Forest Stewardship Plan

Prepared for:
Bever Park
City of Cedar Rapids Parks and Recreation Department
City Services Center
500 15th Avenue SW
Cedar Rapids, IA 52404

Location: Section 14 & 23, T83N, R7W, Linn County

Total Acreage of Plan: ~ 56

Written by Iowa DNR District Forester:
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NRCS Natural Resources Conservation Service

Forest Stewardship Plan

Bever Park City of Cedar Rapids

~56 Acres

Owner's Objectives:

- To provide a woodland environment for enjoyment, aesthetics, and safe recreational opportunities.
- To provide habitat for game and non-game wildlife.
- To keep woodland area in good condition for future generations, and reduce populations of non-native invasive species present when feasible.
- Potentially create a local volunteer crew to manage non-native invasive species in the park, and to utilize forest management activities as a way to educate the public on forest management.

General Description, Site History, and Adjacent Sites

The preparation of this plan is part of the Healthy Forests & Invasive Plant Control in the Cedar River Corridor Grant from the USDA Forest Service and is a cooperative effort between the Iowa Department of Natural Resources/Forestry Bureau and corridor communities such as Cedar Rapids, Coralville, and Iowa City. The Bever Family donated this land in the early 1900's to the City of Cedar Rapids. This park is in southeast Cedar Rapids and just southeast of Washington High School. The park is ~91 acres in size which includes parking, a pool, a tennis court, a children's farm/zoo, playgrounds, hiking/walking trails, and ~56 acres of forest cover.

Looking at the enclosed 1930's photo of the property there has been significant forest cover in this park for a long period of time. The terrain on the property is flat in the bottom areas and generally rolling to steep in the upland areas (ranging from to 2 to 30% slopes).

Soils Descriptions

There is no specific soils information for this portion of Cedar Rapids, but looking at information for adjacent properties and the type of vegetation (significant native forest cover habitat) on the site these soils most likely developed under native forest cover.

Stand Descriptions and Management Suggestions

The forest cover has been divided into 5 different stands or areas (See Map) for the purpose of describing the vegetation on the site. Each stand will be divided into three different layers: overstory (upper level of the forest), mid-story (middle layer), and understory (lower level) when present. The density of each layer will be defined three possible ways: dense, moderately dense, and scattered.

Trees in each stand will be put into five possible size categories: seedling-sized (less than 1 inch in diameter), sapling-sized (1 to 4 inches in diameter measured at breast height (DBH) 4.5 feet off the ground), pole-sized (5 to 12 inches DBH), small sawtimber-sized (13 to 18 inches DBH), and large-sized ($\geq$ 19 inches DBH). Shrub and non-woody vegetation will also be listed when found in significant populations.

Stand 1

The overstory (upper layer) of this stand consists of scattered large-sized white and red oak, and scattered pockets of pole to small sawtimber basswood and a few pole-sized buckeye and sugar maple. There is some dead red oak in this stand that has most likely died from the fungus that causes the disease oak wilt. There are also a few dead scattered white oak in this stand. The mid-story consists of scattered pole-sized Norway maple (non-native invasive) and basswood. Along the south edge of this stand there are spots of pole-sized tree-of-heaven (non-native invasive). The understory (lower layer) of this stand consists of scattered seedling to sapling-sized ash and buckeye. Also, the non-native invasive plants such as Oriental bittersweet, barberry, honeysuckle, and garlic mustard are present in this lower layer.

Stand 1 Dead Red Oak

Stand 2

This area is a bottomland drainage. The overstory (upper layer) of this stand consists of scattered large-sized cottonwood and a few silver maple. The understory (lower layer) of this stand consists of scattered seedling to sapling-sized elm. Also, the non-native invasive plants such as Oriental bittersweet, barberry, and garlic mustard are present in this lower layer.

Stand 2

Stand 3

The overstory (upper layer) of this stand consists of scattered large-sized white and red oak. There is some dead red oak in this stand that has most likely died from the fungus that causes the disease oak wilt. The mid-story consists of scattered pole-sized sugar maple. The understory (lower layer) of this stand consists of scattered to moderately dense pockets of seedling to sapling-sized sugar maple and ironwood. Also, the non-native invasive plants such as Oriental bittersweet, barberry, and garlic mustard are present in this lower layer.

Stand 3

Stand 4

The overstory (upper layer) of this stand consists of scattered large-sized white oak. The understory (lower layer) of this stand consists of scattered seedling to sapling-sized ironwood and basswood. Also, the non-native invasive plants such as barberry and garlic mustard are present in this lower layer.

Stand 4

Stand 5

This stand is in the north side of the park. The overstory (upper layer) of this stand consists of scattered large-sized white and small sawtimber to large-sized black/red oak. There is some dead black/red oak in this stand that has most likely died from the fungus that causes the disease oak wilt. The mid-story consists of few scattered pole-sized Norway maple (non-native invasive). The understory (lower layer) of this stand consists of scattered seedling to sapling-sized elm, black cherry, ironwood, ash, and a few tree-of heaven (non-native invasive). Also, the non-native invasive plants such as Oriental bittersweet, barberry, burning bush euonymus, honeysuckle, privet, and garlic mustard are present in this lower layer.

Stand 5 Dead Black/Red Oak

Management Suggestions:

Forest Stand Improvement

Any action that improves the growing conditions and overall plant health in a stand of trees is called Forest Stand Improvement (FSI). FSI activities can include the removal of vines, crown competition, weed trees, non-native invasive species, and the use of prescribed fire.

- These woodland areas are currently at a crossroads because there is a large diversity of non-native invasive plants invading many areas. If an aggressive/consistent effort is not started soon many of these non-native plants will continue to reduce the bio-diversity, increase the potential of site erosion, and reduce the recreational accessibility in the park in the near future. To improve the quality of the woodland areas in this park strongly consider reducing or eliminating as many of the different non-native invasive species as possible (i.e. Oriental bittersweet, barberry, burning bush euonymus, privet, buckthorn, honeysuckle, amur maple, tree-of-heaven, Norway maple, white mulberry, and garlic mustard (See Invasive Species Alert). This is not something that will be accomplished over-night; instead it will have to be a long-term effort to manage some of these plants.

- Any vines on desirable trees that are getting up into the crown and competing for light should be cut. If the vines are Oriental bittersweet they need to be cut and treated with a registered herbicide to eliminate re-sprouting or the roots need to be carefully pulled out of the ground completely if you do not want to use any herbicides.

Vine cutting

Creating Open Woodland Areas/Oak Re-generation (Stands 1 & 3)

Historically portions of upland forests in this county were often described as open woodlands, meaning they had limited understory vegetation. In portions of these two stands the overstory is scattered large white and red oak, and mostly seedling to sapling-sized sugar maple, ironwood, and ash. Also, in portions of these stands some of the large oaks have begun to decline in health and die. Basically, in areas like this there is no new oak coming at all because it is not tolerant to shade, and it needs full availability to sunlight to become re-established. If areas like this are left alone eventually as the oak decline in health the remaining forest cover will be sugar maple, ironwood, and other shade tolerant tree species. If there is no management to promote oak in any of these stands eventually much of the oak in these stands (which is key to diversity and wildlife habitat) and in the park will be gone.

In these stands where there are pockets of scattered large-sized white oak and some red/black oak consider re-creating a few small pockets or areas of open oak woodland. To re-create an open woodland look and to give oak an opportunity to re-generate in the future, consider using a combination of mechanical removal and possibly prescribed fire to accomplish this task. Try a small manageable area (1/4 to 1 acre in size) at first, and then in future years if you like the results you can expand the area where the conditions are similar.

Before

Combination of understory tree removal and prescribed fire to create an open woodland

After

Since the potential of using prescribed fire in this location is most likely very limited use weed tree removal in portions of these stands to create a more open understory. In specific portions of each stand consider removing seedling to sapling-sized ironwood, basswood, hackberry, ash, sugar maple, Norway maple, and elm to create an open-woodland like area. ****Note:** Do not do this work between March 1 and November 1 to avoid wounding any existing oaks during the removal activities. Wounding oaks at this time of year can make them more susceptible to the fungus that causes the disease oak wilt. In areas where an open woodland will be created remove all species listed above level to the ground that are 6 inches in diameter or less and treat the stumps with a herbicide labeled for this use to prevent re-sprouting. All trees must be lying on the ground and none can be left leaning on adjacent trees. Also, break down branches & tree tops of any felled trees that are above breast height (4.5 feet) for aesthetic reasons. All trails must be kept free of downed trees.

Trees of these species between 7 and 13 inches in diameter should also be killed standing by cutting flaps or a double girdle with a chainsaw all the way around the trunk and treating these wounds with a herbicide labeled for such use. **Chemicals used in performing these practices must be applied according to authorized use, label direction, and other federal or state policies and requirements.**

Chainsaw Girdle **Hatchet Girdle**

If prescribed fire becomes a management option it can be used after weed tree removal to maintain an open woodland habitat. ****VERY IMPORTANT:** If ever burning, be sure to have a burning plan, permit if required (required in Linn County), assistance, create firebreaks around the burn area, notify the local fire department, local law enforcement, and neighbors before the fire is set. Prescribed fire is a good forest management tool if used correctly, but if not used correctly it can cause significant damage to the site. Prescribed fire is also a good tool to keep non-native invasive shrubs such as barberry and honeysuckle from re-invading an open woodland. If you are using prescribed fire to maintain an open woodland and you start to get natural regeneration of oak in the understory have the Iowa DNR Forester re-evaluate the site before prescribed fire is continued.

Tree Health

Through the summer (a couple times) each year take a walk through these areas to see if any trees are showing problems. Symptoms to look for during your walks include: small or distorted leaves, browning, yellowing, or wilting leaves, dying branches or trees, or trees that just do not look right.

With the presence of oak there is the potential to have problems with a disease called oak wilt. This is a disease found in Iowa on oaks, and it is caused by a fungus. **As mentioned in the site descriptions this disease is present on portions of this site.** The trees in Iowa most commonly impacted by this disease are species such as red and black oak, but it can infect white and bur oak also. If black, northern pin, or red oak are infected by the fungus that causes this disease they usually die within the summer they are infected. White oak and bur oak can often take a number of years before they succumb to this disease after infection.

The key for the city in this situation is to continue to monitor for problems such as this, and to contact the District Forester's office if problems are found. One way to avoid the potential transfer of the fungus that causes oak wilt problems is to not prune or wound oaks **between March 1st and November 1st each year. I would focus any pruning or work in the woods during the dormant season (November through March 1).**

Browning and Wilting Symptoms (Oak Wilt)

Wildlife Management

The four basic habitat requirements needed by any type of wildlife include cover, space, food, and water. Each wildlife species often needs different amounts of these different requirements, and how close each of these requirements are to each other impacts how suitable an area is to a specific species. The forest cover on the property is beneficial to deer, turkey, squirrels, and a variety of other wildlife species. During my site visit all of these animals plus a fox were observed on this site. Forestry management practices that promote a diversity of tree species and reduce invasive non-native plant species will be beneficial to a variety of wildlife. Protect snag trees (dead trees or tree tops) that are being used as habitat as long as they will not damage anything if they fail.

Cavity Tree

Archeological Sites/ Rare and Endangered Species

During site visits no specific archeological sites (i.e. Native American burial mounds) and/or rare, endangered, or special concern plant and/or animal species were observed, but this does not mean that they are not present. If there are any significant sites or species found on the site, they should be protected during any site activities. Also, if something significant is found, notify my office and we can assist with suggestions for protection of critical areas or plant and/or animal species.

NLEB

Please beware of the Northern Long Eared Bat (NLEB) regulations. Tree removal should not occur within .25 miles of a known hibernaculum. Do not cut or destroy a known occupied maternity roost tree, or any other trees within a 150 foot radius from the maternity roost tree, during the pup season (June 1 through July 31). For updated information on the NLEB go to U.S. Fish and Wildlife Service (USFWS) at https://www.fws.gov/midwest/endangered/mammals/nleb/.

NLEB can occur in any county, unlike the Indiana Bat. Known hibernaculum and roost trees in the state can be found at: https://www.fws.gov/midwest/endangered/mammals/nleb/pdf/IowaNLEBHibernaculaAndRoostsByTWP03May16.pdf

Forests of Recognized Importance

During site visits no specific forested areas of outstanding and critical importance due to their environmental, social, biodiversity or landscape value were found on this property.

Air, Water, & Soil Protection

On this site keep out non-native invasive species so they will not shade out many of the native plants and increase the potential for erosion during rain events. Reducing the populations of non-native invasive plants will help promote the native plants that help protect the soil and reduce erosion.

Risk Trees

With a number of the trails in this park going through some heavily forested areas it is important that the City monitors for risk trees on a regular basis. Risk trees are trees that carry a particularly high risk of structural failure which could cause property damage or personal injury. To be considered a risk tree, a tree must have both of the following: 1) structural defect that makes it prone to failure and 2) a nearby target that it could land on, which could be a trail, picnic table, grill, fire pit, parking lot, bench, etc. As trees grow larger and bear more weight and become greater in height, they need to be frequently monitored for structural decline in high-use areas on a routine basis.

Tree Harvesting

Harvesting trees for timber production is not a goal of the City, but if oak wilt and other health issues continue to eliminate some quality trees in this park consider harvesting these trees in the winter after they die to reduce future risk tree situations and to salvage some of the quality dead trees before they lose their value. Even a few quality trees a year could be salvaged and sold to local log buyers or a portable sawmill could be brought in to process the logs so the City could use the lumber material for park projects such as benches and picnic tables. Work with the Iowa DNR District Forester to develop a process to salvage this material if there continues to be loss of quality trees in this park in the future..

Invasive Species Alert

Monitoring, reducing, and eliminating invasive species in this park now will help promote the natural beauty of the area, and will significantly reduce the potential negative impacts that invasive species could have in this park. Work with the Iowa DNR District Forester to select the best management method for each specific situation.

Below are a few methods that can be considered depending on the specific target plant:

- Monitor areas on a regular basis to stop plant populations before they get out of control.
- Complete plant removal-Dig and destroy if seeds present.
- Cut trunk and treat stump with registered herbicide.
- Spot treat or basal bark spray target plants with registered herbicide.
- Utilize flash goat grazing to reduce and minimize plant populations.
- Rx fire in specific situations.

Note on herbicides: The label is the law! You must follow the label exactly. If any instructions in this letter are contrary to the label that is in your possession, then contact the DNR Forester for consultation. Herbicides must be used in accordance with their labels.

Oriental Bittersweet

This plant is a non-native woody vine that is very aggressive, and it can overwhelm native trees and shrubs. **Oriental bittersweet is currently one of the most destructive non-native invasive plants found in Iowa woodlands, and it is common in the park.** Go to http://www.iowadnr.gov/Conservation/Forestry/Forest-Health for a brochure on management. If careful pulling this plant out by the roots (get the entire root) can be a successful management method.

Oriental Bittersweet

Honeysuckle

This plant is in the park. Honeysuckle is a shrub that can be introduced into a forested area by birds. This shrub can grow 5 to 8 feet tall in the understory of a forested area where it can become invasive and cause heavy competition for more desirable native plants.

Barberry

This plant is in the park. Barberry is a landscape plant that can also be introduced into forested areas by birds. Depending on the variety, this shrub can grow 3 to 5 feet in the understory, and as you can see below it can overtake an area and out-compete the native plants.

Barberry

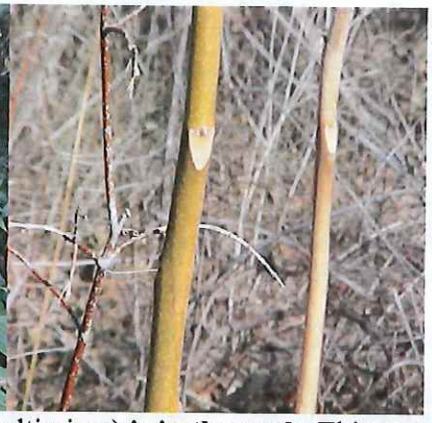
Multiple Plants

Multi-Flora Rose

This plant is in the park. This plant prefers full sunlight, and grows 4 to 5 feet tall.

Multi-Flora Rose

Tree-of-Heaven

Tree-of-heaven (Ailanthus altissima) **is in the park.** This species is not native to the United States, and if left alone it will most likely continue to spread on the property.

Common Buckthorn

Common buckthorn is a tall shrub or small tree that can be introduced into a forested area by birds. This plant can grow 5 to 15 feet tall in the understory of a forested area where it can become invasive and cause heavy competition for more desirable native plants. **This plant is in the park.**

Common Buckthorn

Privet

Privet is a landscape plant that can also be introduced into forested areas by birds. **This plant is in the park.** Depending on the variety, this shrub can grow 5 to 10 feet in the understory.


White Mulberry

This plant is in the park. White mulberry (*Morus alba*) is a native tree to China and can grow 30 to 40 feet tall. Its leaves are shiny compared to native red mulberry. The tree can produce large amounts of fruit that allows birds to spread it quickly and significantly.

Burning Bush/Winged Euonymus

This plant is in the park. This plant has been used by homeowners for years in their home landscapes, but over the last few years it has begun to appear in native woodlands. This plant can grow 5 to 15 feet tall.

Burning Bush/Winged Euonymus

Norway Maple

This plant is in the park. Norway maple (*Acer platanoides*) is a non-native tree native tree that can grow 30 to 50 feet tall.

Garlic Mustard

This plant is aggressive, and is common in the park. Since Garlic mustard (*Alliaria petiolata*) was introduced to the United States it has become a very invasive plant in forested areas in eastern and northern Iowa. There is a new publication on this plant that can be found at http://www.iowadnr.gov/Conservation/Forestry/Forest-Health.

(1st year stage) **Garlic Mustard** (2nd year stage flower and seed stage)

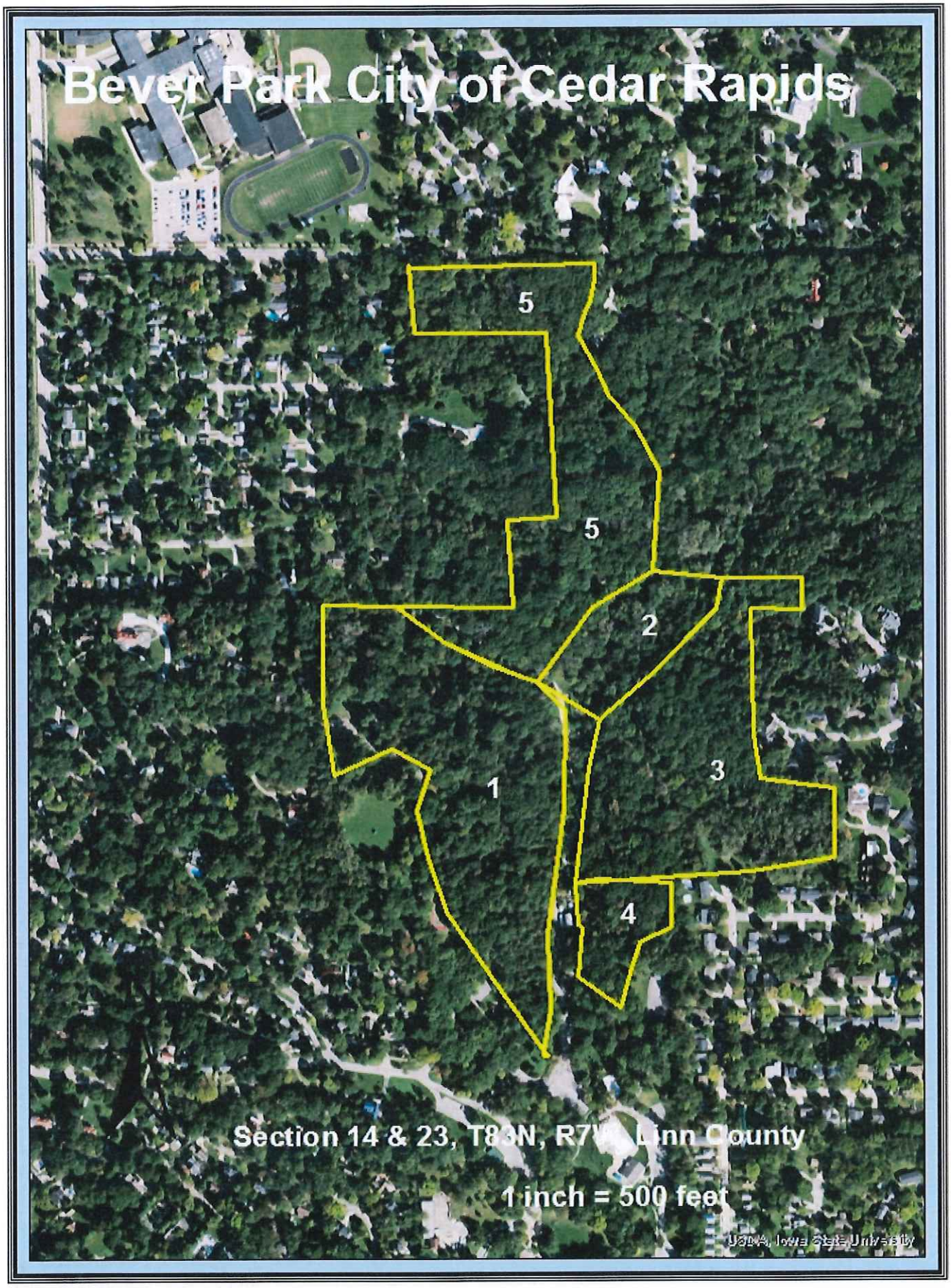
Amur maple

This plant is in the park. Amur maple (*Acer ginnala*) is a non-native tree native tree that can grow 10 to 20 feet tall.

Management Activity Schedule and Tracking

Stand	Unit (Acres/ Feet, etc)	NRCS Practice Code*	Treatment Activity Short Description (or reference to description in Plan)	Dates		Incentive Program (s) Used?	Net Cash Flow (optional)	
				Planned	Completed		Cost	Income
All	56 Ac.	692/666	Monitor & Manage Invasive Species & Forest Health	Ongoing				
All	56 Ac.	692/666	Cut vines on desirable trees	Ongoing				
1 & 3	¼ to 1 Ac. To start	692/666/ 338	Use Weed Tree Removal to remove understory trees and large shrubs to create an open oak woodland habitat and potentially use prescribed fire to maintain openness and manage some non-native invasives	Winter/ Late Fall 2017/18 or 18/19				

This plan was completed in part with the support of the USDA Forest Service.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