconceptions, build trust and rapport, and increase community support. It is also a way of monitoring what the public feels about the site and the managers.

Keeping in close contact with local and regional professional resource managers is also important. These individuals, if they are aware of the site and interested in its preservation, can provide valuable expertise and manpower, and lend equipment if needed for management. As local residents they can help generate community support for the tract. Cooperative management efforts can also sometimes be used to solve problems which affect (or could affect) several sites in the area, including the preserve.

Action 26. Develop and implement a water table monitoring program (TNC guideline 4; SNA policies 1, 2, 3, and 5).

Presently there is no information on the tract's water table. Changes in the water table may adversely affect the tract's biota. Therefore, the depth

of the groundwater should be measured annually using the method described by Turnock & Lawrence.[7] Analysis of this data will show if any changes are occurring, the magnitude of the changes, and possibly provide clues on the cause of the change (e.g., climate, irrigation).

Action 27. Develop and implement a vegetative monitoring program (TNC guidelines 1, 2, 3, and 4; SNA policies 1, 2, 3, and 5).

A monitoring program is necessary to keep track of the vegetative changes occurring on the tract. Thus the releve plots set up in the 1979 inventory should be periodically sampled every year. The photopoint stations used by Dr. Donald B. Lawrence should be reactivated and photographed every two years. At, Dr. Lawrence's direction, additional stations may be established. These stations will provide another valuable record of vegetation and can also be used to detect major problems, such as boundary incursions and unauthorized vehicle use. Color IR aerial photographs should be taken of the site once every five years. Additional monitoring programs may be developed to further record changes in the vegetation.

Action 28. Develop and implement a monitoring program for Sea-Beach Triple-Awned Grass (Aristida tuberculosa), Rhombic Evening Primrose (Oenothera rhombipetala), Long-Bearede Hawkweed (Hieracium longipilum) and Tall Nut Rush (Sueria triglomerata). (TNC guidelines 1 and 4; SNA policies 2, 3, and 5).

These plants warrant special attention. An annual record should be kept of the four species' populations, consisting of: stem counts; counts of plants which flower or fruit; maps showing the plants' location; and any trends which are identified. Scleria triglomerata, is the highest priority plant element occurrence recorded for the preserve. It is known to occur in the low, wet swales in the east burn unit. In particular, the effects of fire management on this species should be observed. Mark Heitlinger, Dr. Donald Lawrence, and other botanists will provide information on exactly what techinques and procedures to follow on the tract.

Action 29. Develop and implement a program to monitor Bearberry (TNC guideline 1; SNA policy 5).

This species is not a proposed element of state significance, but it is of special interest for its occurrence this far distant from its main range. An annual record should be kept of the site's population, consisting of: stem counts; counts of plants which flower or fruit; maps showing the plants' location; and any trends which are identified. Mark Heitlinger and other botanists will provide information on exactly what techniques and procedures to follow on the tract.

Action 30. Develop and implement a program to monitor the Karner butterfly once it is introduced onto the tract (TNC guideline 1; SNA policies 2, and 5).

The Karner butterfly is on the federal list of threateded species and therefore deserves special attention. A site record will be kept, and periodically updated,

on the insect's population. The record should include information on population abundance (estimates or counts), breeding status, site location, and trends. Robert Dana (Department of Entomology, Fisheries & Wildlife, University of Minnesota) and other experts will be asked to provide detailed information on what monitoring techniques and procedures to use on Helen Allison Savanna.

Action 31. Periodically inspect the site (TNC guidelines 1,2,3,4,7, and 8; SNA policies 1,2,3,5,6(C),7,11,16, and 23).

The site shall be thoroughly inspected at least once per month for human impacts (e.g., vandalism, unauthorized trails, trampling of plants, littering, the disturbance of sensitive resources), signs of violations in rules & regulations, (e.g., hunting, snowmobiling, horseback riding), and natural changes in the tract (e.g., tree blow-downs, insect infestations). If urgent action is required on the site TNC should be contacted immediately. Otherwise records should be kept of observations for the annual status report. The inspections are also an opportunity to gather feedback from users in the area concerning the site and management actions. Visitors observed violating rules & regulations should be tactfully asked to correct their behavior, e.g., remove rubbish dumped on the site. Serious problems requiring immediate attention should be referred to the DNR conservation officer or county sheriff. A report should be submitted to TNC if further action is advisable.

Action 32. Submit an annual written report to TNC and the SNA Program (if appropriate) (TNC guidelines 1,2,3, and 4; SNA policies 1,2,3 & 5).

The annual report shall note completed management actions, progress made in implementing other actions, number of users and violations (compared against preceeding years), solicited and unsolicited comments regarding management, research proposals and studies underway, changes in the resources, problems identified by managers, local residents and researchers, and recommendations for changes in the management plan.

Action 33. Request DNR Forestry, Plant Pest Section to inventory the preserve for plant pathogens (insects, diseases and pests).

Base line information describing the presence, rate of spread, extent and severity of plant disease and pest problems would aid in making proper management decisions.

ADJACENT RESOURCES

ADJACENT RESOURCES

Several areas adjacent Helen Allison Savanna could have a significant impact on the SNA if land use should change. The primary threat to this preserve is residential development adjacent its boundaries. Development can hinder management activities, particularly the use of fire. Potential land use concerns are delineated on map and discussed below.

Area 1 - Cedar Creek Natural History Area (CCNHA)

Quality: Co. rd. 26 borders the north side of the preserve. North of this is an area of oak woods/oak savanna owned and managed by CCNHA.

Threat: None

Relationship to the SNA: The savanna area is presently managed under a variety of prescribed fire treatments to restore and maintain oak savanna. Information from studies done on this area can provide valuable management assistance to the preserve.

Smoke from burning on Allison Savanna can cause some temporary problems with traffic on Co. rd. 26.

Suggestions: Continue with burn procedures used in the past. No major conflicts have resulted as yet.

Area 2 - West of the Preserve

Quality: This area has been cultivated in the past and is presently planted with pine trees. A wetland on the south end also extends onto the preserve and Area 3. (approx. 20 ac.)

Threats: None at present. Houses could be built on this property although it does not seem likely in the foreseeable future (see local perspective, Eact Bethel, pg).

Relationship to the SNA: Houses already exist on the east and south sides of the preserve. More houses surrounding the preserve could restrict burning opportunities by 1) increasing the risk of burning, resulting in more conservative management; and 2) causing a greater chance of smoke related conflicts. The community, however, seems fairly tolerant of prescribed burning. Burn programs have been conducted on CCNHA and Helen Allison Savanna for more than 15 years already. In most cases this predates the surrounding homes.

Suggestion: Discuss some type of conservation agreement with the present landowner. If development occurs, low density development would minimize the chance of conflicts occurring.

Area 3 - Southwest of the Preserve

Quality: This area includes some oak woods (formerly savanna) and part of a wetland that also extends onto the preserve. (approx. 15 ac.)

Threats: None at present time. Likelihood of development is low. The landowner has registered this property under the Metropolitan Agricultural Preserves Act.

Relationship to the SNA: A fire in the low wet area cannot presently be contained within the boundaries of the preserve. For this reason Area 3 has been proposed as an appropriate addition to Helen Allison Savanna a few times in the past. Fire management would not be practical however unless the contiguous wetland area of Area 2 is also included in the proposal.

Examination of aerial photos from 1938 through the present does show the change from a grass/sedge dominated wetland to increased shrub and tree coverage. The need to manage this area with fire is not clear. Because of this, fee-title acquisition has a low priority for the SNA Program.

Suggestions: If a more pressing management need becomes apparent, some type of management agreement with the affected landowners should be examined in addition to acquisition.

Area 4 - Southeast of the Preserve

Quality: Immediately bordering the south side of the preserve is a strip of cultivated land. The rest is degraded savanna; probably the result of grazing, cutting, and control of fire. One house is present. Total area is approximately 20 acres.

Threat: No change anticipated in the foreseeable future.

Relationship to the preserve: The house here and the subdivision south of this tract cause safety and smoke concerns for fire management (see also discussion under area 2).

Suggestions: Some type of conservation agreement with the landowner would minimize any conflicts.

Area 5 - East of the Preserve

Quality: The wooded area east of Co. rd. 15 has been developed for houses and rest is agricultural land.

Threat: None at present time. There is some potential that more houses could be built along the road in the future.

Relationship to the SNA: Presence of the houses causes some smoke and safety concerns with fire management.

Suggestions: Keep the neighbors informed of prescribed fire plans.

Area 6 - Northeast from the Preserve

Quality: The woods have been developed into a small residential area.

Threats: None

Relationship to the SNA: Presence of houses and people causes some smoke and safety concerns with fire management.

Suggestions: Keep the residents informed of fire management plans.

ADDITIONAL INFORMATION:

- LOCAL PERSPECTIVE

- VISITORS & USE

LOCAL PERSPECTIVE

East Bethel (The following discussion is summarized from the East Bethel Comprehensive Plan).

Helen Allison Savanna is located in the north-eastern corner of East Bethel Township, approximately 35 miles north of the Twin Cities. The area is served by State Trunk Highway 65 which runs north-south through the western side of the township. Most of the existing and planned development is located along this corridor. (see map#).

The community regards public utilities as an unwarranted expense. The philosophy concerning residential development has and will remain to be letting individuals and developers build homes or subdivisions wherever they wanted, as long as they met reasonable standards. However, the community does recognize that the city should be conserving large areas that need not and should not be developed, such as wetlands, lakes, ponds, lowlands and high water table areas. Some of the community goals expressed in the comprehensive plan are summarized below:

-Protect and manage environmentally sensitive areas such as soils, woodlands, wetlands, natural watercourses, and steep slopes.

-Direct development to minimize serious environmental or economic damage.

-Maintain the rural character of the community, quality of life, minimal restrictions, and develop at densities and locations that will not require public sewer or other urban services.

Development policies for land surrounding the SNA require a 5 acre lot size minimum unless permitted in a plat. Lot size is dictated by capability of the land to support 2 on-site sewage systems.

Cedar Creek Natural History Area (CCNHA)

This is a 5360 acre site opened by the University of Minnesota and the Minnesota Academy of Sciences for the preservation of a unique series of habitats in the Anoka Sand Plain. It is one of the major sites for research on natural, undisturbed ecosystems within the state. It is an Experimental Ecological Reserve of the National Science Foundation and a Natural Landmark of the National Park Service. Approximately 200 scientific publications have resulted from field work conducted at this site, research facilities are located on the property.

Beginning in 1964, prescribed fires have been applied systematically on approximately 500 acres of the CCNHA. The objective is to restore and maintain natural habitats and to provide students with fire experience. This area is just across the road (Co. rd. 26) from the SNA.

There has always been close cooperation between managers of Helen Allison Savanna and CCNHA. Much of the research conducted on one is applicable to the other.

Meds-Mud-Deer Lake County Park

The existing 172 acres of county land may be expanded to almost 500 in the mid to late 1980's. It is intended to remain in its natural state of woods and lowlands with no recreational development. This area is approximately 3 miles southwest of Helen Allison Savanna.

Several other recreation-oriented areas are available in the city (see map).

VISITORS & USE

Visitor Use. The approximate number of visitors to the preserve is reported to be 100-1000 annually. This includes scout groups, school groups, interested individuals, scientists and civic organizations.

Use and Activity Problems. Reports of use problems are not common on Helen Allison Savanna. The most frequent is trespass by bow hunters in the fall. Other occasional problems have included horseback riding, hunting and trailbikes. Snowmobile use was not observed during the winter of 1981-82, a good snow year.

SUMMARY

HELEN ALLISON SAVANNA

SUMMARY OF MANAGEMENT ACTIONS

RESOURCE MANAGEMENT ACTIONS

Wildfires will be controlled on the preserve. Local fire authorities will be asked to use methods that will have a minimal impact on the preserve. Perimeter fire breaks will be maintained. Prescribed fires will be used to maintain the native savanna vegetation and character. The preserve has been divided into 3 major burn units. The eastern unit is an experimental burn unit. The primary function of the central burn unit is to assure the total compliment of savanna species are retained on the preserve (a "species reservoir"). This central area has not yet been burned. Base-line data must be collected before burn management can begin. Fire management of the western burn unit is primarily directed at restoring this old field to native vegetation. Weeds in this old field will be controlled by hand pulling.

The Nature Conservancy and the SNA Program are open to cooperating in a protection program for the Karner Blue butterfly (a federally endangered species). Management activities for this species would occur in the old field area. Supplemental inventory information is needed on the non-vascular plants, amphibians, reptiles and butterflies.

USE MANAGEMENT ACTIONS

The smooth wire single strand fence on the western border of the preserve needs to be completed. All the fences need periodic checking. The west (south-bound) side of Co. rd. 15 is recommended for car parking. Buses can park in a pull off along Co. rd. 26. The main recognition sign should be maintained regularly. The preserve needs to be signed with official SNA signs. The registration box does not seem to be effective in registering visitor use. If used to distribute information it might be more successful. A map and brochure will be developed for the site.

Public relations work will be continued with the local community, educational institutions and public officials.

MONITORING ACTIONS

The preserve's volunteer manager is Alvar Peterson. A water table monitoring program will be initiated. Vegetation monitoring; consisting of releve plots, photo point stations, and color IR aerial photos will be reactivated or continued. Special monitoring of significant plant and animal species will begin. This included Aristida tuberculosa (sea beach triple awned grass), Oenothera rhombipetala (Rhombic evening primrose), Scleria triglomerata (a species of nut-rush), Hieracium longipilum (long bearded hawkweed), Arctostaphylus uva-ursi (Bearberry) and the Karner blue butterfly Plebejus melissa sameulis.

The site will be inspected monthly for human use impacts. An annual written report will be submitted to the SNA Program and TNC. The DNR Forestry plant pest section will be asked to inventory the preserve for plant pathogens.

ADJACENT RESOURCES

Areas adjacent the preserve can have a significant impact on the preserve if land-use should change. Residential development is the most likely threat. However, no new development is expected adjacent the preserve in the foreseeable future.

EFFECTS OF MANAGEMENT ON THE SIGNIFICANT RESOURCES

Plants

Scleria triglomerata (a species of nut-rush)

1. Prescribed burning (Action #2, pg): The response of Scleria triglomerata to fire is unknown. The effects of fire on a plant may be the result of direct stimulation or injury; or changes in the competitive balance of the vegetation. The known location of S. triglomerata on the preserve is in the eastern burn unit. The swale in which it occurs spans several of the burn compartments within the fire unit. As such, different parts of the swale are subjected to different fire reigns. The distribution of this plant within the swale has not yet been examined.

   Most of the previous burns in the eastern fire unit have been conducted in the spring. One would expect moisture levels in the soil where S. triglomerata occurs to be relatively high at this time of year. A spring fire would not be expected to damage the plant's rhizome under these conditions. If conditions were extremely dry, burning might directly damage the plant.

   It has not yet determined if this species occurs elsewhere on the preserve (see Action 28).

Aristida tuberculosa

1. Prescribed burning (Action #2). The distribution of this species within the preserve has not been thoroughly examined (see Action 28). It seems to be most abundant in and around the blowouts on the central fire unit. The response of A. tuberculosa to spring fires is not well known. A. tuberculosa is reported to to have alleopathis properties. Because of this it tends to increase under stable conditions. Fire may cleanse the soil of alleopathic substances and set back the plant. This species is an annual and would appear to require bare soil for establishment.

   Because it is a warm-season annual, a spring burn would probably have less direct effect on the species than a late summer or fall burn.

Hieracium longipilum (long bearded hawkweed)

1. Prescribed burning (Action #2). This species is similar to Aristida tuberculosa in that it occurs in dry, open habitats. Its response to fire is unknown. The plant blooms in mid to late summer so a spring fire may not have a severe effect on the population. It may be that fire may have an indirect effect by changing the general vegetational structure of its habitat. The direction of that change, however, is not clear. Fire may favor perennial, warm season grasses that would eventually crowd out the Hieracium, or it may perpetuate the Hieracium by clearing the ground litter and keeping the vegetation in a less stable condition.

Oenothera rhombipetala (a species of evening primrose)

1. Prescribed burning (Action #2). The fire response of Oenothera rhombipetala is not known. The plant is reported to be largely biennial and occasionally perennial. It is not known what the growth habit of the plant is on the site. If exclusively biennial, burns in subsequent years could potentially damage the population. Timing of the burn could be important in the species' response to fire. O. rhombipetala seems to be associated with early successional vegetative stages. Burning could potentially favor the species by removing litter build-up creating a more open-soil habitat.

Animals

Plebejus melissa sameulis (karner blue butterfly)

Reintroduction (Action #5). The karner blue has not yet been identified on the preserve. Its host plant, the wild lupine, does not grow here. The butterfly seems to be host-specific. If the lupine was established on the preserve, and the karner blue introduced to the site, it is not anticipated that his will adversely affect any native species now growing on the area. If the wild lupine maintains itself, or expands on the preserve, it can be assumed that it would have just been a matter of time before the species would have arrived at the site naturally.

Communities

Oak Savanna

Prescribed burning (Action #2). It is the goal of this preserve to maintain the most complete assemblage of community components possible. The variety of management approaches used on this small preserve will hopefully accomplish this. These include:

Savanna burned every 4 years, 3 years, 2 years and every year; Savanna burned frequently at long intervals; a Savanna-old field edge burned frequently; and a Savanna-old field edge burned infrequently.