Appendix I

Suggested Tree Species for Oakes

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Ohio Buckeye *Aesculus glabra*

Height 20-40', Spread 20-40'

Ohio Buckeye has a dense oval to round form, branching quite low. It is one of the first trees to leaf out in the spring. The leaves are palmately compound with 5-7 leaflets that are 4-5 inches long. Foliage is medium to dark green and may develop yellow or orange fall color. In spring the tree is covered with many upright panicles of creamy yellowish flowers. Fruit is a glossy brown nut enclosed in a thick husk. Seeds are poisonous.

Ohio Buckeye Hybrid Cultivars:

Autumn Splendor Buckeye *Aesculus x arnoldiana `Autumn Splendor'*

Height 35-40', Spread 25-30'

A small, upright oval to round-headed tree, similar to Ohio Buckeye, but has excellent resistance to leaf scorch. It has glossy dark green leaves, which remain in good condition throughout the growing season. It develops an outstanding maroon red fall color, available in the nursery trade but availability by be limited. Introduced by the University of Minnesota Landscape Arboretum.

Prairie Torch Hybrid Buckeye *Aesculus x 'Bergeson'*

Height: 20-28'

A winter hardy hybrid buckeye selected in northern Minnesota. In NDSU trials it grew faster than most buckeyes that were accessions for the first 10-15 years. It produces a dense globose form which broadens with age becoming more mushroom shaped. The foliage is of high quality, fairly coarse and becomes a brilliant orange-red in the fall. Introduced by NDSU Zone 3

Dutch elm disease resistant elms

Discovery Elm *Ulmus davidiana var. Japonica 'Discovery'*

Height 40', Spread 40'

A vase-shaped tree. Reported to be resistant to Dutch Elm Disease, phloem necrosis, elm leaf beetles and aphids. Lower lateral branches need to be removed or the tree becomes somewhat dwarfed and bushy.

Cathedral Elm *Ulmus x 'Cathedral'*

Height, 40-50', Spread 40-60'

The form of the tree is broadly vase shaped. Cathedral is a distinct variety of elm tree, which is characterized by its resistance to Dutch elm disease. This variety is also highly tolerant to Verticillium wilt disease, limited susceptibility to black leaf spot disease, and good resistance of traumatic injury from climatic elements. The tree develops into a broadly vase shaped tree.

Prairie Expedition American Elm *Ulmus americana 'Lewis & Clark'*

Height: 55', Spread: 60

This selection is a TRUE American Elm selected from a lone survivor along the Wild Rice River. When inoculated with the Dutch elm disease fungus the tree showed high resistance. The foliage is dark green and it develops the classic umbrella shape which typifies American Elm .

Vanguard Elm *Ulmus 'Morton Plainsman'*

Height 40-50' Spread 40-50'

This hybrid of Japanese and Siberian Elm closely resembles Japanese Elm. Selected for its excellent Dutch Elm disease resistance, glossy deep green foliage and resistance to elm leaf beetle damage. Vanguard will tolerate drought prone areas of the Midwest and Great Plains. Selected and introduced by Morton Arboretum. Shape: Loosely rounded, Foliage: Dark green in the summer and no significant fall color, prefers full sun.

Prairie Radiance Winterberry Euonymus *Euonymus bungeana 'Verona'*

Height 18-24' Spread 15-18'

Prairie Radiance is a small tree with a low branched trunk or multiple stems, truly an all-season small tree for the north. The foliage is green and produces an intense pink to reddish fall color. It produces a large quantity of delicately pink colored capsules which begin in mid-August. By mid to late September the capsules split open exposing bright red arils. After the leaves drop, the gray barked twigs set off the sequential color changes of the fruit, a beautiful sight over an extended period.

Hackberry *Celtis occidentalis*

Height,50-75', Spread 50'

Similar in appearance to the American Elm with light green foliage. Hackberry has rough, corky bark and is tolerant to drought, alkaline soil, wind, and pollution. Hackberry develops a deep root system.

Japanese Tree Lilac *Syringa reticulata*

Height 25', Spread 25'

Very hardy and pollution tolerant with large, fragrant, creamy-white flower panicles in June after other lilacs have bloomed, it is grown as a shrub or small tree. There are several tree form cultivars available in the nursery trade.

American Linden *Tilia Americana*

Height 60-70', Spread 40-50'

The tree is pyramidal in youth and matures into a rounded tree. The leaves are large dark green; heart shaped 4-8" long and almost as wide. The fall color is a pale yellow. The trees are a rapid grower once established, provides excellent shade and has fragrant pale yellow flowers. Transplants well, prefer deep, moist fertile soil but will adapt to drier soils. There are many cultivars available in the nursery trade.

Littleleaf Linden *Tilia cordata*

Height 30-35', Spread 25-30'

This tree is native to Europe and has a dense pyramidal to rounded crown. Leaves are dark green, bluish green beneath and turn yellow in the fall. The flowers are creamy-white to pale yellow and very fragrant. There are many cultivars available in the nursery trade.

Mongolian Linden *Tilia mongolica*

Height 30', Spread 25'

This is one of the smallest of the lindens has a typical attractive rounded habit. The leaf of Mongolian Linden is more birch-like than linden-like and is fine textured for a linden. The leaves are a lustrous dark green and develop a nice yellow fall color. The species seems to be aphid resistant. Zone 3

Thornless Honeylocust *Gleditisia triacanthos var. inermis*

Height 50-60', Spread 50-60'

A medium to large deciduous tree, branching is upright to arching, rather loose and open in appearance and casts only light shade. Leaves are 6-8" long, bright green glossy leaves turning yellow in the fall. Seed pods are flattened 7" to 18" long and twisted. Several cultivars available in nursery trade, some are seedless.

Amur Maple *Acer tataricum subsp. ginnala*

Height 15-20' Spread 15'

Small rounded graceful tree or large shrub with an overall irregular head with spreading slender branches. Foliage is medium green developing to a scarlet red in the fall. Several tree form cultivars are available in the nursery trade.

Freeman Maples Hybrid maple, parents are red maple and silver maple, we do not know if they are full adapted for North Dakota winters and soils. The trees should be planted in limited numbers until more is known about these cultivars. Iron chlorosis has been a problem in higher pH soils.

Tatarian Maple *Acer tataricum*

Height 20-25', Spread 18-20'

Has dark green foliage turning to yellows, orange red in the fall. Samaras (seed) are often red and showy. Large shrub or small tree, which is similar in many respects to Amur Maple. Tatarian Maple will tolerate alkalinity and dry conditions better than Amur Maple.

Amur Maackia *Maackia amurensis*

Height 20-30', Spread 20-25'

Small, upright vase shaped tree with a rounded crown. White blooms in July-August the foliage emerges with a silvery pubescence becoming green with maturity. Bark shiny brown, peels as it matures. Adaptable to a wide range of soils and prefers moist well-drained sites. Legume, fixes its own nitrogen, no serious disease or insect problems.

European Mountain Ash *Sorbus aucuparia*

Height 20-30', Spread 20-25'

Foliage is clear deep green becoming orange to red in the fall. In the spring white flowers are produced developing into showy orange red fruit, August-September. The fruit may persist on the tree into the winter. The tree has an upright, rounded appearance at maturity. Bark is grayish brown, usually smooth, but may become somewhat roughened with age. Several cultivars are available in the nursery trade.

Showy Mountain Ash *Sorbus decora*

Height 20-25', Spread 20'

The hardiest of the Mountain Ash species. Smaller ornamental tree grown for its white flowers, handsome dark green foliage, showy red fruit, and the foliage turns red in the fall. It is slower growing than European Mountain Ash but more disease resistant.

Bur Oak *Quercus macrocarpa*

Height 60-80', Spread 60-80'

Tolerates a wide range of soil types and is drought resistant The tree has an impressive crown, massive trunk and stout branches. The stems have corky ridges on them. This oak will adapt to various soils where other oaks sometimes fail.

Prairie Stature Oak *Quercus x bimundorum 'Midwest'*

Height 50', Spread 40' Zone 3

A hybrid of English and white oak, this tree has proven very cold hardy in North Dakota State University trials. Prairie Stature Oak is broadly pyramidal with dark green foliage shows mildew resistance and can
change to a good red coloration in autumn.

Ussurian Pear *Pyrus ussuriensis*

Height 15-30', Spread 15-20'

The hardiest of all pears, native NE Asia. When in bloom the tree is a mass of large, clustered white flowers, foliage is semi-glossy and dense. Growth habit is dense and upright, becoming rounded with age. Fruit is a one-inch pome, greenish yellow. Foliage develops an orange to yellow fall color. Several cultivars are available in the nursery trade.

Amur Chokecherry *Prunus maackii*

Height 20-30', Spread 25-30'. Zone 2

A hardy small tree producing white flowers and black fruit, usually eaten by the birds before fully ripe. Bark golden brown or dark red with a glistening metallic color, flaking off similar to birch. Foliage is light green turning yellow in the fall

Laurel Leaf Willow *Salix pentandra*

Height 30-35', Spread 30' Zone 2

A medium sized tree with a broad oval to rounded crown. It grows rapidly and is drought tolerant once tree is established. The leaves are dark green and extremely glossy. Fall color is green to yellow-green.

There are additional tree species and cultivars available in the nursery industry which may be appropriate to plant within the community. Work with your local nursery and the North Dakota Forest Service to identify additional species and cultivars for your community.

Appendix J

New Tree Planting

New Tree Planting

http://www.treesaregood.com/treecare/tree_planting.aspx
Think of the tree you just purchased as a lifetime investment. How well your tree, and investment, grows depends on the type of tree and location you select for planting, the care you provide when the tree is planted, and follow-up care the tree receives after planting.

Planting the Tree

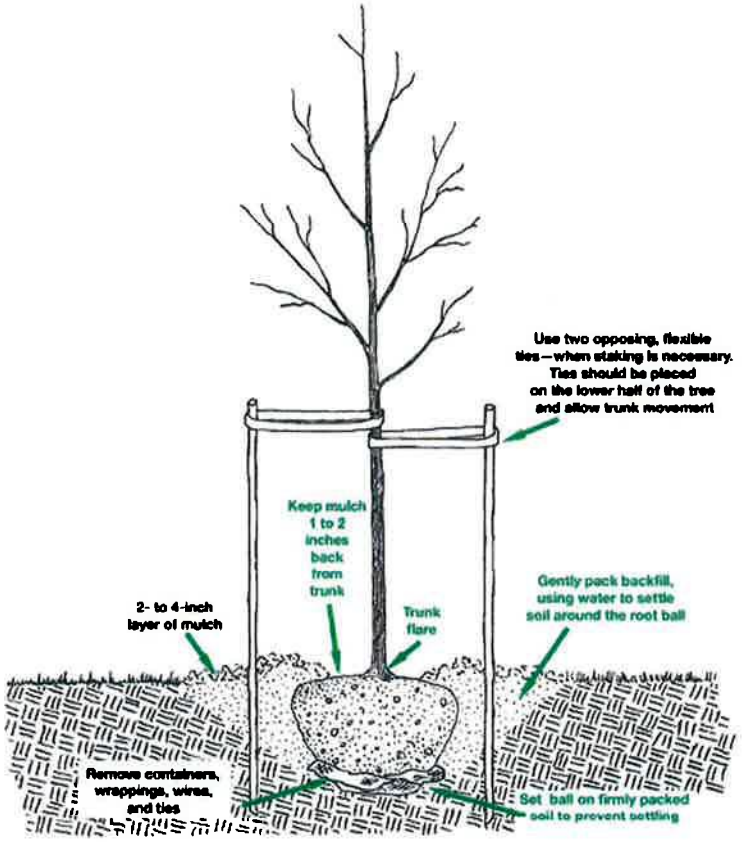
The ideal time to plant trees and shrubs is during the dormant season and in the fall after leaf drop or early spring before budbreak. Weather conditions are cool and allow plants to establish roots in the new location before spring rains and summer heat stimulate new top growth. However, trees properly cared for in the nursery or garden center, and given the appropriate care during transport to prevent damage, can be planted throughout the growing season. In tropical and subtropical climates where trees grow year round, any time is a good time to plant a tree, provided that sufficient water is available. In either situation, proper handling during planting is essential to ensure a healthy future for new trees and shrubs. Before you begin planting your tree, be sure you have had all underground utilities located prior to digging.

If the tree you are planting is balled or bare root, it is important to understand that its root system has been reduced by 90 to 95 percent of its original size during transplanting. As a result of the trauma caused by the digging process, trees commonly exhibit what is known as transplant shock. Containerized trees may also experience transplant shock, particularly if they have circling roots that must be cut. Transplant shock is indicated by slow growth and reduced vigor following transplanting. Proper site preparation before and during planting coupled with good follow-up care reduces the amount of time the plant experiences transplant shock and allows the tree to quickly establish in its new location. Carefully follow nine simple steps, and you can significantly reduce the stress placed on the plant at the time of planting.

1. Dig a shallow, broad planting hole. Make the hole wide, as much as three times the diameter of the root ball but only as deep as the root ball. It is important to make the hole wide because the roots on the newly establishing tree must push through surrounding soil in order to establish. On most planting sites in new developments, the existing soils have been compacted and are unsuitable for healthy root growth. Breaking up the soil in a large area around the tree provides the newly emerging roots room to expand into loose soil to hasten establishment.
2. Identify the trunk flare. The trunk flare is where the roots spread at the base of the tree. This point should be partially visible after the tree has been planted (see diagram). If the trunk flare is not partially visible, you may have to remove some soil from the top of the root ball. Find it so you can determine how deep the hole needs to be for proper planting.
3. Remove tree container for containerized trees. Carefully cutting down the sides of the container may make this easier. Inspect the root ball for circling roots and cut or remove them. Expose the trunk flare, if necessary.
4. Place the tree at the proper height. Before placing the tree in the hole, check to see that the hole has been dug to the proper depth and no more. The majority of the roots on the newly planted tree will develop in the top 12 inches of soil. If the tree is planted too

deeply, new roots will have difficulty developing because of a lack of oxygen. It is better to plant the tree a little high, 2 to 3 inches above the base of the trunk flare, than to plant it at or below the original growing level. This planting level will allow for some settling (see diagram). To avoid damage when setting the tree in the hole, always lift the tree by the root ball and never by the trunk.

5. Straighten the tree in the hole. Before you begin backfilling, have someone view the tree from several directions to confirm that the tree is straight. Once you begin backfilling, it is difficult to reposition the tree.
6. Fill the hole gently but firmly. Fill the hole about one-third full and gently but firmly pack the soil around the base of the root ball. Then, if the root ball is wrapped, cut and remove any fabric, plastic, string, and wire from around the trunk and root ball to facilitate growth (see diagram). Be careful not to damage the trunk or roots in the process.



Fill the remainder of the hole, taking care to firmly pack soil to eliminate air pockets that may cause roots to dry out. To avoid this problem, add the soil a few inches at a time and

settle with water. Continue this process until the hole is filled and the tree is firmly planted. It is not recommended to apply fertilizer at the time of planting.

7. Stake the tree, if necessary. If the tree is grown and dug properly at the nursery, staking for support will not be necessary in most home landscape situations. Studies have shown that trees establish more quickly and develop stronger trunk and root systems if they are not staked at the time of planting. However, protective staking may be required on sites where lawn mower damage, vandalism, or windy conditions are concerns. If staking is necessary for support, there are three methods to choose among: staking, guying, and ball stabilizing. One of the most common methods is staking. With this method, two stakes used in conjunction with a wide, flexible tie material on the lower half of the tree will hold the tree upright, provide flexibility, and minimize injury to the trunk (see diagram). Remove support staking and ties after the first year of growth.
8. Mulch the base of the tree. Mulch is simply organic matter applied to the area at the base of the tree. It acts as a blanket to hold moisture, it moderates soil temperature extremes, and it reduces competition from grass and weeds. Some good choices are leaf litter, pine straw, shredded bark, peat moss, or composted wood chips. A 2- to 4-inch layer is ideal. More than 4 inches may cause a problem with oxygen and moisture levels. When placing mulch, be sure that the actual trunk of the tree is not covered. Doing so may cause decay of the living bark at the base of the tree. A mulch-free area, 1 to 2 inches wide at the base of the tree, is sufficient to avoid moist bark conditions and prevent decay.
9. Provide follow-up care. Keep the soil moist but not soaked; overwatering causes leaves to turn yellow or fall off. Water trees at least once a week, barring rain, and more frequently during hot weather. When the soil is dry below the surface of the mulch, it is time to water. Continue until mid-fall, tapering off for lower temperatures that require less-frequent watering.

   Other follow-up care may include minor pruning of branches damaged during the planting process. Prune sparingly immediately after planting and wait to begin necessary corrective pruning until after a full season of growth in the new location.

   After you have completed these nine simple steps, further routine care and favorable weather conditions will ensure that your new tree or shrub will grow and thrive. A valuable asset to any landscape, trees provide a long-lasting source of beauty and enjoyment for people of all ages. When questions arise about the care of your tree, be sure to consult your local ISA Certified Arborist or a tree care or garden center professional for assistance.

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Developed by the International Society of Arboriculture (ISA), a non-profit organization supporting tree care research around the world and is dedicated to the care and preservation of shade and ornamental trees. For further information, contact:

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