Strategic Planning for the City of St. Louis Park: Westwood Hills Nature Center Master Plan

Environmental Science, Policy and Management 4041W: Problem Solving for Environmental Change
Report 1/8 prepared for the City of St. Louis Park by:

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Executive Summary

The master plan developed in this report targets three priorities identified by WHNC staff and city officials for St. Louis Park—invasive species management and restoration, programming options, and marketing. Multiple methods were used to gather data for the development of the master plan. A vegetative analysis of the WHNC property determined priority areas within the park for invasive species removal and native flora restoration plantings. Phone interviews with several Twin Cities nature center’s personnel provided insight into successful programming strategies and themes. Ideas from this pool of knowledge could be adapted to address the specific goals of WHNC. Finally, it was recognized that there was a need for increased marketing of WHNC amenities and services.

The findings of this report served to recommend appropriate measures for addressing the goals of WHNC and the City of St. Louis Park:

• Finding 1: Buckthorn (Rhamnus cathartica and Frangula alnus) is the most predominant invasive species at the nature center.
• Finding 2: A broader array of programming options is needed to increase visitor use.
• Finding 3: Electronic media is the most used marketing choice for four out of five area nature centers.

These findings lead to the development of three recommendations for WHNC:

• Recommendation 1: Manage Invasive Species by Using Chop and Stop Method
• Recommendation 2: Expand Programming to Promote St. Louis Park as a Sustainable Community
• Recommendation 3: Increase WHNC Use of Internet Outreach Tools
Introduction

This report is a resource developed for the Westwood Hills Nature Center (WHNC) and the City of St. Louis Park’s Park and Recreation division as part of a comprehensive investigation of sustainability initiatives. The City of St. Louis Park wished to explore the potential for implementation of citywide sustainability measures. WHNC desired to present a model of low-impact natural resource management and provide educational resources to residents of St. Louis Park and surrounding communities.

This project was a collaborative effort between the University of Minnesota senior capstone course ESPM 4041W: Problem Solving for Environmental Change and the Westwood Hills Nature Center (WHNC), St. Louis Park, Minnesota. The project focused on enhancing natural resource management, educational programming and outreach at the nature center.

WHNC is located in the City of St. Louis Park, MN, a first-tier suburb located west of Minneapolis in Hennepin County. The city consists of 10.8 square miles with a total of 11.5% (750 acres) of the land set aside for parks and open space. There are numerous trails through the city that connect it to downtown Minneapolis, Uptown, Hopkins, and Chaska areas.

In the past 100 years, the size of St. Louis Park has grown substantially from 45 families to 45,216 residents in 2007. By the year 2030 the population is projected to increase by 15.5% or to a total of 51,500 people. There are 23,172 housing units located within 35 neighborhoods across the city. The average age of residents in St. Louis Park is 35 years old. Household demographics include 34% singles, 24% married couples without children, 16% married couples with children, and 5% single parents.

Within St. Louis Park is WHNC, a 160-acre natural park located in the northwest corner of St. Louis Park at the intersection of two major highways. The area features a unique collection of habitats including woodland, marsh and restored prairie nestled around Westwood Lake. More than three miles of walking trails, including wood chipped, paved, crushed rock and wooden boardwalks, provide unique opportunities to explore the nature center. Trails are open daily from sunrise to sunset, year-round. Visitors of all ages can enhance their understanding and appreciation of the natural world through programming at WHNC.

The WHNC has a vision to become a model of sustainability for the residents of St. Louis Park and the surrounding communities. The nature center acts as resource and as an example for citizens to discover options for sustainable practices to carry home to their own landscapes. In order to realize this vision, specific programs will be put
on display at WHNC to familiarize the community with new programs and set high standards for environmental stewardship.

Problem Statement

The WHNC seeks to enhance its capacity for environmental education and sustainable natural resource management. It will promote initiatives to involve private citizens in sustainable practices by modeling within the park practical alternatives to current natural resource management methods. The implementation of these alternatives depends on the support and cooperation of municipal administrators and citizens. The success of these programs is in the interest of the environment as well as the future of the community.

Vision Statements

WHNC Vision
To increase visitor understanding and appreciation of their natural world.

Class Vision
St. Louis Park will be a model of environmental stewardship by providing residents and future generations with educational tools and sustainable practices to foster a community of ecologically conscious and engaged citizens.

Group Vision
To provide a plan of environmental stewardship and community involvement at WHNC that will act as a model for environmental management and sustainability practices for St. Louis Park and surrounding communities.

Goal Statement

The project goal is to create a five-year master plan for the WHNC, in order for it to become a model of sustainability for the residents of the City of St. Louis Park and the surrounding communities.

Objectives

The following objectives guide progress toward the goal statement:

- Conduct a vegetative analysis and create a map of the type, location, and extent of invasive plant species at WHNC.
- Develop a five-year management plan for invasive plant species and native restoration.
- Identify and present opportunities for expanding programming and outreach. Provide a list of funding options and resources to municipality and WHNC.
• Implement sustainability projects developed for ESPM 4041W at the WHNC.
• Educate and encourage public to take sustainable practices in the home.
• Share information with WHNC about natural resource management programming and outreach opportunities that are successful at other Twin Cities nature centers.

**Methods**

**Site Description**

WHNC is located in the northwest corner of the City of St. Louis Park, MN. The city has 10.9 square miles of land of which WHNC represents 2% of the total area. The nature center provides various recreation activities on Westwood Lake and several different biome representations throughout the park.

Westwood Hills was a golf course from 1933 until 1961 as per historical records. By 1971, the City of St. Louis Park bought the 150 acres once owned by the golf course including Westwood Lake. WHNC was completed in 1981 (St. Louis Park Historical Society 2010). Current uses of WHNC include: outdoor education, recreation, and community involvement in natural resource management.

The current visitor market of WHNC is geared toward young couples with children. A wide variety of activities exist including classes inside the nature center and recreation outdoors in the park. Educational programs are targeted toward preschool through high school students and WHNC is developing new contacts with schools while maintaining old relationships with local schools. Outreach programs are designed to reach audiences of all ages in St. Louis Park and the surrounding area. This report will reveal potential programming opportunities for sustainability and good environmental stewardship.

Buckthorn (*Rhamnus cathartica* and *Frangula alnus*) and other invasive species have spread throughout areas of WHNC property, often choking out the native vegetation. This report will propose a five-year rotational plan for natural resource management that includes habitat improvement through invasive species removal and native restoration.

**Vegetative Analysis**

A vegetative analysis of the plant species on WHNC was conducted between the 8th and 16th of October 2010.
Figure 1. Westwood Hills Nature Center Map.
Selecting Sample Plots

Plots were located using systematic transects as recommended by the U.S. Fish & Wildlife Service for invasive plant species management (2009). Systematic sampling assumes the elimination of any choice in the location of samples. The inflexibility is necessary to use statistics to support conclusions. Although more time intensive than a random or selective sample due to the number of plots, a grid produces a comprehensive, unbiased view of local vegetation (Mueller-Dombois and Ellengerg 1974). Plots based on a grid were ideal to avoid overestimating invasive species percentages.

Aerial photos of WHNC property for 2008 were obtained from the City of St. Louis Park and were used to determine sample sites (see Appendix A). ArcMap software was used to create a grid (250ft intervals) (see Appendix A). Landmarks (e.g., forks and bends in trails, houses, structures) on the map photo were used to determine physical locations corresponding to points of intersection on the grid. Points (i.e., sample plots) on the map lying near trails were selected as starting points for field data collection.

Data Collection

Plot size was chosen as 400 square meters (1/10 acre) (Pfister and Arno 1980) and to establish a standard size for analysis and continued monitoring. This size is convenient for estimating coverage but could also be extrapolated up to 1,000m² for a better representation of vegetative composition (Pfister and Arno 1980).

The plot center was marked using a wooden stake. Using a compass to determine the cardinal directions, each plot was divided into four quadrants—northwest, northeast, southwest, and southeast. Two radii of 37.2 ft were extended forming a ninety-degree angle to mark the outer boundary of each quadrant. The arc boundary of each quadrant was visually projected. Percent of ground cover by plant species was estimated (always by the same individual) for each quadrant. Plants were considered independent of one another as they formed different levels of the canopy. Trees with a diameter of 2 inches or more were recorded as the number of individuals within a transect (e.g., n=1). This data was used to illustrate the concentration of buckthorn on WHNC property and to identify the areas of highest management priority.

The criteria used to determine the order of priority within each plot were:
- the extent of invasive species (expressed as percent ground cover),
- the level of biodiversity (low biodiversity defined as fewer than ten species),
- the integrity of the forest structure (determined by clear evidence of a ground, middle, and canopy layer), and
- the proximity of affected areas to nonaffected areas.
Priority was given to plots exhibiting a high percent of buckthorn and/or garlic mustard (*Alliaria petiolata*) and low biodiversity, a missing forest layer, less than five trees (diameter greater than 2 inches), or a situation adjacent to another plot also affected by invasive terrestrial plants. Any combination of these criteria increased the priority ranking.

**Educational Program Inventory and Outreach**

Conversations with WHNC naturalists were held to learn what types of educational programming and outreach the nature center offers. Questions posed to the naturalists addressed the following points:
- the most successful programs at WHNC,
- WHNC target audiences,
- the format of program delivery,
- possible needs to expand program variety, and increase visitor attendance at these programs,
- outreach opportunities undertaken by the nature center, and
- the types of programming advertised online.

**Interviews of Other Nature Centers**

Five out of eight nature centers within a 20-mile radius of the Twin Cities were contacted for interviews. These nature centers were selected for equivalent comparisons with WHNC. The basis of comparison was made on urban or suburban setting, size of the properties, and the guiding purpose of the nature centers. Information was collected via phone interviews with naturalists at Tamarack, Wood Lake, Dodge, Eastman, and Springbrook nature centers. The purpose of these interviews was to understand how metro area nature centers manage invasive species and to learn of the types of educational and outreach programming they provide.

Prior to the interviews, review of the nature centers’ websites provided background information and brief descriptions of public programming offerings. A questionnaire was prepared for phone interviews (Appendix B). Following the each interview, a summary of responses was written.

**Local Outreach Opportunities Inventory**

An inventory of establishments found within a 10-mile radius of WHNC was conducted to identify potential outreach opportunities. This inventory used a combination of Google Earth and Google Maps to approximate driving distances to WHNC. The driving distance was calculated in Google Maps.

The locations identified were included after reviewing websites from the various outreach sites to ensure viability as an outreach option. Locations were categorized as
Nursing Homes/Assisted Living, Hospitals, Preschools, Public and Private Schools (Appendix C).

Findings

Vegetative Analysis

- Buckthorn was the most abundant species and was found in 51% of sampled plots.
- Buckthorn was found in all four representative biomes (Marsh, Maple/Basswood forest, Pine forest, and Prairie) at WHNC.
- Buckthorn, Narrow Leaf Cattail (*Typha angustifolia*), Garlic mustard, and grasses [Reed Canary Grass (*Phalaris arundinacea*), turf grass]. Were the most common plants found in the 64 plots sampled on WHNC property.
- In 20% of sampled plots garlic mustard was one of the two most abundant species.
- Narrow Leaf Cattails were found in 31% of plots sampled.
- In 37.5% of plots where Narrow Leaf Cattail was found it accounted for more than 60% of the total plot area (68.5%, 68.75%, 98%, 100%, 100%, 100%).
- In areas where buckthorn accounted for more than 50% of the ground cover, the forest structure was degraded. In most cases the herbaceous ground layer was absent.
- The pine forest was found to have little to no regeneration and little to no herbaceous ground cover.
- Vegetative communities change quickly over a distance of 250 feet.
- Plant biodiversity is greater at the edges than at the core of the representative biomes.

Westwood Hills Nature Center Inventory

Current programming at WHNC is geared toward children, mostly preschool, home and private schools, and neighboring school districts. Some outreach is conducted at schools and nursing homes in the area. Advertising for the nature center is done through the city of St. Louis Park’s website, Park & Recreation mailings to St. Louis Park residents, and people who sign up on the mailing list. Information about WHNC is available at the Recreation Center in St. Louis Park as well.

Buckthorn is a large concern at WHNC and information was sought for controlling it and other invasive species.
Interviews of Other Nature Centers

Four out of five nature centers had an expansive range of adult programming (see Table 1). Wood Lake Nature Center offers most of their adult programming during the early or late hours of the day. This allows for the daytime working visitors to attend programming. Occasional free programming at several nature centers allows residents to check out what is offered on site for future use. Community gardens have shown to bring visitors with similar interests to the nature centers, with potential for volunteer workers to help with plant management. Nature centers that had nonprofit fund raisers (ex. Friends of Springbrook Nature Center) had success in raising funds for that particular nature center and its programming.

Some areas for outreach that were successful at other nature centers included after school programs, daycare and recreational centers. These areas have potential for being successful at WHNC as well.
The most common marketing strategy among the interviewed nature centers is the Internet. Each had a website to reach the community, but one recent marketing idea is the use of social networking pages. Eighty percent of the nature centers interviewed said they had great success in using social networking pages such as, Facebook and Twitter, and that they are able to reach a much broader community of visitors as well as keeping them updated on news and information.

Flyers and newsletters (online and paper handouts at events, schools, and real mail) continue to work well in advertising events, but paper and mail can be costly at times. Attending community events gives the nature center a face and shows what it has to offer (i.e., health fairs, farmers market, Arbor Day events). Finally, posters that are put up around town and in parks help to visually expose nature centers to the public.

Invasive species management varies from one nature center to another. Some have extensive management plans for controlling the invasive species while others work to remove them in spare time and at random locations. The use of volunteer coordinators is common in 60% of the nature centers interviewed. They aid in recruiting a wide variety of volunteer workers to carry out removal of problem species and other projects.

Full responses from the phone interviews are available in Appendix D.

Local Opportunities Outreach Inventory

WHNC offers educational programs at the nature center and in the surrounding community. Programs intended for community presentation qualify as outreach material and can be used to disseminate information on natural resources to the community. The goal of WHNC outreach is to be a source of natural resource engagement within the community and to connect people with nature.

The primary market during the school year is local private and public schools within St. Louis Park and the surrounding communities. School participation at WHNC has
been declining. WHNC distributes backpack flyers to schools within four miles of the nature center for students to take home to encourage visits to WHNC.

Currently, the WHNC user market is in need of expansion especially during the summer months when school is not in session. During the months when school is in session some schools send the students to WHNC for field trip(s). However, when school is finished for the summer WHNC does not receive the same amount of activity and outreach possibilities must be considered to make up for the decrease of visitors.

Pre-schools and daycare centers are sources of community outreach in the summer months and there are six within five miles of WHNC. Local nursing homes, assisted living homes, and hospitals are also summer possibilities for community outreach and there are five within a four-mile radius of WHNC. The patients and residents of these places would benefit from having a contact with nature, and it has been shown that patients recover more quickly when they are connected to nature (Zamosky 2008). The proximity of the locations can be found in Appendix C and the majority of them are within five miles, which make them an ideal market for WHNC within the city of St. Louis Park.

**Recommendations**

**Recommendation 1: Invasive Species Management Using Chop and Stop Method Invasive Buckthorn Management Plan**

Each plot was ranked for buckthorn management (Table 2). Ranking indicates individual plots that have the highest percent cover of buckthorn and/or are highly susceptible to invasive species infiltration. The plots with the highest concentrations of buckthorn were used to create three unique areas within the park (Figure 3). By targeting each area in succession based on highest priority each year WHNC will be able to focus its resources to efficiently tackle the issue of invasive species within the park.

A combination of “cut-stump” treatment and chemical “basal bark” treatment over a 5-year period will reduce the buckthorn found on WHNC property. The cut-stump treatment is used for mature adult buckthorn, focusing on females over males to prevent seed dispersal, and employs chainsaws to cut buckthorn as close as possible to the ground. A thin layer of Garlon 4 is then applied to the cut stump with a foam brush or spray. The second strategy, basal bark treatment, may be used on buckthorn two inches in diameter or less. Chemical (Garlon 4) is applied around the first 2 to 3 inches of the base of the buckthorn stem.
Table 2

Priority ranking of plots within Westwood Hills Nature Center for invasive species management and restoration.

<table>
<thead>
<tr>
<th>First priority</th>
<th>Plot ID</th>
<th>Invasives dominate (&lt;10 species)</th>
<th>Low biodiversity</th>
<th>Impaired forest str &lt;5 mature trees</th>
<th>Proximity to sensitive plot</th>
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<th>Low biodiversity</th>
<th>Impaired forest str &lt;5 mature trees</th>
<th>Proximity to sensitive plot</th>
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</table>

Key
- Abuts fence
- Transition zone
- Naturalist Request
- Core area
- Along a trail
Garlon 4 is “a selective, oil-based herbicide which effectively kills the cambium of the buckthorn restricting the transport of nutrients” (Koshollek et al. 2010). The active ingredient in Garlon 4 is Triclopyr, which is “a plant growth regulator that mimics growth hormones...causing rapid mature cell growth” (Kosholleck et al. 2010). This prohibits transport of nutrients and the ability to use energy causing the plant to die.

Garlon 4 is ideal due to its short half-life of 30-50 days.

The generic brand of Garlon 4 is Element 4. The generic brand is highly recommended due to lower costs. Alternative herbicides are brands Roundup, Rodeo, or Accord (Glyphosate 25-50% in water). However, Glyphosate is only effective for cut stump treatment and Triclopyr for basal bark treatment should be used in conjunction.

Chemically treated buckthorn is identified by using a visual marker (snap the tops of buckthorn, spray paint or color tag). Restrict chemical treatment to November...
through March to prevent chemical contamination of non-targeted vegetation and wildlife. Late fall to early spring application reduces the volatility of chemicals and the hazard to the applicator.

The basal bark method has been shown to be effective on stumps up to eight inches in diameter, making this method preferable in areas that are highly visible to the public. Therefore, the basal bark method is recommended in areas near park boundaries given its visibility to the community and the public’s perception that it is undesirable to cut down trees.

The most efficient method of removal and regrowth prevention is to use a staggered treatment approach (Table 3). Treatment begins in Area A (year one), then Area B (year two), and finally in Area C (year three). The approach follows the timeline for buckthorn removal as recommended by the Buckthorn Bust Neighborhood Guide (Tree Trust) for each area.

**Table 3.** Suggested buckthorn removal timeline.*

<table>
<thead>
<tr>
<th>Task description</th>
<th>Year</th>
<th>Year</th>
<th>Year</th>
<th>Year</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cut mature shrubs or trees</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treat stumps with chemical control</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remove seedlings</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Plant noninvasives to replace</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continue to monitor buckthorn</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

* Adapted from the Buckthorn Bust neighborhood guide.

It is recommended that Sentence to Serve (STS) be employed to perform the initial cut stump treatment in each area. In subsequent years, a volunteer force can revisit areas treated in previous years to carry out basal bark treatment. Volunteers will supplement the STS labor that is needed to address the incorporation of new areas into the management plan for each additional year. Due to the toxic nature of the herbicide, any volunteers or STS individuals involved should receive safety training and protective equipment.

Re-invasion of invasive species is probable in the absence of continual monitoring and management. It is therefore recommended that to implement a yearly management plan to continue to pull new growth and chemically treat any remaining buckthorn. After each year, buckthorn populations and succession rates can be reevaluated to assess the intensity needed for long-term management.

**Recommendation 2: Expand Programming to Promote St. Louis Park as a Sustainable Community**

WHNC has the opportunity to increase community engagement by serving as a community fixture. It can enhance this capacity by adding new programs and
extending hours. Currently WHNC hours are from 8:00 AM to 4:30 PM (weekdays) or 12:00 noon to 5:00 PM (weekends). Modifying nature center hours to remain open until 8:00 PM on Tuesday, Thursday, and Saturdays from May-October will draw in more visitors, specifically adults who otherwise work during the day. This also allows families to visit outside of school hours.

WHNC is an ideal location for dissemination of information collected by other ESPM 4041W groups and can provide the expertise in environmental education to create engaging and effective programming to share this information with the community. As such, it is recommended that WHNC offer new programming to make this information available to the public.

Create Tree Demonstration Plots to represent each of the four biomes at WHNC

It is predicted that the Emerald Ash Borer (EAB) will devastate Minnesota ash trees. WHNC can make EAB action plans available to private homeowners to educate them about the threat of EAB and explain the measures that will be taken to protect the urban forest in St. Louis Park and the surrounding communities. Tree diversity in St. Louis Park’s urban forest is undesirably low, making it vulnerable not only to EAB but to future pests as well. Therefore tree diversity in St. Louis Park should be diversified. Tree demonstration plots at WHNC will include a variety of tree species that can be suggested for planting on private properties to increase tree diversity throughout the city.

One tree demonstration plot is recommended to be located in each of the four biomes (marsh, prairie, pine, and maple/basswood) represented at WHNC. It is desirable that plots be stationed along trails to increase their visibility to park visitors, and that they be accompanied by signage and other markers to attract visitor interest. Each tree demonstration plot will be composed of a variety of species specific to the biome in which it is found and will encourage diversification of the urban forest. The University of Minnesota Extension Service created “Tough Trees and Shrubs for Tough Sites” (Johnson et al. 2001) and is available online as a resource to identify appropriate species for specific sites. Signage on each demonstration plot will explain: why the specific trees were selected for the plot, the need for greater urban tree diversity, and photos of unique attributes of each tree (e.g. flowers, berries, sun/shade tolerance).

Recruit volunteers and obtain grants and/or corporate donations

Tree demonstration plots can be installed by community volunteers and financed with grants (see Appendix F) and/or corporate sponsorship (i.e., plant nursery donations). It is recommended that a volunteer coordinator position be established at WHNC to arrange for volunteers for WHNC projects and initiatives. A volunteer can be recruited to write grant proposals to secure funding and/or solicit donations for the demonstration plots. Then, a large body of volunteers will be needed to put the trees in the ground. Volunteers can be recruited to help maintain the plots upon installation. Community involvement in the design and implementation of
demonstration plots ensures that a core of citizens is aware of the need for urban tree diversity and acquires the skills and know-how to plant trees. These individuals can spread this information throughout the larger community through word of mouth as well as teach others how to plant trees.

**Build skills and knowledge of invasive species management with active demonstrations**

Active demonstrations of invasive species removal, specifically buckthorn, can be organized to promote community involvement in invasive species management. Demonstrations can be designed for adults, children, and families. Adult demonstrations will involve hand tools such as weed wrenches, saws, and chemicals. Adults will build the skills and knowledge necessary to attack buckthorn on their private property. Child demonstrations will involve hand pulling, brush removal and imagination games (e.g. fort building and craft projects). WHNC naturalists can create programs to make these activities fun and enjoyable for children. Parents and children can use what they learn from the live demonstrations to work together to rid their own yards of buckthorn.

**Offer workshops on alternative vegetation at nearby parks with interested communities**

Public spaces surrounding WHNC are dominated by managed grasses (e.g. lawns, athletic fields). In addition to requiring continual attention and inputs, these areas diminish the biodiversity of the vegetation. Encouraging greater biodiversity on public lands can be encouraged through alternative vegetation plantings. WHNC can organize workshops to be held at nearby parks for communities that express an interest in alternative vegetation landscaping. Workshops familiarize community members with the benefits of alternative vegetation (e.g., minimal maintenance, water filtration), as well as with native Minnesota flora species that can be used for landscaping (see Appendix E). A dedicated core of community volunteers will provide maintenance to alternative vegetation as needed.

Alternative vegetation plots will provide models that park visitors can imitate on their own private property. Alternative vegetation plots can be installed at the parks where workshops are held by workshop participants, financed by a workshop participation fee and supplemented with grants. Initial installation of alternative vegetation plots can be small so that opportunities for future workshops remain. This serves to increase the number of people in the community interested and involved in alternative vegetation planting.

**Install a worm tank and a Plexiglas™ pane to a model compost bin to display aspects of the organic recycling process**

The decomposition of organic waste presents an educational opportunity. It is recommended that a tank of worms be added to the educational animal wall inside WHNC and that one wall of the compost bins outside WHNC be made of Plexiglas™ to allow WHNC visitors to watch as worms transform food scraps and other organic
materials into dirt. Information about the benefits of composting organic wastes and instructions for how to make compost bins can be located next to the compost bin to encourage private citizens to begin organic waste recycling. Black dirt from compost bins can be used in the planting projects described above.

**Develop creative activities to encourage recycling**

One recommendation for a new program at WHNC involves developing a market for difficult to recycle products by turning them into materials for arts and crafts. Students will be interested in the creative activity component of the program, and educators will be able to convey the importance of proper waste management practices. Activities can utilize plastic milk jugs, egg cartons, toilet paper rolls and other household items to create birdhouses, other animal habitats, egg carton gardens, and other nature-centered crafts.

**Public open houses and teacher workshops to attract new visitors to WHNC**

Hosting public open houses and teacher workshops can be used to introduce local teachers and community members to WHNC. Open houses provide the public a chance to learn all of what WHNC offers in their educational programming. Teacher workshops present opportunities to demonstrate how WHNC programs fit into school curriculum. A positive experience at WHNC open houses and/or workshops will encourage teachers to bring their classes to the WHNC for field trips and the public to attend more programs.

**Recommendation 3: Increase WHNC Use of Internet Tools**

Internet marketing is the easiest way to reach a large community of visitors. With the expanding use of social networking sites (ex. Facebook, Twitter), this large community of users can be reached at little to no cost.

In addition, online survey sites such as Survs (https://www.survs.com/) can be used as a client complaint/satisfaction collection station that is useful if clients want to provide any feedback or suggestions.

**Website adjustments and new domain**

Adjustment of the current layout on the nature center’s website would be beneficial (e.g., move information tabs to the top of the page), or even the creation of the nature center’s own domain such as www.westwoodhillsnc.org. Changing the layout of the Nature Center’s web page may allow for more images, more inviting colors, and the ability to expand for online activities. Any changes to the website should preserve the ability for the Nature Center Staff to easily edit content.

**Online outreach**

An alternative to social networking sites is an e-mail distributor called Constant Contact™ (Markowitz). Constant Contact™ is a service (client) for creating
professional looking emails, newsletters, cards, and invitations. Additionally it can send out the media to an unlimited number of contacts and provide feedback after sending. The feedback contains information such as the number of emails opened and which links are clicked on. This information can be used to evaluate the most effective time to send information and also to assess the interest of certain programs. Although it is not a free service, it would allow WHNC to reliably send out e-mails to everyone listed in their customer list and minimally assess outreach programs. This type of approach would allow WHNC to contact their customers that do not have Facebook or Twitter accounts but still have e-mail access.

Web contests for WHNC
A creative way to expand electronic presence and community involvement is to construct a photo/video contest that adult and school age kids could participate in. The contest serves to promote attributes of WHNC and to educate the community about the benefits of those attributes. For example, beautiful Westwood Lake is actually a natural storm water pond that serves to reduce rainwater runoff, a little known public fact. Contests could feature photos and videos submitted on social networking sites (Facebook, YouTube, Twitter) or directly to the WHNC website. Users can be directed to the websites and vote on which photo or video is their favorite by commenting on the entries or by setting up an online to vote. The contest can be advertised at many different social gathering areas and advertised in the local newspaper. This contest can be done monthly with a grand winner chosen at the end of a 12-month period for a special prize.

A follow up to the contest would be to display the winning photos or videos at WHNC, which can draw in community members. This concept would be useful for advertising and utilizing electronic media while bringing people to WHNC. With this expansion in advertising, additional outreach can be done and it will also help engage community members and the surrounding schools.

Conclusion

WHNC has the capacity for a substantial outreach effort and has a well-established base of expertise and facilities for general use. Customization of these recommendations allows WHNC to fully implement a plan that is most effective for the community.

The comprehensive approach of this report provides information to guide WHNC and the City of St. Louis Park to create a customized master plan to address invasive species, programming, and marketing. The recommendations offer an invasive species management option, expanded programming and marketing to invigorate public interest in WHNC, and the promotion of sustainable natural resource management initiatives at WHNC and in St. Louis Park.
References

Carlson, S. Professor at University of Minnesota, Personal Communication, October 7, 2010.
Haines, D. University of Minnesota Graduate Student. Email correspondence October 4, 2010.
Markle, A. Woodlake Nature Center Naturalist. Phone interview, October 13, 2010
Vaughn, J. Environmental Coordinator, Personal Communication, October 4, 2010
Westwood Hills Nature Center
Vegetative Analysis - Plot Numbers

Legend
- Park Boundary
- Grid
- Plot Number

Westwood Hills Nature Center Vegetative Analysis Plot Location and Number
December 1, 2010

350 Meters
Appendix A (continued)

East view

South- Southeast view
Appendix A (continued)

South-Southwest view

West view
Appendix B

Phone Interview Script –

Hello, my name is _____________ and I’m a student at the University of Minnesota. I was wondering if someone would be willing to take a few minutes and answer some questions I have about your nature center.

As part of my senior project, I am part of a group developing a 5 year management plan for the WHNC in St. Louis Park and we are looking at how other nature centers are managed. I’ve been to your website, but I would (still) like to further my understanding of your programs, outreach, and management of invasive species.

Programs- -What are your most successful/attended programs for youth/adults?  
-Who attends these programs? 
-What are they about? 
-How are the programs carried out?

Outreach- -What (if any) types of community outreach do you have? 
-What audience are they aimed towards? 
-How is it carried out?

Marketing- -How do you advertise your programs? 
-What has been most successful?

Management of Invasive Species- 
-Do you currently have invasive species on the property?  
-Is there a management plan for controlling these species? 
-How is it carried out? 
-Who carries out the work? (Employees, volunteers, STS, Community Service)

*If they do have a management plan, ask them if they have a copy we could have for reference.*
Appendix C

<table>
<thead>
<tr>
<th>Type/Location</th>
<th>Distance from WHNC</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nursing Homes/ Assisted Living</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visiting Nursing homes and assisted living is a nice way to give back to the community but is also a source of enjoyment and entertainment for elderly individuals. This has potential to be a year round source of activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Texas Terrace Care Center</td>
<td>0.9 mile</td>
<td>7900 West 28th Street, St. Louis Park (952) 920-8380</td>
</tr>
<tr>
<td>Visiting Angels Assisted Living</td>
<td>1.5 miles</td>
<td>5871 Cedar Lake Rd S # 101, St. Louis Park (952) 544-6300</td>
</tr>
<tr>
<td>Park Health and Rehab Center</td>
<td>3.2 miles</td>
<td>4415 West 36 1/2 Street, St. Louis Park (952) 927-9717</td>
</tr>
<tr>
<td>Gentle Care Inc</td>
<td>3.6 miles</td>
<td>4517 Minnetonka Boulevard, St. Louis Park (651) 621-5693</td>
</tr>
<tr>
<td><strong>Hospitals</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It has been researched that contact with nature and living things has been beneficial to patients in boosting their attitude, morale, and well being while they recover in a hospital (Zamosky ). This has potential to be a year round source of activity.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Park Nicollet Methodist Hospital</td>
<td>3.9 miles</td>
<td>6500 Excelsior Boulevard, St. Louis Park (952) 993-5000</td>
</tr>
</tbody>
</table>
**Pre-Schools**

Children are becoming less connected with nature and a connection to nature is crucial (Louv). A visit to the Nature Center or the Nature Center visiting Daycare Centers to show kids fascinations about nature and will promote Westwood Hills Nature Cente

<table>
<thead>
<tr>
<th>Pre-Schools</th>
<th>Distance</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arise and Shine Montessori</td>
<td>0.7 miles</td>
<td>7330 West 14th Street, St. Louis Park</td>
<td>(952) 545-2244</td>
</tr>
<tr>
<td>Bassett Creek Montessori School</td>
<td>0.9 mile</td>
<td>9400 Cedar Lake Road, St. Louis Park</td>
<td>(763) 577-1500</td>
</tr>
<tr>
<td>Discoveries Children Daycare</td>
<td>2.8 miles</td>
<td>3801 Wooddale Avenue South, St. Louis Park</td>
<td>(952) 922-8411</td>
</tr>
<tr>
<td>Little Flowers Montessori</td>
<td>3.6 miles</td>
<td>5224 Minnetonka Boulevard, St. Louis Park</td>
<td>(952) 925-3876</td>
</tr>
<tr>
<td>Kindercare Learning Center</td>
<td>3.8 miles</td>
<td>4732 Excelsior Blvd., St. Louis Park</td>
<td>(952) 920-8548</td>
</tr>
<tr>
<td>Kidzone Child Care Center</td>
<td>5.1 miles</td>
<td>3700 Alabama Avenue South, Minneapolis</td>
<td>(952) 929-7636</td>
</tr>
</tbody>
</table>
Westwood Hills Nature Center has a long standing mission in promoting environmental stewardship and building a conscious attitude towards the environmental problems that are present in the world today. Schools can provide a great source of activity during

### Schools

<table>
<thead>
<tr>
<th>Public</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SLP Jr. High School</td>
<td>0.4 miles</td>
<td>2025 Texas Avenue - St. Louis Park 952-928-6300</td>
</tr>
<tr>
<td>Peter Hobart Elementary</td>
<td>1.3 miles</td>
<td>6500 West 26th Street, St. Louis Park (952) 928-6600</td>
</tr>
<tr>
<td>Aquila Elementary</td>
<td>1.9 miles</td>
<td>8500 West 31st Street, St. Louis Park 952-928-6500</td>
</tr>
<tr>
<td>Park Spanish Immersion Elementary</td>
<td>2.3 miles</td>
<td>6300 Walker Street, St. Louis Park (952) 928-6759</td>
</tr>
<tr>
<td>SLP Sr. High School</td>
<td>3 miles</td>
<td>6425 West 33rd Street, St. Louis Park (952) 928-6100</td>
</tr>
<tr>
<td>Susan Lundgren Elementary</td>
<td>3.4 miles</td>
<td>4801 West 41st Street - St. Louis Park 952-928-6700</td>
</tr>
</tbody>
</table>
### Appendix C (continued)

<table>
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<tr>
<th>Private</th>
<th>Distance</th>
<th>Address</th>
</tr>
</thead>
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<tr>
<td>Metropolitan Open School</td>
<td>2.6 miles</td>
<td>3390 Library Lane, St. Louis Park (952) 926-5552</td>
</tr>
<tr>
<td>Holy Family</td>
<td>3.1 miles</td>
<td>5925 West Lake Street, St. Louis Park (952) 925-9193</td>
</tr>
<tr>
<td>Minneapolis Jewish Day</td>
<td>3.3 miles</td>
<td>4330 Cedar Lake Road South, St. Louis Park (952) 381-3500</td>
</tr>
<tr>
<td>Calvin Christian School</td>
<td>3.6 miles</td>
<td>4015 Inglewood Avenue South, Minneapolis (952) 927-5304</td>
</tr>
<tr>
<td>Benilde St. Margaret</td>
<td>3.7 miles</td>
<td>Hwy 100, Minneapolis, Minnesota (952) 927-4176</td>
</tr>
<tr>
<td>Groves Academy</td>
<td>4.0 miles</td>
<td>3200 Highway 100 South, St. Louis Park 952-920-6377</td>
</tr>
</tbody>
</table>

Roger Ulrich Study

*Last Child in The Woods*
Appendix D

Phone Interview Script Responses

Dodge Nature Center (Julie Allen – Schedule/Restoration/Special Events Coordinator)

Programs-
- Most popular programs are farm related. They draw in kids, families, and seniors. Participants get to pet the animals and learn about them (i.e.- where milk comes from).
- Other popular programs include maple syrup making in March, tree & insects from the orchard, and reptiles and amphibians. These are popular with all age groups.
- 1st Tuesday of every month seniors get together for an hour at the nature center for OWLS (Outwardly, Wiser, Livlier Seniors). Programs focus on the natural environment.
- Community garden plot- vegetables and some flowers. There is also a market every Wednesday.

Outreach-
- Seniors in nursing homes, churches, YMCA, Scouts, after school programs. Cost is $135/hr ($75-100/hr for schools).
- Woodbury Community Center
  - Programs for parents & child
  - Very hands-on

Marketing-
- Newsletter sent to members.
- Advertising at the onsite preschool.
- Facebook, Twitter
- Advertising for BIG events is through an email blast to all on the mailing list.
- Internet is the #1 for marketing

Management of Invasive Species-
- Buckthorn, burdock, garlic mustard, purple loosestrife
- 12 groups of volunteers helped removed buckthorn for an 8 week period this fall (2010).
- Volunteer Coordinator works to gather workers.
- Augsburg and Macalester colleges send volunteers to the nature center.
- STS workers come out in groups of 3-4
- County Rehabilitation workers getting back into the work force carry out much of the work.
- Volunteers from the Tree Trust also come to help.

Management plan?
Several grants that were received helped to create their master plan. It consists of a HUGE hard copy, and they did not have a copy for me. I was told to come to the nature center to view the master copy if I wanted.
Eastman Nature Center/Three Rivers Parks District (Lee Ann Landstrom – Interpretive Naturalist and Environmental Educator)

Programs-
- High demand for mid-week preschool sessions – each week there is a new topic. Same program is run each day for 4 days. Kids are signed up for one of those days and has repeated attendance each week.
- Halloween event was large, bringing in 500 people/day for 2 days.
- Other holiday events have a great turn out (May Day, Easter, St. Patrick’s, Christmas), with each of these events bringing about 50-80 people.
- Programming available every weekend. Little bit of lecture, mostly hands on.
- Wildlife watching, summer camps, snowshoe hikes, moon walks, demonstrative paintings.
- Cell phone audio stops (visitor can call a number that gives them information along the trails, receives about 25 calls/month).
- Free Family Fun Days
- Looking into getting more adults involved. Current revisioning processes.

Outreach-
- There are 2 schools that hire the nature center to go to the school and teach each school grade in an outdoor nature area.
- Park and Recreation agencies also seek outreach.
- Plan to “beef up” outreach in the future.

Marketing-
- Facebook is a big contributor.
- Brochures are created by the Three Rivers Park District that lists all things happening at every nature center and park.
- Newspapers, like the Star Tribune sometimes put out articles.
- Email list
- Create posters and post them in town and at parks.
- Go out to community events to show their “face”, talk about the nature center and pass out brochures. Examples: Farmers market, health fairs, Arbor Day events.
- Bike trails that connect with trails at the nature center help being in people. There is also a trailhead located at Eastman Nature Center.

Management of Invasive Species-
- Working to remove buckthorn from the nature center → out. Only a handful of it outside the nature center building, much further out on the property.
- No garlic mustard immediately around the building, some farther out.
- Richardson NC has almost a complete buckthorn understory.
- Volunteers and STS work with forestry staff to remove invasive species.
- Corporate groups (Target, Cargill) just help put down woodchips on trails.

Management Plan?
The revisioning process brought forth 31 total objectives that the Three Rivers Park District is focusing on. A hard copy of these objectives was mailed for reference.
Springbrook Nature Center (Tara Rogness – Interpretive Program Supervisor)

Programs-
- Most attended programs are the “Special Events” that are hosted at the nature center around holidays. Examples include Pumpkin Night, which had about 3,400 people show up during the one night event. Before Easter there is a program that brings in about 2,500 people. Other popular events take place around holidays. *NOTE* These “Special Events” are non-educational. They are considered a community event.
- Weekly animal feeding program brings in people.
- Friday night movies- FREE (charge for optional concessions). Turn out depends on the type of movie- Planet Earth movies had less of a turn out compared to themed or cartoon related movies.
- Children programs (Pollywogs) see about 15-40 children, plus their parents.
- Contracted with 6 school districts to teach science to K-8 grade.
- Everything is very hands-on.

Outreach-
- Advertising in classrooms, daycare centers, preschools.
- Weekly programs at preschools. “Edutainment” with live animals.

Marketing-
- Nature center is owned by the city of Fridley, information about the nature center gets sent out in the city’s quarterly newsletter. BUT, it used to every resident, now it only gets sent to people on the mailing list.
- Rely on their website and the city of Fridley’s website
- Flyers (16,000) get sent out at schools.

Management of Invasive Species-
- Buckthorn, Purple Loosestrife, Garlic Mustard.
- Used beetle on the Purple Loosestrife about 6-7 years ago. Needs to be done again.
- Management of invasives is taught in some of the curriculum to 5th graders – help learn and remove species.
- Clubs remove invasives
- Since Buckthorn is a problem everywhere, need to educate the public more.
- Garlic Mustard in mainly under control.
- Work is also done by volunteers and corporations volunteers like Medtronic.

Management Plan?
Many separate management plans (i.e. water, prairie, trails), but no comprehensive management plan for the nature center. Recently applied for a grant to get a comprehensive management plan.
Tamarack Nature Center (Megan Nysse- Naturalist)

Programs-
- Most popular are the apple cider and maple syrup making programs.
- Preschool on site- partnership with White Bear Lake Area Schools.
- All programs have an outdoor component.
- Orienteering for Families – approximately 15 people attend.
- New Breakfast Hike for adults – small numbers while introducing the program. About 3 people attended.
- Wide variety of programming available for preschool-high school linking classroom curriculum to field trips

Outreach-
- Available upon request
  - Preschool/schools and senior homes.

Marketing-
- Ramsey County Website
- News letters
- In local newspapers

Management of Invasive Species-
- Buckthorn is a major problem and not under control.
- Reed Canary Grass
- Spotted Knapweed-controlled through regular burns on the prairie.
- Ramsey County Natural Resource Manager develops natural resource management plan.
- Work is carried out by volunteers, staff, and a handful of community service workers.

Management Plan?
Ramsey County has a copy of the master plan, but the nature center has no direct access to it. On Ramsey County website([http://www.co.ramsey.mn.us/parks/tamarack/index.htm](http://www.co.ramsey.mn.us/parks/tamarack/index.htm)), click on Destination for Discovery. Links to master plan goals and executive summary.
Wood Lake Nature Center (Amy Markle, Naturalist)

Programs-

- Preschool, ages 3-5 in a ‘nature adventures’ program.
- Interactive, instructions for parents, felicitation
- 6 year olds attend every other week
- Neighboring schools come to the nature center. Partnership since 1971 with the schools to provide grades K-6 with programming 3 times a year (fall, winter, spring). Connects concepts they are learning in class with a hands on experience.
- Put on a fund raiser to pay for the programming fees for the students.
- Marathon & a 5K race
- High schools are taught upon request. Teachers partner with naturalists to help teach the kids.
- Schools and seniors come out to make maple syrup.
- Home school groups (K-6) come monthly for programs.
- Occasionally, programs are free
- Guest speaker comes in once a month during the winter months
- Discusses alternative powers (solar, wind), travel, etc.
- Adults use the nature center in the early and late hours of the day.
- Book club has approx. 8-12 people/ time.
- Snowshoe making – 6-13 people / time
- Bird hikes-anywhere from 2-20 people (sometimes weather dependent)
- Adult programs are more often attended on Tuesday & Thursday nights

Outreach-
- Really, only offer outreach programming to groups who lack physical or financial ability to go to the nature center.
- Senior citizen homes and teach them how to make apple cider.
- Speaking at rotary clubs.

Marketing-
- Brochure is sent to people on the mailing list (real mail, not email- sent to several thousand people.)
- Friends of Wood Lake (FOWL) help raise money (i.e.-Benefit dinner)
- Their website: www.woodlakenaturecenter.org
- All three methods are very successful

Management of Invasive Species-
- Nature center is surrounded by riparian forest & prairie. Invasive species include buckthorn and garlic mustard.
- Working to remove the species from the building → outwards.
- Species location is mapped.
- Removal by pulling, or by chainsaw for buckthorn if large (well-established).
- Removed species are stacked into piles to provide habitat for wildlife.

Management Plan?
- No current information.
## Appendix E

### Prices of Native Plants for WHNC

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>MN Native Landscapes</th>
<th>Itasca Greenhouse Inc.</th>
<th>Dragonfly Gardens</th>
<th>Native Prairie Inc.</th>
<th>Out Back Nursery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$/pot or 6 pack</td>
<td>$ per pot</td>
<td>$/pot or 6 pack</td>
<td>$/pot or 6 pack</td>
<td>$/pot or 6 pack</td>
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<tr>
<td><strong>Shrubs</strong></td>
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<td></td>
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<tr>
<td>Amelanchier spp.</td>
<td>Serviceberry</td>
<td>6.00-11.00</td>
<td>8.99</td>
<td>18</td>
<td>21.45</td>
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</tr>
<tr>
<td>Cornus racemosa</td>
<td>Gray Dogwood</td>
<td>6.00-11.00</td>
<td>8.99</td>
<td>18</td>
<td>21.45</td>
<td></td>
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<tr>
<td>Corylus americana</td>
<td>American Hazel</td>
<td>6.00-11.00</td>
<td>8.99</td>
<td>18</td>
<td>21.45</td>
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<tr>
<td>Hamamelis virginiana</td>
<td>Witch Hazel</td>
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<td>8.99</td>
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<td></td>
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<td>Sambucus canadensis</td>
<td>American Elder</td>
<td>6.00-11.00</td>
<td>8.99</td>
<td>18</td>
<td>21.45</td>
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</tr>
<tr>
<td>Sambucus pubens</td>
<td>Red-berried Elder</td>
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<td>Viburnum lentago</td>
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<tr>
<td><strong>Understory Trees</strong></td>
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<td></td>
</tr>
<tr>
<td>Cornus alternifolia</td>
<td>Alternate Leaf Dogwood</td>
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<td>18</td>
<td>21.45</td>
<td></td>
</tr>
<tr>
<td>Ostrya virginiana</td>
<td>Ironwood</td>
<td>6.00-11.00</td>
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<td>70</td>
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<td>Prunus virginiana</td>
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<td>$3.25</td>
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<td>Thuja occidentalis</td>
<td>White Cedar</td>
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<td>Abies balsamifera</td>
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<td>$1.55-3.14</td>
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<td>$1.55</td>
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<td>20</td>
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<td><strong>Garlic Mustard Replacement List</strong></td>
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<td>Asarum canadense</td>
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<td>Viola canadensis</td>
<td>Canada Violet</td>
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<td></td>
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<tr>
<td>Viola sororia</td>
<td>Common Blue Violet</td>
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<td>Viola pubescens</td>
<td>Downy Yellow Violet</td>
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<td>Hydrophyllum virginianum</td>
<td>Virginia Waterleaf</td>
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<td>Aquilegia canadensis</td>
<td>Wild Columbine</td>
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<td>4.99</td>
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<tr>
<td>Matteuccia struthiopteris</td>
<td>Ostrich Fern</td>
<td>5.99</td>
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<td>Parthenocissus inserta</td>
<td>Virginia Creeper</td>
<td>6.00-11.00</td>
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</tbody>
</table>

*Trees are typically priced by the pot which is usually 6-20" on average with 1 seedling per pot. Companies vary.*

*Flowers are usually sold by the 6 pack or by flats of 48 plants.*
Appendix F: Grants

- **The Cynthia Krieg Watershed Stewardship Grant**
  - **Minnehaha Creek Watershed District**
  - **Criteria:** This grant will fund a project that “…supports community service initiatives to protect water quality and promote public awareness…Native habitat restoration, development of educational sites and exhibits demonstrating water quality protection principles and public education such as posters, flyers, videos…”
  - Recommendation 1, 2 and 3 meet the criteria of the Cynthia Krieg Watershed Stewardship Grant. In particular, these funds can be applied to Recommendation 1 to restore native habitat upon buckthorn removal. Native plants provide better riparian coverage to decrease overland flow reducing nutrient input into Westwood Hills Lake. Recommendation 2 will engage the community in educational alternative vegetation workshops. These workshops will promote native landscaping, which help to filter rainwater and prevent runoff from the landscape. The grant can be applied to the purchase of native plants and to pay the workshop staff. The video contest (Recommendation 3) can be used to increase public awareness of water resources at WHNC (e.g., Westwood Lake).

- **Conservation Partners Legacy Grant**
  - **Minnesota Department of Natural Resources**
  - **Criteria:** This grant provides funds “…for work to enhance, restore, or protect the forests, wetlands, prairies, and habitat for fish, game, or wildlife in Minnesota”.
  - Recommendations 1 and 2 meet the criteria of the Conservation Partners Legacy Grant. Specifically this grant could be used for invasive buckthorn removal and native plant restoration to enhance the condition of the forests at WHNC. Additionally, the grant money could supplement the cost of native plant purchases for alternative vegetation workshops.
  - [http://www.dnr.state.mn.us/grants/habitat/cpl/index.html](http://www.dnr.state.mn.us/grants/habitat/cpl/index.html)

- **Woody Biomass Harvest for Habitat Restoration Grant**
  - **Minnesota Department of Natural Resources**
  - **Criteria:** This grant is looking for a project that “…helps to restore high quality native plant communities by removing ecologically inappropriate woody vegetation…support local businesses…and employ labor crews… Efforts provide direct benefits to ecosystems, economies, and human communities”.
  - Recommendation 1 meets the criteria for this grant. Buckthorn qualifies as an “ecologically inappropriate woody vegetation”. Purchases of native flora for restoration from local nurseries support local businesses, and labor will be provided by Sentence To Serve and volunteer crews. Overall this project will improve the WHNC ecosystem, local economy and community.
  - [http://www.dnr.state.mn.us/grants/habitat/biomass_grant.html](http://www.dnr.state.mn.us/grants/habitat/biomass_grant.html)
Outdoor Recreation Grants
- Minnesota Department of Natural Resources
  - Criteria: “…eligible projects include: nature study/observation areas, and natural area restoration.”
  - Recommendation 1 and 2 fit the criteria of this grant. The grant can be applied to buckthorn removal and native habitat restoration in Recommendation 1. The tree demonstration plots, alternative vegetation plots and organic waste compost bin in Recommendation 2 qualify as “nature study/observation areas”.
  - [http://www.dnr.state.mn.us/grants/recreation/outdoor_rec.html](http://www.dnr.state.mn.us/grants/recreation/outdoor_rec.html)

Project Learning Tree- GreenWorks Grants
- Minnesota Department of Natural Resources
  - Criteria: “…partnerships with groups, businesses or organizations within their communities to help implement and sustain environmental projects… habitat improvements.”
  - Recommendations 1 meet the criteria of this grant. Invasive species management (Recommendation 1) will form partnerships with Sentence to Serve, local plant nurseries, and volunteers. A five-year management plan provides evidence of the intention to sustain this environmental project. Additionally, removal of invasive buckthorn and replanting native species will improve the quality of the habitat at WHNC.
  - [http://www.dnr.state.mn.us/grants/plt.html](http://www.dnr.state.mn.us/grants/plt.html)

The Lorrie Otto Seeds for Education Grant Program
- Seeds for Education Program
  - Criteria: “Projects must emphasize involvement of students and volunteers in all phases of development, and increase the educational value of the site … use of, and teaching about, native plants and the native-plant community is mandatory, and the native plants must be appropriate to the local ecoregion and the site conditions (soil, water, sunlight).”
  - Recommendation 2--specifically the Alternative Vegetation Workshops-- meets the criteria of this grant Community involvement in the alternative vegetation workshop is ensured since interested communities approach WHNC to initiate the workshops. All ages are encouraged to participate in the workshops and maintenance of the resulting alternative vegetation gardens. Workshops will teach the community of the importance of alternative vegetation, and specifically native vegetation, for the landscape. Additionally, appropriate native plant species will be customized to each site.
  - [http://www.for-wild.org/seedmony.htm](http://www.for-wild.org/seedmony.htm)