



# W.R. Bagley Nature Area

Long Range Management

Proposal 2003

Recreation Management 4315

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# Table of Contents

Introduction.....	2
Agency Overview .....	3
Mission.....	4
Flow Chart.....	5
Current Features.....	6
Geographical.....	6
Geological.....	7
Ecological.....	7
History.....	10
Zone of Use.....	12
Current Uses and Users.....	13
Uses.....	13
Users.....	14
Recommendations.....	16
Mission Statement.....	16
Flow Chart.....	17
Educational Purposes.....	18
Trails and Waterway Maintenance.....	19
Public Awareness Education.....	20
Kiosk Education.....	21
Miscellaneous.....	22
Appendix.....	23
References.....	30

# Introduction

We are a group of students studying Recreation Management through the University of Minnesota Duluth. As a part of the class we have been given the opportunity to develop the first phase of a long-range management plan for an existing recreational facility. Our group is working with the W.R. Bagley Nature Area. The goals of this training exercise are to recognize current management plans based on natural, social, and fiscal resources, and from that guide the agency to developing a long rang management plan emphasizing Bagley Nature Area as a learning laboratory.

# AGENCY OVERVIEW

Bagley Nature Area is 55 acres of forest and trails owned by the University of Minnesota Duluth. It is located on the northern edge of campus separated by Buffalo Street. Bagley has one and a half miles of trails for running, hiking, and groomed cross-country skiing. Many groups and organizations use Bagley on a daily basis. University classes use Bagley for its diversity in wildlife, flora/fauna, and old-growth forest. Bagley has many unique features including Rock Hill, which has a lookout/observation deck overlooking the campus and Lake Superior. At the foot of the hill is Rock Pond, which is a bit bigger than a hockey rink. There are a number of trails that weave around the rest of the area and provide great contouring and cross-country trails. Bagley's purpose is to serve as an education resource to the UMD community, a recreation site, and arboretum for UMD and the Duluth community.

# Mission Statement

A mission statement explains the purpose of an organization. It is the foundation with which the organization is built. Along with the actual mission statement, a vision, significance, and objectives statement is generally included within the mission.

Mission:

The W.R. Bagley Nature Area will provide educational and recreational experiences for UMD students, and community members with objectives that emphasize conservation, nature study, and year round recreation.

Vision:

Unspecified

Significance:

Unspecified

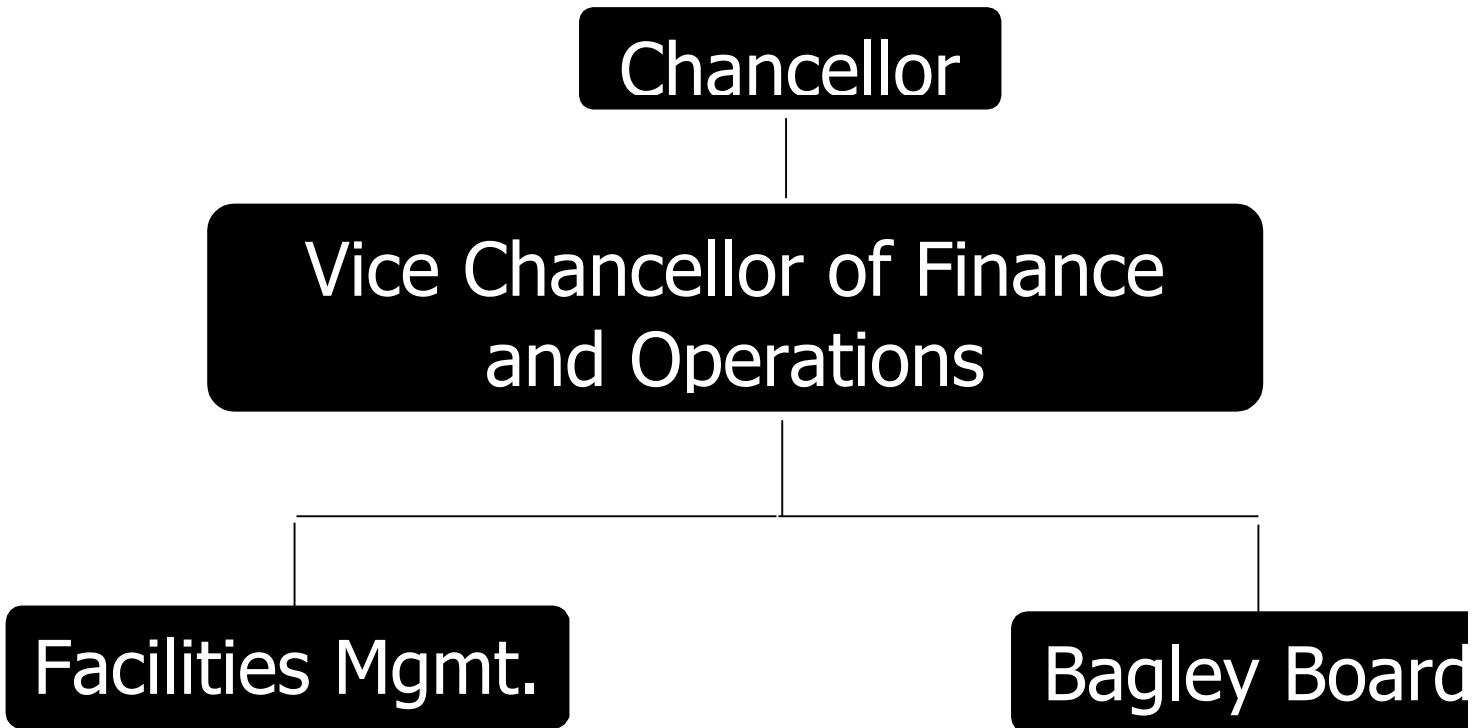
Objectives:

Unspecified

# Flow Chart

A flow chart is used to show the level of hierarchy within an agency. The position at the top of the chart usually is a leader of some sort or holds the position with the most power. Positions at or near the bottom of the flow chart tend to have the most interaction with the issues dealt with, but have the least amount of power to create change.

Bagley Nature Area Flow Chart



# Current Features

Knowing the current features of Bagley Nature Area is a great tool to have for two reasons. One, it allows us to compare its features with the Mission Statement and ensure that the features are compatible with what Bagley is striving to accomplish. Two, the current features can be used as a tool to develop long range management plans by reminding us what it has already, and what potential remains to be found. The geographic, geologic, and ecologic features of Bagley Nature Area play a significant role in fulfilling the mission of educational and recreational experiences for UMD students, faculty, staff, and community members.

## **Geographic Features**

Bagley Nature Area is 55 acres of land owned and operated by the University of Minnesota Duluth (UMD), in Duluth, MN (see figure #1 and figure #2). It can be found on the northwest corner of campus. Buffalo Street separates the BNA from the scholastic buildings of UMD on the south side; Arrowhead Road is the Northern boundary. Residential homes and Brainerd Avenue designate the East boundary (see figure #3). Bagley has 1\_ miles of hiking and groomed cross-country ski trails, an abandoned ski hill, and a pond. Evidence of the ski slopes can still be seen.

Bagley Nature Area is a significant part of the UMD campus, not only for its aesthetic values and beauty, but also as a learning tool because of the old growth Northern Red Oaks, Maples, and Basswoods stands.

## Geologic Features

The geomorphology of Bagley Nature Area consists of hills, creeks, plateaus, a man-made pond, and valleys. Bagley Nature Area is composed geologically of gabbro and basalt rocks. Glaciers created the unique characteristics like Rock Hill as evidenced by the glacial till found on the backside. A natural spring feeds into the southeast side of Rock Pond. The north side of the pond feeds into “Bagley Creek” which feeds into Tischer Creek (a DNR designated trout stream). Throughout history, Tischer Creek has changed its course through Bagley. Eroded banks and dried creek beds wandering through the Nature Area show evidence of this. Evidence can also be found of an old farm. A depression in the land next to the softball fields suggests an old house, as well as the planted non-native trees that created wind blocks and decorative landscaping.

## Ecological Features

Bagley Nature Area is made up of a Northern Mixed Hardwood Forest. The trees within the boundaries include:

- Paper Birch (*Betula papyrifera*)
- Yellow Birch (*Betula alleghaniensis*)
- Quaking Aspen (*Populus tremuloides*)
- Large Tooth Aspen (*Populus grandidentata*)
- Balsam Poplar (*Populus balsamifera*)
- Sugar Maple (*Acer saccharum*)
- Red Maple (*Acer rubrum*)
- Mountain Maple (*Acer spicatum*)
- Boxelder (*Acer negundo*)
- Red Oak (*Quercus rubra*)
- Speckled Alder (*Alnus rugosa*)
- Ironwood (*Ostrya virginiana*)
- Elm (*Ulmus americana*)
- Black Ash (*Fraxinus nigra*)
- Red Pine (*Pinus resinosa*)
- White Pine (*Pinus strobes*)
- Jack Pine (*Pinus banksiana*)
- Scotch Pine (*Pinus sylvestris*)
- Balsam Fir (*Abies balsamea*)
- N. White Cedar (*Thuja occidentalis*)



- American Basswood  
(*Tilia americana*)
- Kentucky Coffeetree  
(*Gymnocladus dioica*)
- Common Buckthorn  
(*Rhamnus cathartica*)
- Apple (*Malus*)
- Crab Apple (*Malus*)

(See Figure #6)

It is important to manage this land for the various stages of forest succession within Bagley. These stages include new growth, mature forest, and a few old growth stands. Red Osier Dogwood and Staghorn Sumac are the only native shrubs in Bagley. Native and non-native wildflowers can be found through out the year including the following:

□ Native Wildflowers

- Large-leaved Asters  
(*Aster macrophyllus*)
- Wood Anemone  
(*Anemone quinquefolia*)
- Nodding Trillium  
(*Trillium ceruum*)
- Jack-in-the –Pulpit  
(*Arisaema*)
- Marsh Marigold (*Caltha palustris*)

□ Non-native Wildflowers

- Valerian (*Valeriana officinalis*)
- Bull Thistle (*Cirsium vulgare*)
- Common Tansy  
(*Tanacetum vulgare*)
- Cow Parsnip (*Heracleum maximum*)
- Nightshade (*Solanum dulcamara*)
- Tartarian Honeysuckle  
(*Lonicera tatarica*)

Bagley is also known for the plethora of animals that can be found running through the trees and leaves. The majority of animals include small mammals and birds, and a variety of other animals. The following have been identified throughout the BNA, some are native, and some have been brought here from other areas around the globe:

- Red and Gray Squirrels
- Flying Squirrels
- Chipmunk
- Red Fox
- Cottontail Rabbit
- Snowshoe Hare
- White-tailed Deer
- Bullheads
- Field Mice
- Vole

- Pine Martens
- Fisher
- Earthworms
- Goldfish/Coy
- Rusty Crayfish
- Black Bear
- Skunk
- Raccoon
- Moose
- Painted Turtle
- Green Heron
- Beaver

When looking at the plant and animal life of Bagley, it is important to consider how much of it can be used for edible purposes. The following list is compiled of plants that may or may not have been previously mentioned. All are considered wild edibles of Bagley.

- Red Elderberry
- Cattail
- Burdock
- Staghorn Sumac
- Acorns
- Pine Needles
- Wild Onion
- Jack in the Pulpit
- Red Clover
- Sweet White Clover
- Japanese Knotweed
- Mountain Ash
- Mullien
- Plantain
- Balsam Fir
- Spruce
- High-bush Cranberry
- Spiny-leaved Sow Thistle
- Bull Thistle
- Crab Apple
- Basswood Buds

# History

Knowing the history of a certain area helps to identify what the agency is about. Things that have worked in the past can be reapplied, and ideas that did not work with the mission can be reassessed to fit the objectives of the organization.

## **History of W.R. Bagley Nature Area**

The Bagley Nature Area has a rich and slightly confusing history. Over the years many lands have been donated to or purchased by UMD. Each parcel of land has had its boundaries rearranged and lands managed differently from its original purpose. What we know as Bagley Nature Area today started as a simple woodlot over half a century ago.

The first plot of land given to UMD was a one-acre piece of property owned by the Dickerman brothers. What was then Rock Hill Park began to grow in 1951 when the City of Duluth donated 13.8 acres of tax-forfeited land to the University of Minnesota Duluth. This land was to be designated for winter recreation and biology fieldwork. Soon after, in 1953, Elizabeth and William Bagley donated 16 acres to the existing park. The Bagley's wished the land would add to the welfare of UMD students, even going so far as to suggest a nature center. In honor of the Bagley donation, Rock Hill Park was changed to its current name of William R. Bagley Nature Area. From that donation, other donations and purchases have added up to equal the current 55 acres that makes up the nature area.

In 1957 a ski rope was installed in Bagley to provide locals a place to enjoy alpine skiing. This was eventually torn down in 1975 with the opening of Spirit Mountain Recreational Center. The first management plan for the nature area wasn't made until 1967. The management objective for Bagley at this time was as a multi-use recreational

area. Bagley was recognized for its native species and their importance to the vegetation of the area. The University put \$58,000 into this plan, which was matched by the U.S Department of Interior Land and Water Conservation funds. Land affected by monies from the LAW CON fund must allow for recreation for the general public. Because the land affected by this fund cannot be specified due to changing boundaries, it should be assumed that all land within the BNA must be open to recreation for the general public. Part of the money was used to construct Rock Pond. It was developed in Bagley for research purposes and to improve recreation opportunities within the area. Another important step in the history of Bagley occurred in 1990 when the Bagley Nature Area Management Committee was established to organize the management of the area. Through the years this committee has been an ad hock group of people with representatives from various groups of Bagley Users.

# Zone of Use

A zone of use is a designation given to an area based on the Recreational Opportunity Spectrum. Designations within the spectrum range from primitive to urban. Its users and the impact they leave on the land determine a specific area's designation.

Within this spectrum, the Bagley Nature Area is considered to be a Roded Natural Area. Developed roads are not visible from all areas within Bagley; however, they surround it and are less than one half a mile from any spot in Bagley. A second criterion to being Roded Natural is the use of access roads. Bagley has two of these roads, which are used for maintenance access throughout the area. Lastly, there must be clear evidence of human use in the natural area. Bagley meets this criterion through in the form of benches, bridges, stairs, and picnic table, fire-pits, garbage cans and portable toilet.

(See figure #7)

# Current Uses and Users

Along with designating its zone of use, knowing the uses and users of an area lets a management team evaluate whether or not the mission and objectives are being met. If it turns out that the unintended users are making up the majority of the users, reevaluation of the mission, or management of the area needs to be completed.

## **Uses**

Bagley Nature Area is unique in that it attracts a wide variety of users. From these users, even more uses are recognized. Some of these uses are intended and the land is managed to promote them; yet, others are unintended and could cause damage to the environment or the actual user. To make clear which activities are appropriate in Bagley and which are not we have separated them into two categories.

- Intended Uses

- Running
- Hiking
- Nordic Skiing
- Nature Observation
- Environmental Classes
  - Field Interpretation Techniques
  - Outdoor Educational Methods
- Leisure
- Photography
- Star Gazing
- Maple Sugarbushing
- Leashed Dog Walking
- Snowshoeing (not on groomed ski trail)

- Unintended Uses

- Biking
- Camping
- Sledding – UMD students
- Snowboarding
- Alpine Skiing
- Release of Exotic Species\*

\*The release of goldfish and coy into Rock Pond has caused major disruption in the watershed. There are a few main concerns with the goldfish: they can carry a disease called spring viremia which can be transferred to other species, they can hybridise with carp and multiply rapidly (laying 2,000 eggs every 8-10 days), they are bottom feeders that consume a lot of the organisms thereby lowering the diversity, and damaging aquatic vegetation in Rock Pond. The Bagley Management Committee, MN Sea Grant and the UMD community are addressing the goldfish problem. Tom Robeck, from the UMD Biology department, and his class plan on testing Rock Pond to try and detect the spring viremia virus. Public education about the issue is in full swing, in the form of signs, brochures and lectures. The issue of releasing exotic species is not limited to Rock Pond. Therefore, the public education specific to the Rock Pond issue will be presented nationally as part of a national campaign to inform the public that the release of exotic species is not beneficial to the environment. Goldfish and Coy are not the only exotic species being released in Bagley. Rusty Crayfish, and plants such as Japanese Knotweed and Common Buckthorn are also prominent and endangering the diversity of the area.

## **Users**

As stated before users of Bagley are numerous and come from a variety of backgrounds. A large percentage of the users come directly from UMD classes taught in Bagley. Other users enjoy it simply for recreational purposes. We have created a few simple lists categorizing the major groups who frequently use Bagley.

### UMD Classes

- Biology
- Ecology
- Outdoor Education
- Environmental Studies
- Art
- Photography

- Geology
- Recreational Sports Outdoor Program
- UMD Athletics
- Duluth Community Members
- UMD Students, Staff and Faculty
- Surrounding Schools

(See Figures #6 & #7)



# Recommendations

The following is a list of recommendations that our group has developed to better the management of Bagley Nature Area. They are grouped into six main categories. Each recommendation will state why we are recommending it and two possible impacts it may have on Bagley Nature Area.

## **Mission Statement**

### Mission

The W.R. Bagley Nature Area will provide educational and recreational experiences which shall foster awareness to University of Minnesota Duluth students, faculty, staff, and community members emphasizing year round conservation, environmental education, and recreation.

### Vision

The Vision of BNA is to be a resource to its visitors as a teaching tool of outdoor education, recreation and natural sciences. The scope of this plan is to manage the site as an outdoor learning laboratory.

### Significance

- Educational Tool
- Recreational Opportunity for UMD students, staff, and Duluth community members
- Urban green-space within walking distance of UMD buildings

### Objectives

- Managed for educational purposes
- Committed trails and waterway maintenance

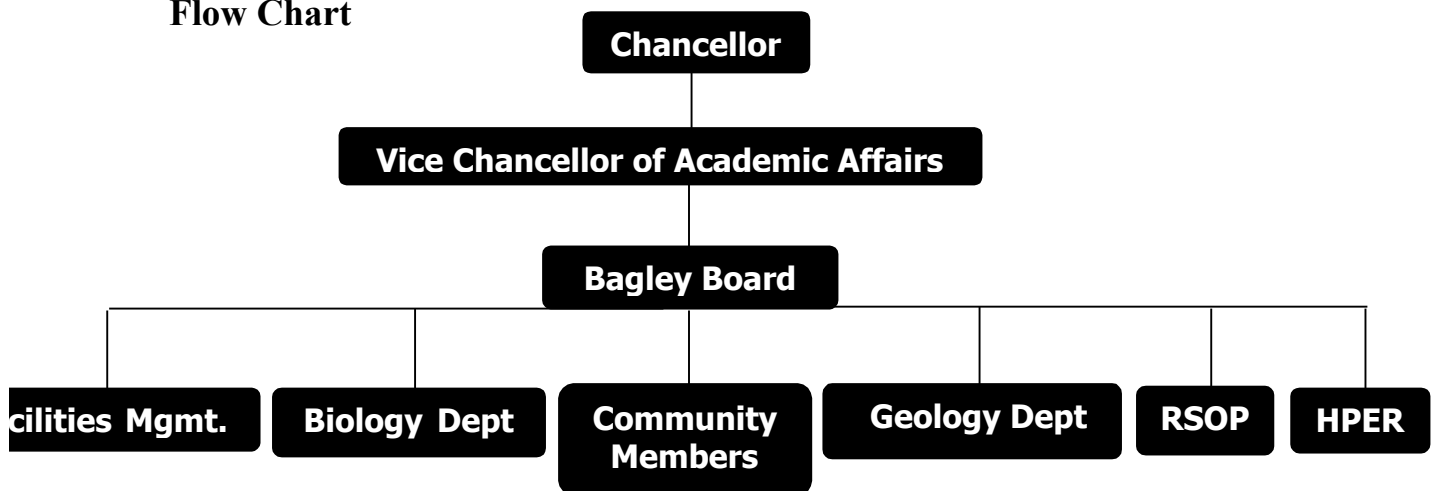
- Public environmental awareness

These recommendations to the Mission Statement are needed to provide the management committee and the users of Bagley with a more concise view of what it is about, and how it should be managed.

Impacts:

1. Bagley will be managed for education before recreation
2. Recreational users may dislike the way Bagley is managed.

### Flow Chart



Our recommendation for the flow chart is to change the Vice Chancellor of Finance and Operations to the Vice Chancellor of Academic Affairs. This way, the focus of the management will be for educational purposes as a learning laboratory instead of recreation. We also suggest that each department be represented in the Bagley Management Board.

Impacts:

1. Needs of users as a learning laboratory addressed easier through Academic Affairs.
2. Communication of needs organized and structured through the Bagley Board.

## **Educational Purposes**

### Teaching Nodes

A teaching node is an open grassy area suitable for groups of people to meet and possibly teach a class. Currently, Bagley has two main teaching nodes: the Learning Tree, and Rock Hill (See figure #7). We recommend Bagley develop a few more nodes to spread out the human impact away from these already heavily used areas. Possibilities for locations include next to Field Six softball field, the grassy area near the trail intersections near the 2<sup>nd</sup> bridge, and across the pond from the Learning Tree, next to the natural spring.

Impacts:

1. Distributes human impact from the Learning Tree
2. Increases educational carrying capacity

### Rock Hill Pavilion

Our recommendation for creating a pavilion on top of Rock Hill also stems from the need to disperse impact from the Learning Tree. We recommend that a pavilion made of non-destructible material be placed at the top of Rock Hill. Picnic tables and a fireplace could be placed within it.

Impacts:

1. Allows classes to commence in increment weather
2. Increase usage on Rock Hill

Ex. July 4<sup>th</sup> picnics

### Scheduled Use

In order to utilize the recommended teaching nodes, and to minimize classes overlapping use at Bagley, we recommend a schedule be developed to alert instructors as

to when certain areas are occupied. To do this, we suggest initiating an email alias that includes all instructors who use Bagley as an educational tool. Scheduling Bagley would not mean that only one class could be out there at a time; it would mean that instructors could plan accordingly if the Learning Tree node was occupied and plan to teach their lesson from a different teaching node.

Impacts:

1. Better communication between users and the Bagley Board
2. Some groups may not want to take the time to schedule a teaching node and therefore would not continue to use Bagley.

## **Trails and Waterway Maintenance**

### Eradicate Goldfish and Coy from Rock Pond

Rock Pond feeds into a designated trout stream. Allowing these species of carp to remain in the pond elevates the risk of the trout stream losing its ability to provide adequate elements for trout to survive. A current proposal in the works is to drain the pond during the summer of 2004. After the pond is drained as far as possible, a chemical will be applied to the remaining water to ensure that everything is killed. The water from the pond will be filtered into the woods. If the Goldfish tested by the Biology class are found to not contain the virus, there is the possibility of giving away the Goldfish.

Impacts:

1. Outflow to Tischer Creek kept clean
2. Biodiversity of pond increases

### Scheduled Garbage Pick-Up

Seeing trash along the trails, in the parking lot, and heaping over the garbage cans is not a pleasant sight to see when trying to observe the natural beauty Bagley has to

offer. Run off from the parking lot goes directly into Rock Pond, thereby creating disturbances in the water. We recommend that Facilities Maintenance have a weekly or monthly pick up of trash throughout the whole 55 acres, not just the garbage cans. We realize that this would create extra work and therefore suggest that Residents who get sanctions for violating Housing policies work with Facilities on the maintenance as part of there service hours. Another option is to have campus groups such as MPIRG, BSA, Chi Alpha, or any other recognized group to do the pick-up as part of a community service project.

Impacts:

1. Cleaner trails, more aesthetically pleasing
2. Users recognize the impact they have on Bagley Nature Area

## **Public Awareness Education**

### Interpretive Trail

Hikers make up a significant percentage of Bagley Nature Area Users. There are currently plans to include the trails in Bagley with the Superior Hiking Trail. Having an interpretive trail is a passive way to educate the public about what they are hiking through. It gives them a sense of place and makes the experience on they can share with others through the knowledge they gain on the trail. We recommend either creating pamphlets at the trailhead, or posting signs along the trail.

Impacts:

1. Guided Discovery for Community and UMD Students
2. Higher evidence of human impact via signs or pamphlets

### Bagley Nature Center

Bagley Nature Area is becoming recognized as a learning laboratory more and more each year. The idea of creating a Nature Center in Bagley is not a new one. It was first brought up with the Bagley donation back in 1953. In 2001, a Student Representative on the Bagley Board again brought up the idea. Having a center in Bagley would mean a centralized location for programs to start. The Audience would not have to walk from campus to Bagley to finish a lesson that requires indoor lessons as an introduction. Ideas for the location include the area just off of the parking lot next to the natural spring, a green house located within the boundaries owned by Ken Peterson, or the hill top next to the Learning Tree. The site by the Learning Tree would require moving the existing volleyball court to possibly in front of the Oakland A Apartment buildings.

Impacts:

1. Centralized meeting place for programs
2. Classroom for UMD Students

## **Kiosk Education**

### User signage

The kiosk is located at the entrance to Bagley Nature Area. This is an excellent place to promote public education about issues affecting Bagley such as the release of exotic species, why mountain biking is not allowed on Bagley trails, and why dogs need to be kept on a leash and picked up after.

Impacts:

1. Decrease in unwanted activities
2. Increase in user knowledge

### Updated Trail Map

The current trail map does not show easily which trails are groomed for cross-country skiing and which are for hiking. It also does not do a good job of informing the public that mountain biking is not allowed. Updating the sign would also allow the recent joining of Recreational Sports Outdoor Program to be noted on the map.

Impacts:

1. Less confusion with users
2. Visually stimulating

## **Miscellaneous**

### Enforcement

It may be a good idea to have a member of Campus Police on the proposed Bagley email alias so that communication between the Board and the police improves. Currently, there is confusion about what is and isn't allowed in Bagley, such as the issue of bonfires and picking up after dogs.

Impacts:

1. Better communication
2. Users feel safer knowing the area is being enforced by the authorities

### Bagley Management Committee

We recommend that the Committee become a recognized committee on campus instead of just an ad hoc committee that meets whenever there is an issue to discuss.

Impacts:

1. Better management of Bagley Nature Area
2. Cooperation and organization increases

# Appendix



Figure 1



# Bagley Nature Area

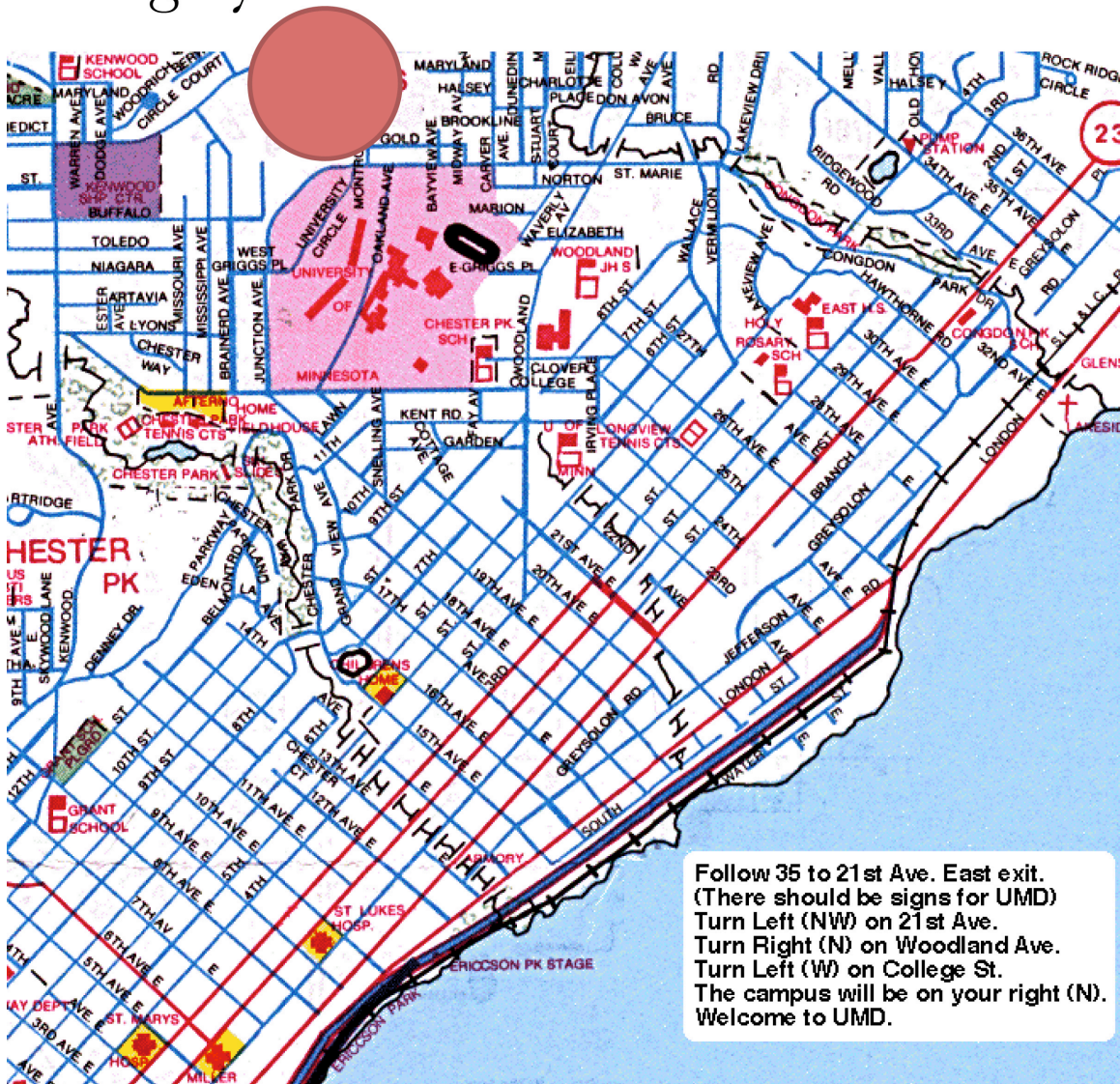


Figure 2

# Bagley Nature Area

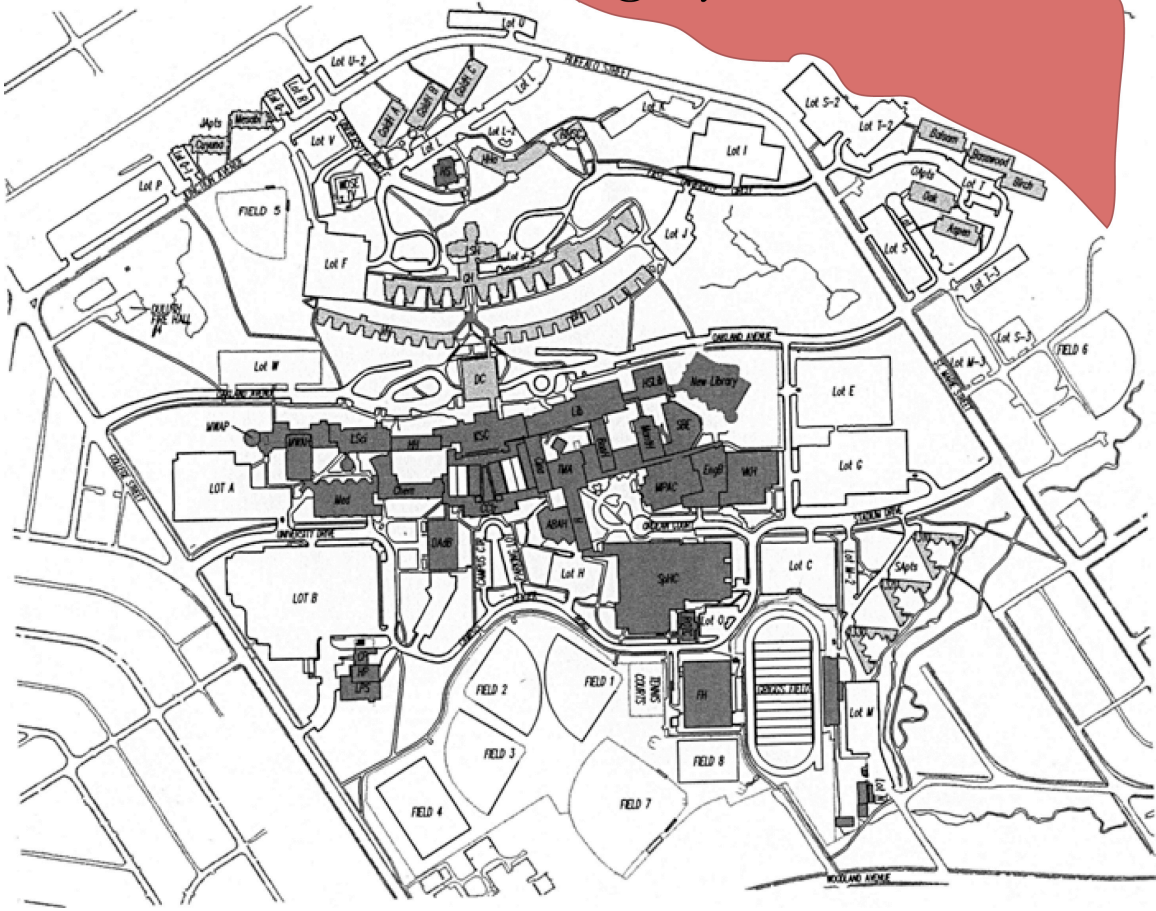


Figure 3

# Bagley Boundary Map

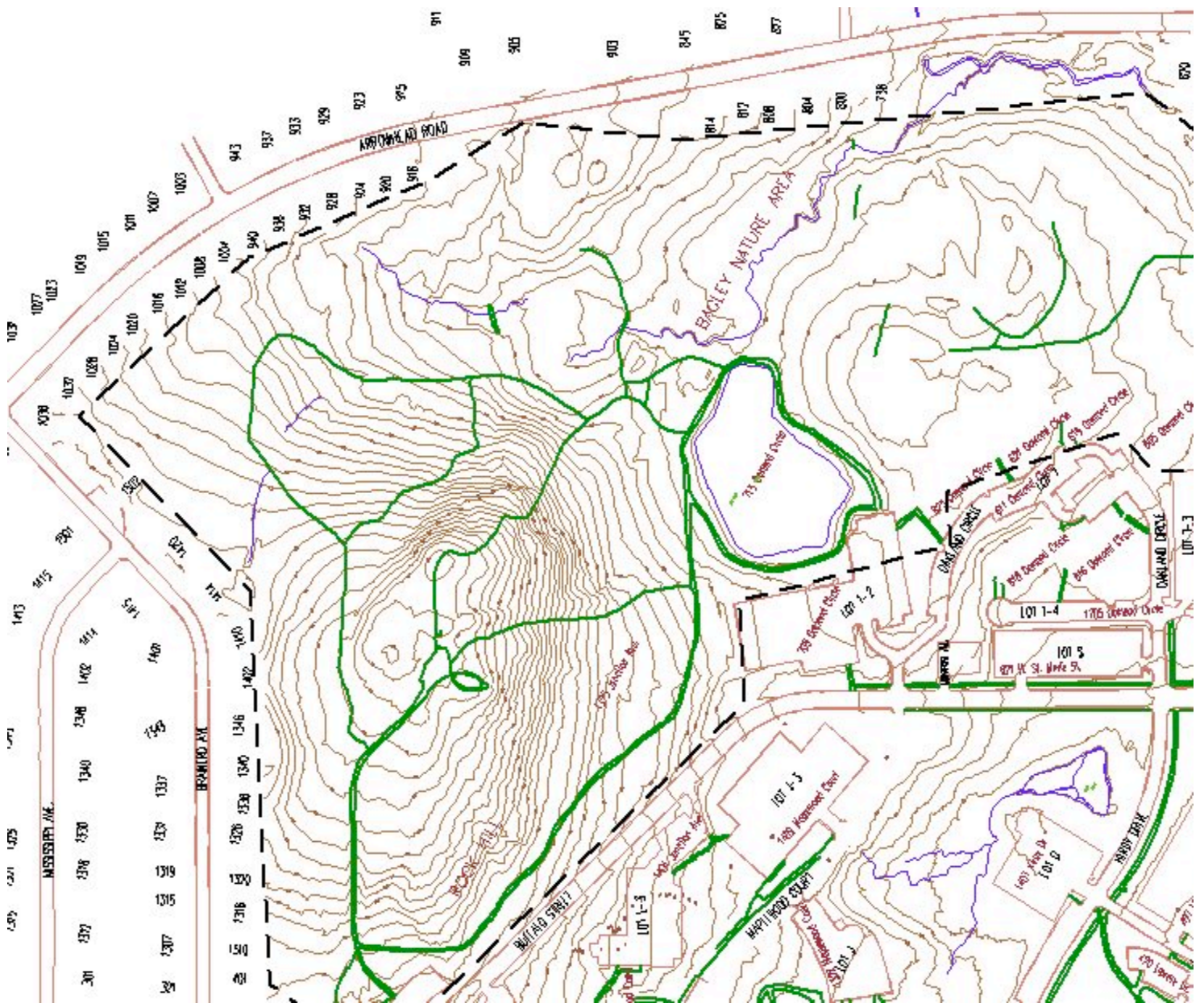


Figure 4

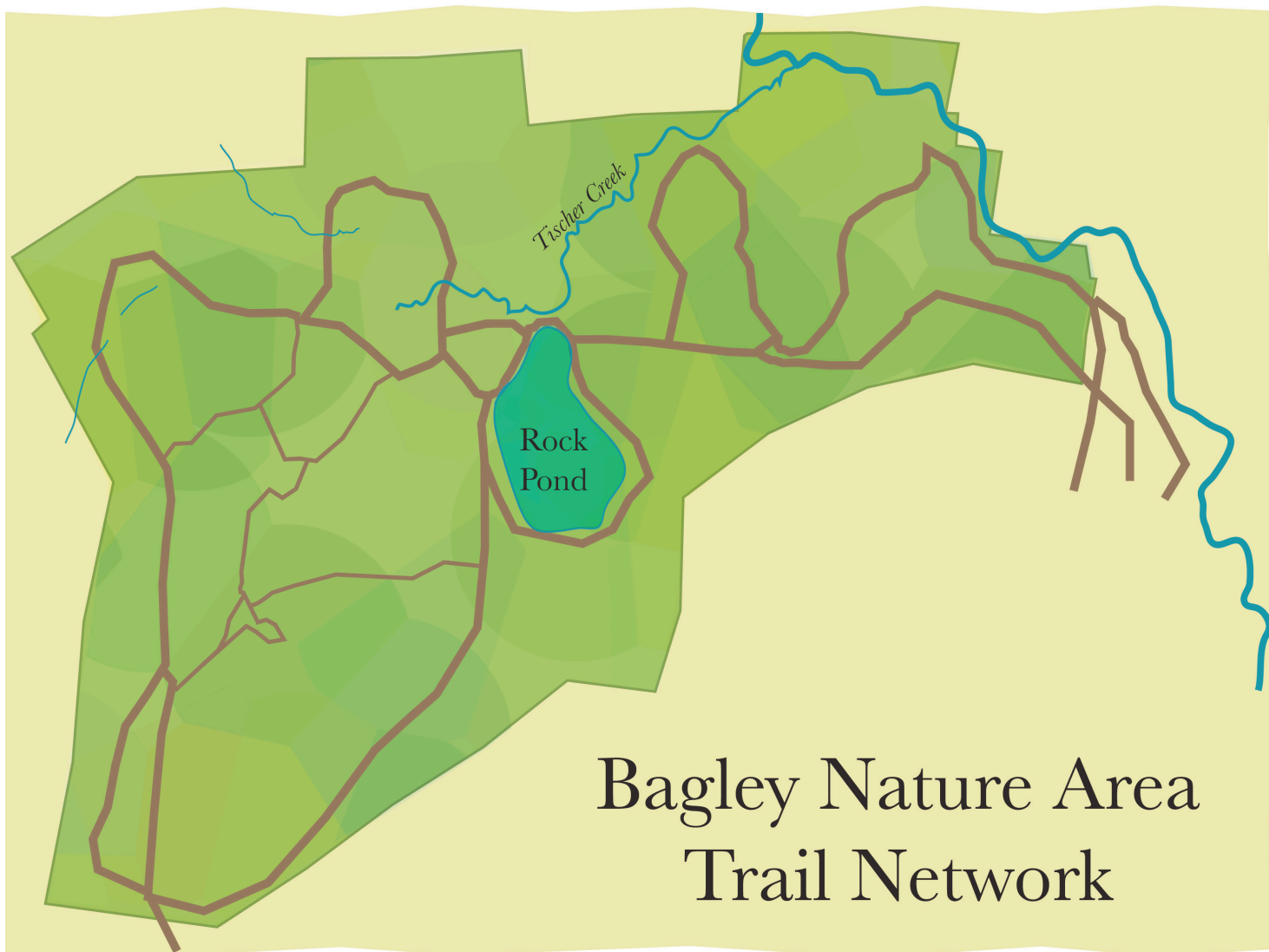
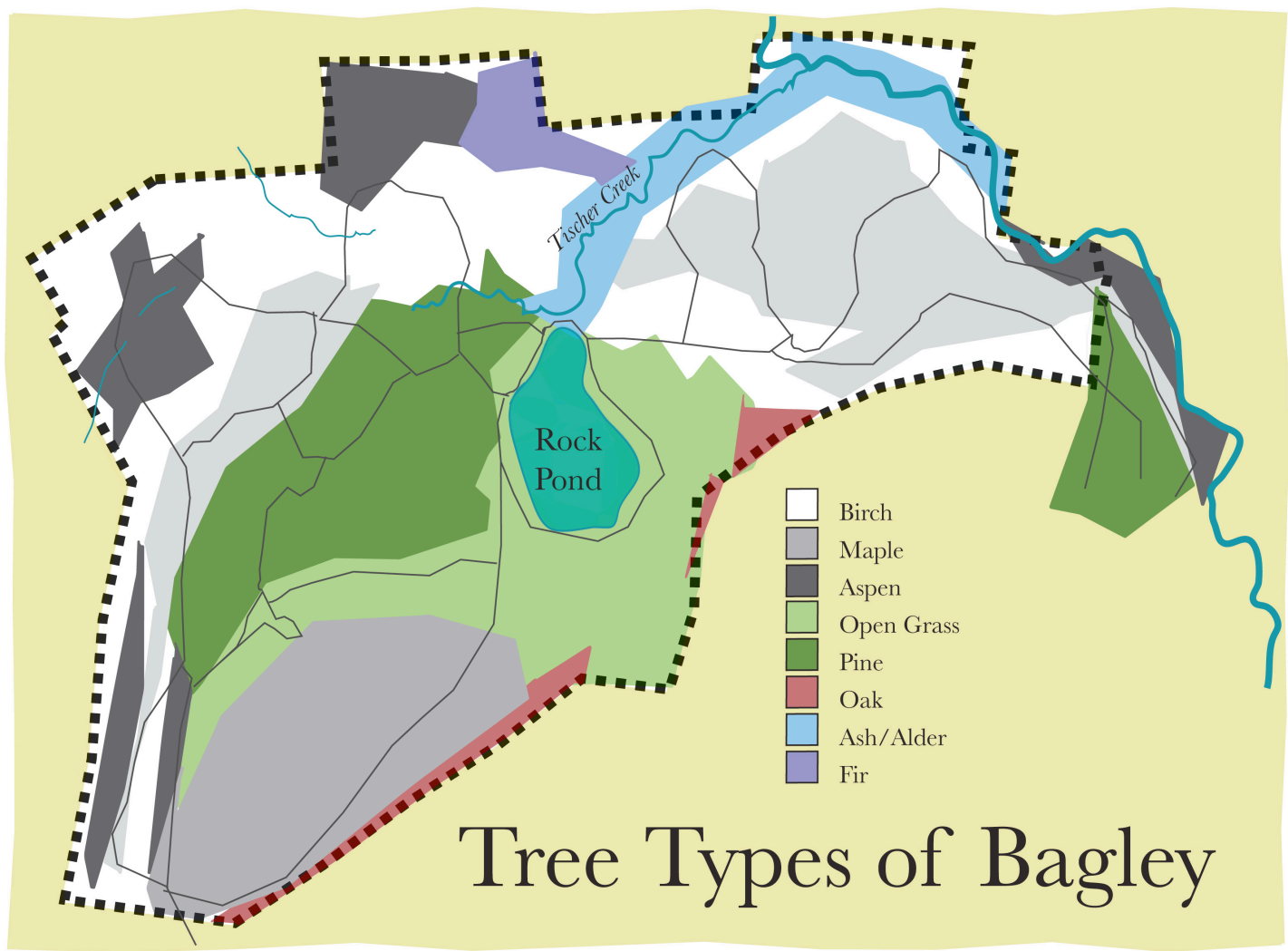


Figure 5



# Tree Types of Bagley

Figure 6

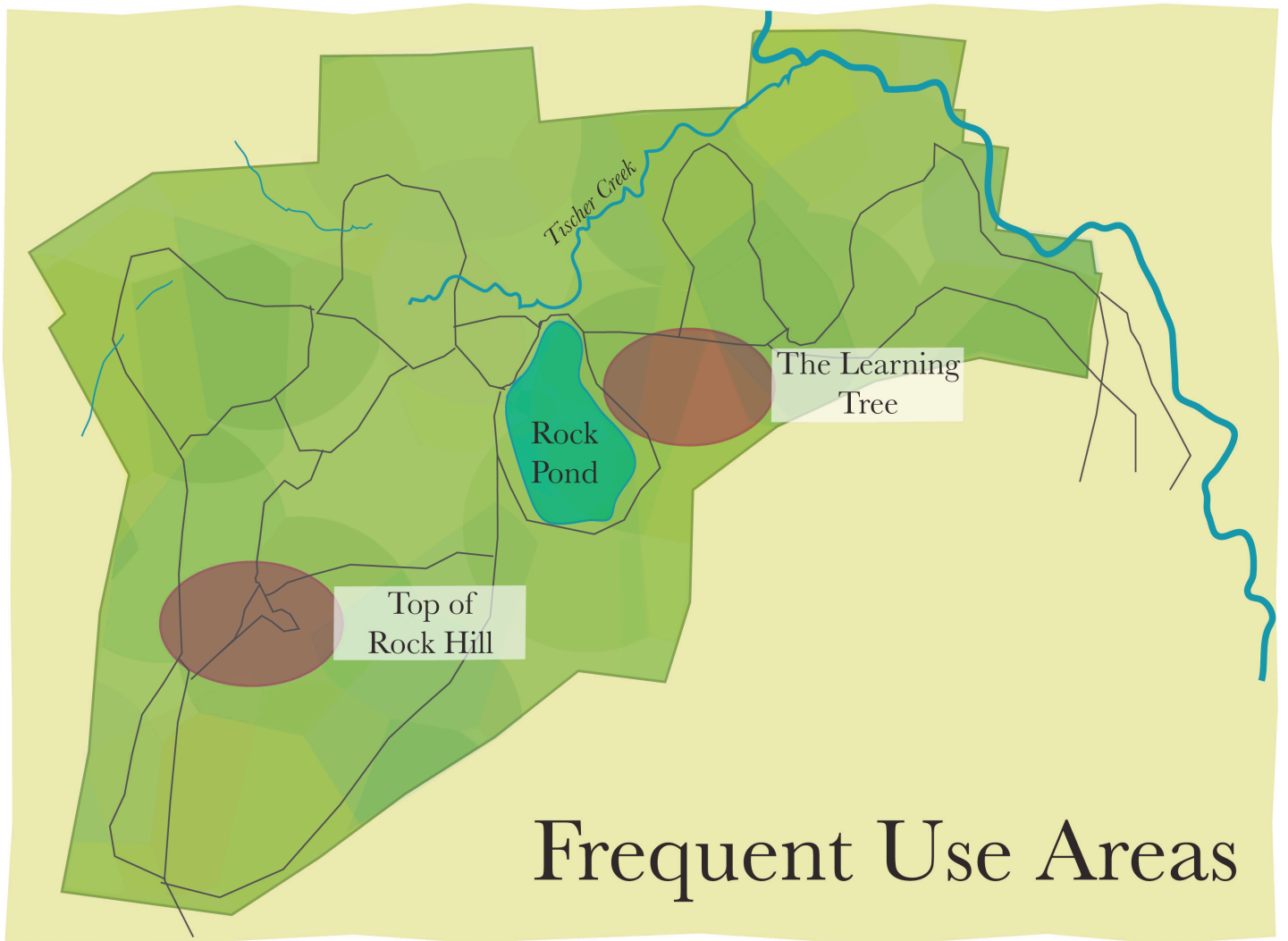


Figure 7

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