Minneapolis Park & Recreation Board Planting Project 2021
Project Design Document – Year 4

Table of Contents

INSTRUCTIONS

Project Operators must complete and submit this Project Design Document (PDD) to request credits after the third anniversary of the Credit Commencement Date. City Forest Credits then reviews this PDD as part of the validation process along with all other required project documents. An approved third-party verifier then does an independent check of all documents and compliance with the Protocol, known as verification. An updated PDD will need to be submitted for future verification at Year 6 and After Year 25.

Project Operators should enter data and supporting attachments starting on page 3 under Project Overview where you find "[Enter text here]" as thoroughly as possible and provide numbered attachments for maps and other documentation (ex: 1 – Regional Map). Keep all instructions in the document.

Below is a list of documents that are needed to complete a successful Year 4 Project Design Document:

<u>For the Single Tree Planting Design:</u>

- Carbon Quantification Year 4 Credit tool
- Tree Sampling Data
- Geocoded photos
- Project geospatial data, if there have been changes (KML file or shapefile)

<u>For the Cluster Planting Design</u>

- Project Area imaging from any telemetry, imaging, or remote sensing service
- i-Tree Canopy report
- i-Tree Canopy source data
- Project geospatial data, if there have been changes (KML file or shapefile)
- Carbon Quantification Year 4 Credit tool

<u>For the Area Reforestation Planting Design (previously Canopy Design)</u>:

- Either:
    - Project Area imaging from any telemetry, imaging, or remote sensing service
    - i-Tree Canopy report
    - i-Tree Canopy source data
- Or:
    - Tree plot sampling data
- Project geospatial data, if there have been changes (KML file or shapefile)
- Carbon Quantification Year 4 Credit tool
- Summary of approach to quantifying the local CO_2 index

PROJECT OVERVIEW

Project Name: Minneapolis Park & Recreation Board Planting Project 2021
Project Number: 021
Project Type: Planting Project (under the Planting Protocol – Version 9, updated February 7, 2021)
Project Start Date: October 31, 2021
Project Location: Minneapolis, MN

Project Operator Name: Green Cities Accord
Project Operator Contact Information:
Michaela Neu
Director of Programs and Operations
612-217-4485
mneu@greencitiesaccord.org

PROJECT AND PLANTING DESIGN UPDATES

Include information on changes to the project including tree survival, ownership, or other relevant updates.

This project includes 23,755 trees planted in the city limits of Minneapolis MN in 2019, 2020, and 2021 by the Minneapolis Park and Recreation Board (MPRB). The trees have been planted in public right-of-way along city streets as well as on other public lands where MPRB has the authority to plant and maintain trees. The method of planting is single-tree dispersed (spaced 10” or more apart, i.e. street trees or linear plantings).

There have been no changes in ownership to the project site(s). The MPRB has maintained and monitored the sites since the trees were planted. Green Cities Accord has monitored and sampled the sites according to the afforestation protocol.

Of the 176 sampled trees, 20 trees, or around 11%, were replaced. Droughts since the original project planting dates have been challenging for tree establishment. Of the sampled trees, 26 trees, or around 15%, were either standing dead or gone.

CARBON QUANTIFICATION DOCUMENTATION (Section 12 and Appendix B)

Describe and summarize the planting design, sampling, and appropriate quantification/measurement method for the project – Single Tree, Clustered, or Area Reforestation. Include the project’s climate zone and method of data collection. Outline the estimated total number of credits to be issued to the project over 25 years as well as the amount to be issued upon successful validation and verification in Year 4. Attach the quantification tool and appropriate sampling tool.

List of quantification Tools by planting method (CFC to provide guidance and resources):

1) *Single Tree - single tree quantification tool*
2) *Clustered - cluster quantification tool*

3) *Area Reforestation - quantification with CO_2 calculated per acre*

To ensure performance of the credits, Project Operators must commit to the following at Year 4, with additional requirements at Year 6 and after Year 25 based on the appropriate quantification method.

1) *Single Tree*
    a. *<u>Year 4:</u> Project Operators must generate a random sample of project tree sites using the Single Tree Quantification Tool. Project Operators must visit those sampled tree sites and collect data on whether the sample contains a live tree, standing dead tree, or no tree. Provide geocoded photos or imaging of a minimum sample of 20% of the trees. The tracking file includes a column where each tree is assigned a unique serial number to help with tracking each coordinate and tree picture or image.*
        i. *Based on this data, the number and species of project trees is adjusted and a new CO_2 projected amount by after Year 25 is generated.*

2) *Clustered*
    a. *<u>Year 4</u>: Project Operators provide images of the Project Area from any telemetry, imaging, remote sensing, i-Tree Canopy, or UAV service, such as Google Earth and estimate the area in tree canopy cover (acres). Imaging from Google Earth with leaf-on may be used. Project Operators will calculate the percent of canopy cover from the Google Earth imaging. Projects can use i-Tree Canopy and point sampling to calculate canopy cover. Using i-Tree Canopy, continue adding points until the standard error of the estimate for both the tree and non-tree cover is less than 5%. i-Tree Canopy will supply you with the standard errors. If tree canopy cover is determined using another approach, such as image classification, a short description of the approach should be provided, as well as the QA/QC measures that were used. A tree cover classification accuracy assessment should be conducted, as with randomly placed points, and the percentage tree cover classification accuracy reported.*
        i. *If the canopy coverage equals or exceeds 2.8% (400 trees per acre with an average canopy area of 3.14 square feet per tree (2-foot diameter of canopy) is 2.8% of an acre), then the credits projected in the Clustered Quantification Tool may be issued. If canopy coverage is below 2.8%, then the number of credits issued is reduced by the same percentage as the canopy coverage falls below 2.8%.*

3) *Area Reforestation (formerly Canopy planting design)*
    a. *<u>Year 4</u>: Project Operators must either conduct a physical tree count using plots or use imaging to determine canopy coverage at Year 4.*
        i. *If the canopy coverage equals or exceeds 2.8% (400 trees per acre with an average canopy area of 3.14 square feet per tree (2-foot diameter of canopy) is 2.8% of an acre), then the credits projected in the Quantification Tool may be issued. If canopy coverage is below 2.8%, then the number of credits issued is reduced by the same percentage as the canopy coverage falls below 2.8%.*

Overview

This project includes 23,755 trees planted in the city limits of Minneapolis MN in 2019, 2020, and 2021 by the Minneapolis Park and Recreation Board (MPRB). The trees have been planted in public right-of-way along city streets as well as on other public lands where MPRB has the authority to plant and maintain trees. The method of planting is single-tree dispersed (spaced 10" or more apart, i.e. street trees or linear plantings).

Data Collection

For this project, Green Cities Accord hired an intern to carry out the sampling work. Using the Single Tree Quantification Tool, CFC generated a random selection of tree sites from across the project area. The intern then visited each of these locations in person to see whether there was a live tree, a standing dead tree, or no tree at all.

While on site, they filled out a short survey for each tree to capture its condition and took geotagged photos to document exactly what they found. Of the sampled trees, 26 trees, or around 15%, were either standing dead or gone. Droughts since the original project planting have been challenging for tree establishment.

Attachments:
2 MPRB Project 2021 Carbon Quantification Initial Credit Tool_Year 4 Sampling

Carbon Quantification

Total number of trees planted	23,755
Project area (acres), if applicable	n/a
Total number of trees per acre, if applicable	n/a
Credits attributed to the project (tCO2e)	64,296
Credits after mortality deduction (20% or insert observed mortality, if greater)	51,437
Contribution to Registry Reversal Pool Account (5%) (tCO2e)	2,572
Total credits to be issued to the Project Operator (tCO2e)	48,865
Total credits requested to be issued at Year 4	19,546

GHG Assertion:
Project Operator asserts that the Project results in GHG emissions mitigation of 48,865 tons CO_2e over the 25-year Project Duration. Project Operator asserts that, per Protocol guidelines, 40% of the Project GHG emissions mitigation is issued at Year 4, or 19,546 tons CO_2e.

The updated Projected CO_2 stored and credit issuance over 26 years is outlined below:

Single Tree Plantings	Projection at Initial Crediting	Updated Projection at Year 4
Total credits issued at Initial Crediting (10% CO2 (t))	4,886	4,886
Total credits to be issued at Year 4 (40% CO2 (t))	19,546	19,546

Total credits to be issued at Year 6 (30% CO2 (t))	14,659	14,659
Total credits to be issued at Year 26 (20% CO2 (t))	9,773	9,773
Total credits to be issued (tCO2e)	**48,865**	**48,865**

Attachment:
2 MPRB Project 2021 Carbon Quantification Initial Credit Tool_Year 4 Sampling

CO-BENEFITS QUANTIFICATION DOCUMENTATION (Section 12 and Appendix A)

Summarize co-benefit quantification and provide supporting documentation. If necessary, update the CFC-provided Co-Benefits Quantification spreadsheet to calculate updated rainfall interception, reduction of certain air compounds, and energy savings.

Ecosystem Services	***Resource Units***	***Value***
Rainfall Interception (m3/yr)	124,911.99	$894,252.94
Air Quality (t/yr)	3.7169	$15,302.66
Cooling – Electricity (kWh/yr)	3,983,352.77	$302,336.48
Heating – Natural Gas (kBtu/yr)	55,614,135.61	$541,388.71
Grand Total ($/yr)		**$1,753,280.78**

Attachment:
2 MPRB Project 2021 Carbon Quantification Initial Credit Tool_Year 4 Sampling

ADDITIONAL INFORMATION

Include additional information on changes to monitoring and reporting plans since the Initial Credit Planting Design Document was submitted.

The project operator name and contact information has changed from Green Minneapolis to Green Cities Accord.

Mailing address: PO Box 582877
Minneapolis, MN 55458

Phone number: 612-217-4485

No other changes have been made.

SIGNATURE

Signed on August 15 in 2025, by Michaela Neu, Director of Programs and Operations, for Green Cities Accord.

Michaela Neu
_____
Signature

Michaela Neu
Printed Name

612-217-4485
Phone

mneu@greencitiesaccord.org
Email

ATTACHMENTS

For the Single Tree Planting Design:

1 - Carbon Quantification Year 4 Credit tool
2 - Tree Sampling Data
3 - Geocoded photos
4 - Project geospatial data (KML file or shapefile)

For the Cluster Planting Design

1 - Project Area imaging from any telemetry, imaging, or remote sensing service
2 - i-Tree Canopy report
3 - i-Tree Canopy source data
4 - Project geospatial data (KML file or shapefile)
5 - Carbon Quantification Year 4 Credit tool

For the Area Reforestation Planting Design (previously Canopy Design):

- Either:
    1 - Project Area imaging from any telemetry, imaging, or remote sensing service
    2 - i-Tree Canopy report
    3 - i-Tree Canopy source data
- Or:
    1 - Tree plot sampling data

2 - Project geospatial data (KML file or shapefile)
3 - Carbon Quantification Year 4 Credit tool
4 - Summary of approach to quantifying the local CO_2 index

This copy assigned to Green Minneapolis. Proprietary and confidential CFC information. Do not forward to third parties without CFC permission.

The Single Tree Initial Credit Tool for the Midwest Climate Zone

This document and all sheets ©City Forest Credits 2017-2022. All rights reserved

The analyst can use this method to forecast the amount of CO2 (in metric tonnes, t) estimated to be stored by live project trees after 25 years for crediting. Credits based on the estimated CO2 storage can be issued at three points in time – 10% within one year after planting, 40% at Year 4, and 30% at Year 6, minus 5% that will go into a program-wide pool to insure against catastrophic loss of trees. At the end of the project, after year 25, Operators will receive credits for all CO2 stored, minus Credits already issued.

Project Operators will follow the Steps listed below to obtain an initial forecast. Basic tree planting data on all trees planted needs to be collected at the time of planting. When a user wishes to seek Credits at one of the first points in time after planting, they will use this tool to calculate credit amounts and to supply verification data to the Registry. Users will submit this spreadsheet to the Registry with other documentation so the Registry can verify the planting. Sampled data will be used to obtain Credits at subsequent points in time.

Steps

1) Plant project trees and collect the following data on each planted tree using the data collection table included in this workbook: species, site id#, tree id# and location (latitude and longitude). We use the term “site” instead of “tree” because some planted trees may no longer be present in the sites where they were planted.

2) Compile data on the numbers of trees planted by species to fill in the Planting List (Table 1).

3) Enter data on the anticipted mortality rate (% of planted sites without trees after 25 years) into row 6 on the Credits sheet.

4) Credits will be automatically calculated in Table 6, incorporating tree losses and the 5% buffer pool deduction.

5) Table 4 automatically infers the amount of CO_2 stored after 25 years from the sample to the population of live trees.

6) For planning purposes only, users can enter a low and high price of CO_2 ($ per t) in Table 5. Table 6 incorporates error estimates of ±15% to calculate low and high amounts of CO_2 stored.

7) Table 7 automatically provides estimates of co-benefits for live trees after 25 years in Resource Units (e.g., kWh) per year and $ per year.

This copy assigned to Green Minneapolis. Proprietary and confidential CFC information. Do not forward to third parties without CFC permission.

Directions
1) In Table 1 record the number of sites planted for each tree species
2) If species are not listed, add them to the bottom of Table 1.

Table 1. Planting List

Scientific Name	Common Name	Tree-Type	No. Sites
Abies balsamea	Balsam fir	CEL	13
Abies concolor	white fir	CEL	45
Abies fraseri	Fraser fir	CEL	3
Acer ginnala	Amur maple	BDS	6
Acer negundo	boxelder	BDM	
Acer nigrum	black maple	BDL	
Acer palmatum	Japanese maple	BDS	
Acer platanoides	Norway maple	BDL	2
Acer rubrum	red maple	BDL	24
Acer saccharinum	silver maple	BDL	41
Acer saccharum	sugar maple	BDL	22
Acer saccharum 'Barrett Cole'	Apollo sugar maple	BDM	1
Acer species	maple	BDL	24
Aesculus glabra	Ohio buckeye	BDL	3
Aesculus glabra 'LavaDak'	Lavaburst Ohio Buckeye	BDM	9
Aesculus hippocastanum 'Baumannii'		BDL	76
Aesculus spp.		BDL	2
Aesculus x arnoldiana 'Autumn Splendor'		BDS	260
Aesculus x carnea 'Fort McNair'		BDM	20
Aesculus x 'Homestead'		BDS	154
Albizia julibrissin	mimosa	BDS	
Alnus species	alder	BDM	201
Amelanchier canadensis	serviceberry, shadblow	BDS	9
Amelanchier laevis	serviceberry, Allegheny	BDM	10
Amelanchier spp.	serviceberry, spp.	BDS	957
Betula nigra	river birch	BDM	678
Betula papyrifera	paper birch	BDL	22
Betula species	birch	BDM	8
Carpinus caroliniana	Beech Blue - Musclewood	BDM	362
Carpinus caroliniana	Beech Blue - Musclewood 'Fire Ki	BDM	64
Carya species	hickory	BDL	200
Castanea dentata	American chestnut	BDL	21
Castanea mollissima		BDM	3
Catalpa species	catalpa	BDL	57
Catalpa speciosa	northern catalpa	BDL	2082
Celtis occidentalis	northern hackberry	BDL	628
Cercidiphyllum japonicum	katsuratree	BDM	6
Cercis canadensis	eastern redbud	BDS	38
Cercis spp.		BDS	1
Cladrastis kentukea	yellowwood	BDM	641
Cornus florida	flowering dogwood	BDS	
Cornus species	dogwood	BDS	8
Corylus colurna	Turkish filbert	BDL	62
Crataegus crusgalli	hawthorn, cockspur	BDS	264
Crataegus spp.	hawthorn, spp.	BDS	5
Crataegus viridis	hawthorn, green	BDM	42
Eucommia ulmoides	Rubber Tree Hardy	BDL	1
Fagus grandifolia	American beech	BDL	52
Fraxinus americana	white ash	BDL	
Fraxinus nigra	black ash	BDM	
Fraxinus pennsylvanica	green ash	BDL	
Fraxinus species	ash	BDM	
Ginkgo biloba	ginkgo	BDM	2207
Gleditsia triacanthos	honeylocust	BDM	19
Gleditsia triacanthos inermis	honeylocust, thornless	BDM	767
Gymnocladus dioicus	Kentucky coffeetree	BDL	3044
Hibiscus syriacus	rose-of-sharon	BDS	
Ilex opaca	American holly	BES	
Ilex species	holly	BES	
Juglans cinerea	butternut	BDL	7
Juglans nigra	black walnut	BDL	23
Juniperus species	juniper	CEM	
Juniperus virginiana	eastern red cedar	CEM	137
Koelreuteria paniculata	Goldenraintree	BDS	9
Larix decidua	European larch	BDL	16
Larix kaempferi	Japanese larch	CEM	117
Larix laricina	Tamarack	CEM	684
Liquidambar styraciflua	sweetgum	BDL	
Liriodendron tulipifera	tulip tree	BDL	
Maackia amurensis 'JFS-Schichtel1'	Maackia 'MaacNificent'	BDS	561
Maackia amurensis 'Starburst'	Maackia Amur 'Starburst'	BDS	1
Maackia amurensis 'Summertime'	Maackia Amur 'Summertime'	BDS	4
Maackia amurensis	Maackia Amur	BDM	316
Maackia spp.	Maackia	BDM	1
Maclura pomifera	Osage Orange 'White Shield'	BDS	8
Magnolia acuminata		BDL	8
Magnolia grandiflora	southern magnolia	BEM	
Magnolia stellata 'Royal Star'	Star magnolia	BDS	2
Magnolia virginiana	sweetbay	BEM	
Malus species	apple	BDS	550
Malus spp.	crabapple, flowering	BDS	
Metasequoia glyptostroboides	Dawn redwood	BDL	4
Morus alba	white mulberry	BDM	

Table 2. Summary of Planting Sites

Tree-Type	Tree-Type Abbreviation	No. Sites Planted
Brdlf Decid Large (>50 ft)	**BDL**	10642
Brdlf Decid Med (30-50 ft)	**BDM**	7002
Brdlf Decid Small (<30 ft)	**BDS**	4770
Brdlf Evgrn Large (>50 ft)	**BEL**	0
Brdlf Evgrn Med (30-50 ft)	**BEM**	0
Brdlf Evgrn Small (<30 ft)	**BES**	0
Conif Evgrn Large (>50 ft)	**CEL**	336
Conif Evgrn Med (30-50 ft)	**CEM**	1005
Conif Evgrn Small (<30 ft)	**CES**	0
	Total Sites Planted	23755

Morus species	mulberry	BDM	1
Nyssa sylvatica	blackgum	BDM	33
Ostrya virginiana	eastern hophornbeam	BDM	544
Parrotia persica	persian ironwood	BDS	
Phellodendron amurense	Amur corktree	BDM	563
Phellodendron lavallei 'Longenecker'		BDM	503
Phellodendron spp.		BDM	2
Picea abies	Norway spruce	CEL	18
Picea mariana	black spruce	CEM	
Picea pungens	blue spruce	CEM	
Picea species	spruce	CEL	20
Pinus cembra	Pine Swiss Stone	CEL	24
Pinus contorta	Bolander beach pine	CES	
Pinus nigra	Austrian pine	CEM	25
Pinus ponderosa	ponderosa pine	CEL	1
Pinus resinosa	red pine	CEL	24
Pinus strobus	eastern white pine	CEL	99
Pinus sylvestris	Scotch pine	CEM	42
Pinus virginiana	Virginia pine	CEM	
Platanus occidentalis	American sycamore	BDL	6
Platanus x acerifolia	planetree, London	BDL	413
Populus deltoides	eastern cottonwood	BDL	107
Populus nigra	black poplar	BDL	
Populus species	cottonwood	BDL	52
Populus tremuloides	quaking aspen	BDL	63
Prunus cerasifera	cherry plum	BDS	
Prunus serotina	black cherry	BDL	224
Prunus serrulata	Kwanzan cherry	BDS	
Prunus species	plum	BDS	340
Prunus virginiana	common chokecherry	BDS	605
Pseudotsuga menziesii	Douglas-fir	CEL	28
Pyrus calleryana	Callery pear	BDM	
Pyrus species	pear	BDS	215
Quercus alba	white oak	BDL	225
Quercus bicolor	swamp white oak	BDL	838
Quercus coccinea	scarlet oak	BDL	
Quercus ellipsoidalis	northern pin oak	BDL	122
Quercus macrocarpa	bur oak	BDL	307
Quercus nigra	water oak	BEL	
Quercus palustris	pin oak	BDL	5
Quercus rubra	northern red oak	BDL	239
Quercus species	oak	BDL	338
Rhamnus species	buckthorn	BDS	
Rhus species	sumac	BDS	
Robinia pseudoacacia	black locust	BDL	1
Salix discolor	pussy willow	BDS	
Salix species	willow	BDL	74
Sorbus species	mountain ash	BDS	63
Styphnolobium japonicum	Scholar Tree - Japanese Pagoda	BDL	1
Syringa reticulata	Japanese tree lilac	BDS	385
Syringa species	lilac	BDS	325
Taxodium distichum	Baldcypress	BDL	228
Thuja occidentalis	northern white cedar	CEL	45
Tilia americana	American basswood	BDL	231
Tilia cordata	littleleaf linden	BDM	1
Tilia species	basswood	BDL	22
Tsuga canadensis	eastern hemlock	CEL	16
Ulmus americana	American elm	BDL	535
Ulmus parvifolia	Chinese elm	BDL	
Ulmus pumila	Siberian elm	BDM	
Ulmus species	elm	BDL	190
Ulmus thomasi	elm, rock	BDL	
Ulmus x	elm, hybrid	BDL	

This copy assigned to Green Minneapolis. Proprietary and confidential CFC information. Do not forward to third parties without CFC permission.

Directions
Create a data sheet with the same fields seen in the example below.
At the time of data collection soon after planting, record the following information:
-Date of data collection.
-Names of the crew that collected that data.
At the time of data collection soon after planting record the following information on each tree:
-Date planted
-Tree Id#, the unique number that coincides with each tree that was planted at the site. When each tree has just been planted, and there are not any dead or missing trees, the tree id#s will all be the same as the site#s. As trees get replaced, the list of tree id#s will increase. In the example below, site# 1 has a replacement tree planted in it, therefore what was originally tree #1 is now tree #4. If tree #4 is the next one at the project that gets replaced, that new tree will then be tree #5.
-Site Id#, a unique number assigned to each spot a tree is planted at.
-Species name (botanical name)
-Latitude and Longitude (or x and y coordinates) of where each tree is located. These data are used to accurately locate the site for remeasurement.
-Image#1, the unique number for the first image of this site.
-Image#2, the unique number for the second image of this site taken at 90 degrees to the first.
To request Forward Credits, draw a random sample and record these additional data on each tree site sampled.
-If the tree is alive, record if it is the original one planted (original) or a replacement (replace#1, replace#2).
-Record if the tree is dead (standing) or missing (vacant site).
-Date removed, the date when the tree was removed.
-Date replaced, the date when the replacement tree was planted.
-Notes, information concerning tree status, health, etc.
During subsequent field sampling sessions you may find it helpful to take a copy of your original data sheets along for reference when attempting to locate each tree.

Example Data Collection Table

Data Collection Dates:

	Date	CID	FID_3_MPRB	Site_ID	Species	Lat	Long	Image #1	Image #2	Live (Orig/Replace	Standing Dead or	Date	Date	Notes
1	##########	8495	8495	117417	Betula nigra	44.893289	-93.257849	https://drive.google.co	https://drive.google.co	Original	Standing Live			
2	##########	16172	16172	21793	Amelanchier x grandiflora 'Autumn Brilliance'	44.896756	-93.302368	https://drive.google.co	https://drive.google.co	No	Gone			
3	##########	18290	18290	11154	Ginkgo biloba 'The President'	44.897889	-93.310387	https://drive.google.co	https://drive.google.co	Replaced #2	Standing Live			
4	##########	18548	18548	115970	Cladrastis kentukea	44.899224	-93.252727	https://drive.google.co	https://drive.google.co	Original	Standing Live			
5	##########	9513	9513	295283	Celtis occidentalis	44.899275	-93.279313	https://drive.google.co	https://drive.google.co	No	Gone			
6	##########	20789	20789	292947	Juglans cinerea	44.89967	-93.266841	https://drive.google.co	https://drive.google.co	Original	Standing Live			
7	##########	7243	7243	164554	Quercus x macdanielli 'Clemons'	44.900389	-93.280715	https://drive.google.co	https://drive.google.co	Original	Standing Live			
8	##########	21713	21713	164391	Phellodendron lavallei 'Longenecker'	44.900953	-93.241126	https://drive.google.co	https://drive.google.co	Original	Standing Live			
9	##########	12897	12897	16868	Gymnocladus dioicus 'UMNSynergy'	44.901048	-93.304911	https://drive.google.co	https://drive.google.co	Original	Standing Live			
10	##########	4702	4702	17780	Gymnocladus dioicus 'Espresso'	44.901276	-93.302359	https://drive.google.co	https://drive.google.co	Original	Standing Live			
11	##########	2476	2476	163504	Ginkgo biloba 'The President'	44.901797	-93.286946	https://drive.google.co	https://drive.google.co	Original	Standing Live			
12	##########	15152	15152	277954	Taxodium distichum	44.902921	-93.246831	https://drive.google.co	https://drive.google.co	Original	Standing Live			
13	##########	15213	15213	284770	Taxodium distichum	44.904396	-93.251524	https://drive.google.co	https://drive.google.co	Original	Standing Live			
14	##########	18325	18325	13857	Ginkgo biloba 'The President'	44.905155	-93.317033	https://drive.google.co	https://drive.google.co	Original	Standing Live			
15	##########	4438	4438	211611	Larix laricina	44.90553	-93.269878	https://drive.google.co	https://drive.google.co	No	Standing Dead			
16	##########	14378	14378	282958	Quercus bicolor	44.905623	-93.222774	https://drive.google.co	https://drive.google.co	Original	Standing Live			
17	##########	16779	16779	294996	Carpinus caroliniana	44.906966	-93.282227	https://drive.google.co	https://drive.google.co	Original	Standing Live			
18	##########	949	949	44570	Aesculus x arnoldiana 'Autumn Splendor'	44.907002	-93.207638	https://drive.google.co	https://drive.google.co	Original	Standing Live			
19	##########	13128	13128	267224	Malus 'Prairifire'	44.907016	-93.247709	https://drive.google.co	https://drive.google.co	Replaced #1	Standing Live			
20	##########	7536	7536	46297	Quercus ellipsoidalis	44.907357	-93.216419	https://drive.google.co	https://drive.google.co	Original	Standing Live			
21	##########	1059	1059	266675	Carya cordiformis	44.908543	-93.236573	https://drive.google.co	https://drive.google.co	Original	Standing Live			
22	##########	13094	13094	283154	Ostrya virginiana	44.908751	-93.202479	https://drive.google.co	https://drive.google.co	Original	Standing Live			
23	##########	5443	5443	91443	Malus 'Red Splendor'	44.909638	-93.282534	https://drive.google.co	https://drive.google.co	Original	Standing Live			
24	##########	18698	18698	21514	Ginkgo biloba 'The President'	44.909895	-93.320046	https://drive.google.co	https://drive.google.co	Original	Standing Live			
25	##########	680	680	180948	Betula nigra	44.910808	-93.289597	https://drive.google.co	https://drive.google.co	Original	Standing Live			
26	##########	17063	17063	262421	Carya ovata	44.911141	-93.263785	https://drive.google.co	https://drive.google.co	Original	Standing Live			
27	##########	2695	2695	20398	Ginkgo biloba 'Autumn Gold'	44.911431	-93.314972	https://drive.google.co	https://drive.google.co	Original	Standing Live			
28	##########	9074	9074	25521	Cladrastis kentukea	44.913018	-93.324019	https://drive.google.co	https://drive.google.co	Original	Standing Live			
29	##########	8087	8087	283103	Carya cordiformis	44.91339	-93.208608	https://drive.google.co	https://drive.google.co	Original	Standing Live			
30	##########	21215	21215	110765	Quercus alba	44.913634	-93.262532	https://drive.google.co	https://drive.google.co	Replaced #1	Standing Live			
31	##########	8891	8891	19070	Carpinus caroliniana	44.913666	-93.293309	https://drive.google.co	https://drive.google.co	Original	Standing Live			
32	##########	12908	12908	22488	Gymnocladus dioicus 'UMNSynergy'	44.913965	-93.308651	https://drive.google.co	https://drive.google.co	Original	Standing Live			
33	##########	23496	23496	289956	Thuja occidentalis	44.91421	-93.251913	https://drive.google.co	https://drive.google.co	Original	Standing Live			
34	##########	293	293	42620	Aesculus x arnoldiana 'Autumn Splendor'	44.915217	-93.22846	https://drive.google.co	https://drive.google.co	Original	Standing Live			
35	##########	21560	21560	284445	Prunus serotina	44.915361	-93.306471	https://drive.google.co	https://drive.google.co	Original	Standing Live			
36	##########	23125	23125	264779	Corylus colurna	44.915484	-93.245243	https://drive.google.co	https://drive.google.co	No	Gone			
37	##########	17047	17047	264628	Carya ovata	44.915511	-93.249225	https://drive.google.co	https://drive.google.co	Original	Standing Live			
38	##########	22919	22919	108377	Syringa reticulata 'Ivory Silk'	44.916138	-93.251278	https://drive.google.co	https://drive.google.co	Original	Standing Live			
39	##########	16508	16508	288673	Betula papyrifera	44.917293	-93.225415	https://drive.google.co	https://drive.google.co	No	Gone			
40	##########	22615	22615	249521	Quercus bicolor	44.917698	-93.224968	https://drive.google.co	https://drive.google.co	Original	Standing Live			
41	##########	14914	14914	281508	Quercus bicolor	44.918283	-93.211128	https://drive.google.co	https://drive.google.co	Original	Standing Live			
42	##########	5933	5933	271377	Malus 'Prairifire'	44.918444	-93.231667	https://drive.google.co	https://drive.google.co	No	Standing Dead			
43	##########	9122	9122	36170	Cladrastis kentukea	44.9199	-93.210128	https://drive.google.co	https://drive.google.co	Original	Standing Live			
44	##########	15223	15223	281261	Ulmus americana 'New Harmony'	44.920198	-93.22827	https://drive.google.co	https://drive.google.co	Original	Standing Live			
45	##########	6024	6024	104947	Platanus x acerifolia 'Bloodgood'	44.92026	-93.267803	https://drive.google.co	https://drive.google.co	Original	Standing Live			
46	##########	8773	8773	104786	Catalpa speciosa	44.920617	-93.251201	https://drive.google.co	https://drive.google.co	Original	Standing Live			
47	##########	12320	12320	156622	Gymnocladus dioicus 'McKBranched'	44.920766	-93.28696	https://drive.google.co	https://drive.google.co	Original	Standing Live			
48	##########	18289	18289	156369	Crataegus crus-galli var. inermis	44.921717	-93.272717	https://drive.google.co	https://drive.google.co	No	Gone			
49	##########	6500	6500	272543	Platanus x acerifolia 'Metzam'	44.922285	-93.204268	https://drive.google.co	https://drive.google.co	Original	Standing Live			
50	##########	21765	21765	251022	Prunus virginiana 'Schubert'	44.922807	-93.311237	https://drive.google.co	https://drive.google.co	Original	Standing Live			
51	##########	6673	6673	271766	Pseudotsuga menziesii	44.923249	-93.324982	https://drive.google.co	https://drive.google.co	Original	Standing Live			
52	##########	10132	10132	141594	Crataegus crus-galli var. inermis	44.927006	-93.224672	https://drive.google.co	https://drive.google.co	Original	Standing Live			
53	##########	1298	1298	121547	Catalpa speciosa	44.927089	-93.254857	https://drive.google.co	https://drive.google.co	Original	Standing Live			
54	##########	20886	20886	214821	Metasequoia glyptostroboides	44.927372	-93.295008	https://drive.google.co	https://drive.google.co	Original	Standing Live			
55	##########	4610	4610	100330	Larix laricina	44.927826	-93.262613	https://drive.google.co	https://drive.google.co	Original	Standing Live			
56	##########	2040	2040	152848	Celtis occidentalis	44.928664	-93.24008	https://drive.google.co	https://drive.google.co	Original	Standing Live			
57	##########	18874	18874	152100	Gleditsia triacanthos var. inermis 'Harve'	44.929343	-93.254857	https://drive.google.co	https://drive.google.co	Original	Standing Live			
58	##########	11812	11812	44887	Gleditsia triacanthos var. inermis 'Skycole'	44.930226	-93.229654	https://drive.google.co	https://drive.google.co	Original	Standing Live			
59	##########	11336	11336	151368	Gymnocladus dioicus 'Espresso'	44.930464	-93.245163	https://drive.google.co	https://drive.google.co	Original	Standing Live			
60	##########	16383	16383	149890	Aesculus x 'Homestead'	44.93229	-93.271831	https://drive.google.co	https://drive.google.co	Replaced #1	Standing Live			
61	##########	14242	14242	282025	Quercus bicolor	44.935983	-93.203166	https://drive.google.co	https://drive.google.co	No	Gone			
62	##########	3114	3114	272766	Ginkgo biloba 'The President'	44.936173	-93.293244	https://drive.google.co	https://drive.google.co	Original	Standing Live			
63	##########	4903	4903	97370	Maackia amurensis 'JFS-Schichtel1'	44.937305	-93.262661	https://drive.google.co	https://drive.google.co	Original	Standing Live			
64	##########	17445	17445	97324	Cladrastis kentukea	44.93733	-93.253768	https://drive.google.co	https://drive.google.co	Original	Standing Live			
65	##########	4961	4961	87670	Maackia amurensis 'JFS-Schichtel1'	44.93769	-93.273337	https://drive.google.co	https://drive.google.co	Original	Standing Live			
66	##########	15241	15241	29073	Quercus x bimundorum 'Midwest'	44.938064	-93.297047	https://drive.google.co	https://drive.google.co	Original	Standing Live			
67	##########	17442	17442	96821	Cladrastis kentukea	44.938197	-93.251232	https://drive.google.co	https://drive.google.co	Original	Standing Live			
68	##########	12382	12382	32571	Larix laricina	44.938307	-93.233474	https://drive.google.co	https://drive.google.co	Original	Standing Live			
69	##########	2221	2221	33445	Ginkgo biloba 'Autumn Gold'	44.938971	-93.246021	https://drive.google.co	https://drive.google.co	Original	Standing Live			
70	##########	4209	4209	96268	Larix kaempferi	44.939206	-93.267745	https://drive.google.co	https://drive.google.co	Original	Standing Live			
71	##########	575	575	96100	Betula nigra	44.939495	-93.273708	https://drive.google.co	https://drive.google.co	No	Gone			
72	##########	572	572	95360	Betula nigra	44.939618	-93.270683	https://drive.google.co	https://drive.google.co	Original	Standing Live			
73	##########	22148	22148	292534	Quercus rubra	44.939908	-93.248723	https://drive.google.co	https://drive.google.co	Original	Standing Live			
74	##########	8364	8364	33945	Catalpa speciosa	44.942081	-93.208648	https://drive.google.co	https://drive.google.co	Original	Standing Live			
75	##########	18487	18487	94328	Ginkgo biloba 'Autumn Gold'	44.942316	-93.274005	https://drive.google.co	https://drive.google.co	No	Gone			
76	##########	4226	4226	118689	Larix kaempferi	44.943227	-93.263441	https://drive.google.co	https://drive.google.co	Original	Standing Live			
77	##########	21666	21666	31580	Phellodendron lavallei 'Longenecker'	44.943588	-93.24053	https://drive.google.co	https://drive.google.co	Original	Standing Live			
78	##########	2259	2259	28348	Celtis occidentalis	44.944493	-93.300937	https://drive.google.co	https://drive.google.co	Original	Standing Live			
79	##########	19928	19928	112084	Gymnocladus dioicus 'McKBranched'	44.944798	-93.28617	https://drive.google.co	https://drive.google.co	Original	Standing Live			
80	##########	18643	18643	31768	Ginkgo biloba 'Autumn Gold'	44.945812	-93.242423	https://drive.google.co	https://drive.google.co	No	Standing Dead			
81	##########	15755	15755	256559	Tilia americana 'McKSentry'	44.947849	-93.31661	https://drive.google.co	https://drive.google.co	No	Standing Dead			
82	##########	23461	23461	292256	Quercus bicolor	44.94854	-93.297106	https://drive.google.co	https://drive.google.co	Original	Standing Live			
83	##########	20878	20878	291756	Malus 'Spring Snow'	44.950032	-93.249169	https://drive.google.co	https://drive.google.co	Original	Standing Live			
84	##########	7858	7858	37610	Quercus x bimundorum 'Midwest'	44.951003	-93.210335	https://drive.google.co	https://drive.google.co	Original	Standing Live			
85	##########	22136	22136	254040	Quercus rubra	44.95139	-93.262776	https://drive.google.co	https://drive.google.co	No	Standing Dead			
86	##########	10090	10090	135983	Crataegus crus-galli var. inermis	44.951901	-93.243121	https://drive.google.co	https://drive.google.co	Replaced #1	Standing Live			
87	##########	15294	15294	260813	Ulmus americana 'New Harmony'	44.953772	-93.258531	https://drive.google.co	https://drive.google.co	Original	Standing Live			
88	##########	18181	18181	277194	Ginkgo biloba 'Autumn Gold'	44.954589	-93.252564	https://drive.google.co	https://drive.google.co	No	Gone			
89	##########	9951	9951	38611	Cladrastis kentukea	44.957445	-93.230475	https://drive.google.co	https://drive.google.co	Original	Standing Live			
90	##########	2645	2645	129119	Ginkgo biloba 'Autumn Gold'	44.959548	-93.265257	https://drive.google.co	https://drive.google.co	Original	Standing Live			
91	##########	11560	11560	213624	Gymnocladus dioicus 'Espresso'	44.960047	-93.254776	https://drive.google.co	https://drive.google.co	Replaced #1	Standing Live			
92	##########	11719	11719	88068	Gymnocladus dioicus 'Espresso'	44.960224	-93.271554	https://drive.google.co	https://drive.google.co	Original	Standing Live			
93	##########	12872	12872	5016	Gymnocladus dioicus 'UMNSynergy'	44.963787	-93.312005	https://drive.google.co	https://drive.google.co	Original	Standing Live			
94	##########	11552	11552	172264	Gymnocladus dioicus 'Espresso'	44.9639	-93.267234	https://drive.google.co	https://drive.google.co	No	Standing Dead			
95	##########	15039	15039	270520	Quercus rubra	44.965145	-93.227222	https://drive.google.co	https://drive.google.co	Original	Standing Live			
96	##########	8038	8038	290886	Carpinus caroliniana	44.965201	-93.274014	https://drive.google.co	https://drive.google.co	No	Standing Dead			
97	##########	2354	2354	75808	Ginkgo biloba 'The President'	44.965364	-93.234111	https://drive.google.co	https://drive.google.co	Original	Standing Live			
98	##########	16242	16242	160007	Carpinus caroliniana	44.96919	-93.21499	https://drive.google.co	https://drive.google.co	Replaced #2	Standing Live			
99	##########	15631	15631	50225	Syringa reticulata	44.969849	-93.318476	https://drive.google.co	https://drive.google.co	Original	Standing Live			

100	##########	12519	12519	244731	Larix laricina	44.970644	-93.269567	https://drive.google.co	https://drive.google.co	Original	Standing Live			
101	##########	2777	2777	245915	Ginkgo biloba 'Autumn Gold'	44.97184	-93.303674	https://drive.google.co	https://drive.google.co	Replaced #2	Standing Live			
102	##########	20745	20745	293147	Malus 'Royal Raindrops'	44.972144	-93.286671	https://drive.google.co	https://drive.google.co	Replaced #1	Standing Live			
103	##########	7403	7403	139709	Tilia americana 'Redmond'	44.972788	-93.269022	https://drive.google.co	https://drive.google.co	Replaced #1	Standing Live			
104	##########	8185	8185	50894	Amelanchier x grandiflora 'Autumn Brilliance'	44.97425	-93.310837	https://drive.google.co	https://drive.google.co	Original	Standing Live			
105	##########	3300	3300	236161	Gleditsia triacanthos var. inermis 'Harve'	44.977703	-93.304759	https://drive.google.co	https://drive.google.co	Original	Standing Live			
106	##########	12976	12976	283876	Larix laricina	44.978324	-93.321443	https://drive.google.co	https://drive.google.co	Original	Standing Live			
107	##########	1055	1055	280717	Carya cordiformis	44.978786	-93.324404	https://drive.google.co	https://drive.google.co	Original	Standing Live			
108	##########	5897	5897	55984	Phellodendron lavallei 'Longenecker'	44.979743	-93.312278	https://drive.google.co	https://drive.google.co	Original	Standing Live			
109	##########	7688	7688	56332	Syringa reticulata 'Ivory Silk'	44.981042	-93.304448	https://drive.google.co	https://drive.google.co	Original	Standing Live			
110	##########	15209	15209	280391	Taxodium distichum	44.981565	-93.320843	https://drive.google.co	https://drive.google.co	Original	Standing Live			
111	##########	20823	20823	216621	Malus 'Royal Raindrops'	44.981738	-93.245187	https://drive.google.co	https://drive.google.co	Original	Standing Live			
112	##########	16067	16067	56148	Betula nigra	44.982497	-93.304586	https://drive.google.co	https://drive.google.co	Original	Standing Live			
113	##########	22997	22997	292768	Syringa reticulata	44.982699	-93.296352	https://drive.google.co	https://drive.google.co	Original	Standing Live			
114	##########	8844	8844	284198	Betula nigra	44.983045	-93.317897	https://drive.google.co	https://drive.google.co	No	Gone			
115	##########	7652	7652	83341	Syringa reticulata 'Ivory Silk'	44.983057	-93.245264	https://drive.google.co	https://drive.google.co	Original	Standing Live			
116	##########	1483	1483	241562	Catalpa speciosa	44.983422	-93.3032	https://drive.google.co	https://drive.google.co	No	Gone			
117	##########	14486	14486	284132	Quercus bicolor	44.985033	-93.317312	https://drive.google.co	https://drive.google.co	Original	Standing Live			
118	##########	6660	6660	57723	Prunus virginiana 'Schubert'	44.986506	-93.314595	https://drive.google.co	https://drive.google.co	No	Gone			
119	##########	5503	5503	60937	Maackia amurensis	44.987788	-93.306952	https://drive.google.co	https://drive.google.co	Original	Standing Live			
120	##########	14331	14331	286335	Prunus serotina	44.987978	-93.326852	https://drive.google.co	https://drive.google.co	Original	Standing Live			
121	##########	11160	11160	57931	Gymnocladus dioicus 'Espresso'	44.988444	-93.314719	https://drive.google.co	https://drive.google.co	Replaced #2	Standing Live			
122	##########	18264	18264	61312	Ginkgo biloba 'Autumn Gold'	44.990913	-93.303273	https://drive.google.co	https://drive.google.co	No	Gone			
123	##########	1623	1623	58127	Catalpa speciosa	44.992724	-93.313422	https://drive.google.co	https://drive.google.co	No	Gone			
124	##########	13829	13829	217029	Malus 'Royal Raindrops'	44.992923	-93.262021	https://drive.google.co	https://drive.google.co	Original	Standing Live			
125	##########	12121	12121	198469	Gymnocladus dioicus 'Espresso'	44.994094	-93.318305	https://drive.google.co	https://drive.google.co	Original	Standing Live			
126	##########	15121	15121	242472	Taxodium distichum	44.995648	-93.302622	https://drive.google.co	https://drive.google.co	Original	Standing Live			
127	##########	3483	3483	168234	Gymnocladus dioicus 'Espresso'	44.995839	-93.289231	https://drive.google.co	https://drive.google.co	Replaced #1	Standing Live			
128	##########	22331	22331	197147	Quercus macrocarpa	44.996013	-93.313268	https://drive.google.co	https://drive.google.co	Original	Standing Live			
129	##########	19526	19526	213532	Gymnocladus dioicus 'Espresso'	44.99668	-93.255054	https://drive.google.co	https://drive.google.co	Replaced #2	Standing Live			
130	##########	17332	17332	213535	Catalpa speciosa	44.996733	-93.255057	https://drive.google.co	https://drive.google.co	Replaced #2	Standing Live			
131	##########	12122	12122	198473	Gymnocladus dioicus 'Espresso'	44.996779	-93.31838	https://drive.google.co	https://drive.google.co	Original	Standing Live			
132	##########	21005	21005	273023	Populus tremuloides	44.998896	-93.233531	https://drive.google.co	https://drive.google.co	Replaced #2	Standing Live			
133	##########	19568	19568	273967	Gymnocladus dioicus 'Espresso'	44.999421	-93.215847	https://drive.google.co	https://drive.google.co	No	Gone			
134	##########	18577	18577	237786	Ginkgo biloba 'Magyar'	45.00127	-93.319555	https://drive.google.co	https://drive.google.co	Original	Standing Live			
135	##########	3078	3078	127212	Gymnocladus dioicus 'Espresso'	45.001372	-93.287906	https://drive.google.co	https://drive.google.co	Original	Standing Live			
136	##########	17868	17868	122232	Catalpa speciosa	45.002558	-93.260177	https://drive.google.co	https://drive.google.co	Original	Standing Live			
137	##########	22476	22476	71849	Quercus rubra	45.004596	-93.253814	https://drive.google.co	https://drive.google.co	Original	Standing Live			
138	##########	7277	7277	273929	Syringa reticulata 'Ivory Silk'	45.005878	-93.242616	https://drive.google.co	https://drive.google.co	Original	Standing Live			
139	##########	928	928	199508	Aesculus x arnoldiana 'Autumn Splendor'	45.005951	-93.305383	https://drive.google.co	https://drive.google.co	Original	Standing Live			
140	##########	3274	3274	70480	Gleditsia triacanthos var. inermis 'Harve'	45.006021	-93.241535	https://drive.google.co	https://drive.google.co	No	Gone			
141	##########	8071	8071	235642	Carya cordiformis	45.006841	-93.285571	https://drive.google.co	https://drive.google.co	Original	Standing Live			
142	##########	18225	18225	292369	Ginkgo biloba 'Autumn Gold'	45.00745	-93.293129	https://drive.google.co	https://drive.google.co	Original	Standing Live			
143	##########	15768	15768	72799	Ulmus 'Patriot'	45.0076	-93.238523	https://drive.google.co	https://drive.google.co	Original	Standing Live			
144	##########	22078	22078	57074	Quercus macrocarpa	45.008138	-93.314682	https://drive.google.co	https://drive.google.co	Original	Standing Live			
145	##########	8587	8587	129389	Aesculus x arnoldiana 'Autumn Splendor'	45.011753	-93.247196	https://drive.google.co	https://drive.google.co	Original	Standing Live			
146	##########	17326	17326	206779	Catalpa speciosa	45.01407	-93.261634	https://drive.google.co	https://drive.google.co	Original	Standing Live			
147	##########	15136	15136	67287	Taxodium distichum	45.015251	-93.287943	https://drive.google.co	https://drive.google.co	Original	Standing Live			
148	##########	10963	10963	67117	Ginkgo biloba 'Autumn Gold'	45.015798	-93.286569	https://drive.google.co	https://drive.google.co	Original	Standing Live			
149	##########	11233	11233	48058	Gymnocladus dioicus 'Espresso'	45.016192	-93.294407	https://drive.google.co	https://drive.google.co	Original	Standing Live			
150	##########	9394	9394	284340	Catalpa speciosa	45.016758	-93.313428	https://drive.google.co	https://drive.google.co	No	Standing Dead			
151	##########	888	888	273127	Amelanchier x grandiflora 'Autumn Brilliance'	45.018798	-93.271292	https://drive.google.co	https://drive.google.co	Original	Standing Live			
152	##########	17352	17352	67887	Catalpa speciosa	45.022326	-93.309368	https://drive.google.co	https://drive.google.co	Original	Standing Live			
153	##########	11077	11077	194870	Gleditsia triacanthos var. inermis 'Shademaster'	45.023274	-93.300967	https://drive.google.co	https://drive.google.co	Replaced #1	Standing Live			
154	##########	17272	17272	78902	Catalpa speciosa	45.025518	-93.246147	https://drive.google.co	https://drive.google.co	Original	Standing Live			
155	##########	3773	3773	66221	Gymnocladus dioicus 'Espresso'	45.025625	-93.316085	https://drive.google.co	https://drive.google.co	Original	Standing Live			
156	##########	1103	1103	73826	Betula nigra	45.025843	-93.229795	https://drive.google.co	https://drive.google.co	No	Gone			
157	##########	2027	2027	79291	Catalpa x erubescens	45.025891	-93.240792	https://drive.google.co	https://drive.google.co	Original	Standing Live			
158	##########	17487	17487	52777	Catalpa speciosa	45.025913	-93.288162	https://drive.google.co	https://drive.google.co	Original	Standing Live			
159	##########	17484	17484	52522	Catalpa speciosa	45.025963	-93.289414	https://drive.google.co	https://drive.google.co	Original	Standing Live			
160	##########	5552	5552	150191	Maackia amurensis	45.026274	-93.318506	https://drive.google.co	https://drive.google.co	Replaced #2	Standing Live			
161	##########	19280	19280	80205	Gymnocladus dioicus 'Espresso'	45.028504	-93.24358	https://drive.google.co	https://drive.google.co	Original	Standing Live			
162	##########	15202	15202	208634	Taxodium distichum	45.029101	-93.291999	https://drive.google.co	https://drive.google.co	Original	Standing Live			
163	##########	7610	7610	274680	Syringa reticulata 'Ivory Silk'	45.031379	-93.308993	https://drive.google.co	https://drive.google.co	Original	Standing Live			
164	##########	6954	6954	53205	Pyrus 'NCPX2' P.A.F.	45.031461	-93.293608	https://drive.google.co	https://drive.google.co	Original	Standing Live			
165	##########	16208	16208	291107	Amelanchier x grandiflora 'Autumn Brilliance'	45.033684	-93.258807	https://drive.google.co	https://drive.google.co	Original	Standing Live			
166	##########	13751	13751	281814	Phellodendron amurense 'His Majesty'	45.034674	-93.315029	https://drive.google.co	https://drive.google.co	Original	Standing Live			
167	##########	15662	15662	65893	Syringa reticulata	45.036032	-93.312987	https://drive.google.co	https://drive.google.co	Original	Standing Live			
168	##########	4673	4673	156784	Gymnocladus dioicus 'Espresso'	45.038534	-93.316673	https://drive.google.co	https://drive.google.co	Replaced #2	Standing Live			
169	##########	11600	11600	283478	Gymnocladus dioicus 'Espresso'	45.043503	-93.293963	https://drive.google.co	https://drive.google.co	Original	Standing Live			
170	##########	6029	6029	236021	Pinus strobus	45.044261	-93.291634	https://drive.google.co	https://drive.google.co	Original	Standing Live			
171	##########	11053	11053	283549	Gleditsia triacanthos var. inermis 'Shademaster'	45.045364	-93.295419	https://drive.google.co	https://drive.google.co	Replaced #2	Standing Live			
172	##########	15680	15680	123736	Syringa reticulata	45.047488	-93.302051	https://drive.google.co	https://drive.google.co	No	Gone			
173	##########	12730	12730	236421	Juniperus virginiana	45.047788	-93.306892	https://drive.google.co	https://drive.google.co	Original	Standing Live			
174	##########	9429	9429	284858	Catalpa speciosa	45.048018	-93.283768	https://drive.google.co	https://drive.google.co	Original	Standing Live			
175	##########	3468	3468	161014	Gymnocladus dioicus 'Espresso'	45.048462	-93.313059	https://drive.google.co	https://drive.google.co	Original	Standing Live			
176	##########	15654	15654	284884	Tilia americana 'Boulevard'	45.049543	-93.283778	https://drive.google.co	https://drive.google.co	Replaced #1	Standing Live			
											Standing live	150	0.852273	
											Gone	18	0.102273	
											Standing dead	8	0.045455	
												176		

This copy assigned to Green Minneapolis. Proprietary and confidential CFC information. Do not forward to third parties without CFC permission.

Directions

Using the information you provide and background data, the tool calculates the amount of Credits that could be issued after planting (10%), at Year 4 (40%), at Year 6 (30%), and after 25 years (20%). A mortality deduction (% loss) is applied to account for anticipated tree losses (Cell D6). A 5% buffer pool deduction is applied that will go into a program-wide pool to insure against catastrophic loss of trees. This tool is used to determine credits issued after planting (Intial Crediting). A different tool is used for credit issuance in Years 4 and 6. The tool in those years requires calculation of a sample and collection of data on tree status in the sample sites.

Mortality Deduction (%):	20%

Table 3. Projected CO_2 stored by live trees 25-years after planting, issued four times over the Project Duration. These values account for anticipated tree losses and the 5% buffer pool deduction.

						10%	40%	30%	20%
	No. Sites Planted	**No. Live Trees**	**Mortality**	**25-yr CO_2 stored**	**Tot. 25-yr CO_2**	**10% CO_2 (t)**	**40% CO_2 (t)**	**30% CO_2 (t)**	**20% CO_2 (t)**
BDL	10642	8514	0.20	3,978.85	32180.6	3218.06	12872.25	9654.18	6436.12
BDM	7002	5602	0.20	2,451.33	13044.8	1304.48	5217.93	3913.45	2608.96
BDS	4770	3816	0.20	700.27	2538.6	253.86	1015.45	761.59	507.72
BEL	0	0	0.20	0.00	0.0	0.00	0.00	0.00	0.00
BEM	0	0	0.20	0.00	0.0	0.00	0.00	0.00	0.00
BES	0	0	0.20	0.00	0.0	0.00	0.00	0.00	0.00
CEL	336	269	0.20	2,144.53	547.6	54.76	219.05	164.29	109.53
CEM	1005	804	0.20	723.89	552.9	55.29	221.16	165.87	110.58
CES	0	0	0.20	0.00	0.0	0.00	0.00	0.00	0.00
	23755	19004	0.20	9,998.9	48864.6	4886.46	19545.84	14659.38	9772.92
				Credits issued	48865	4886	19546	14659	9773
				Buffer Credits	2572	257	1029	772	514

This copy assigned to Green Minneapolis. Proprietary and confidential CFC information. Do not forward to third parties without CFC permission.

In Table 4 the tool infers the amount of CO_2 stored after 25 years from the sample to the population of live trees. Values in column H account for anticipated tree losses and the 5% buffer pool deduction.

Table 4. Grand Total CO_2 Stored after 25 years (all live trees, includes tree losses and buffer pool deduction)

Tree-Type	No. Sites Planted	Mortality Deduction (%)	Total Live Trees After Mortality	25-yr CO_2 stored (kg/tree)	CO_2 Tot. - No Deductions (t)	Grand Total CO_2 w/ Deductions (t)
Brdlf Decid Large (>50 ft)	10642	0.20	8514	3,978.85	42,342.9	32,180.6
Brdlf Decid Med (30-50 ft)	7002	0.20	5602	2,451.33	17,164.2	13,044.8
Brdlf Decid Small (<30 ft)	4770	0.20	3816	700.27	3,340.3	2,538.6
Brdlf Evgrn Large (>50 ft)	0	0.20	0	0.00	0.0	0.0
Brdlf Evgrn Med (30-50 ft)	0	0.20	0	0.00	0.0	0.0
Brdlf Evgrn Small (<30 ft)	0	0.20	0	0.00	0.0	0.0
Conif Evgrn Large (>50 ft)	336	0.20	269	2,144.53	720.6	547.6
Conif Evgrn Med (30-50 ft)	1005	0.20	804	723.89	727.5	552.9
Conif Evgrn Small (<30 ft)	0	0.20	0	0.00	0.0	0.0
	23755		19004	9999	64,295.5	48,864.6

This copy assigned to Green Minneapolis. Proprietary and confidential CFC information. Do not forward to third parties without CFC permission.

Directions

In Table 5, enter the low and high price of CO_2 in $ per tonne (t).

This table incorporates error estimates of ±15% to the high and low estimates of the total CO_2 (t) stored by the live tree population after 25 years. For planning purposes only, it calculates dollar values.

Table 5. CO_2 value

	CO_2 $ per tonne
Low	$30.00
High	$40.00

Table 6. Summary of CO2 stored after 25 years (all live trees, includes tree losses)

Tree-Type	Total CO_2 (t) at 25	Low $ value	High $ value
Brdlf Decid	47764.1	$1,432,921.68	$1,910,562.24
Brdlf Evgrn	0.0	$0.00	$0.00
Conif Evgrn	1100.5	$33,016.12	$44,021.50
Total	48864.6	$1,465,937.80	$1,954,583.74
	CO_2 (t)	**Total $**	**Total $**
Grand Total CO_2 (t) at 25 years:	48864.6	$1,465,937.80	$1,954,583.74
High Est. with Error:	56194.3	$1,685,828.48	$2,247,771.30
Low Est. with Error:	41534.9	$1,246,047.13	$1,246,047.13

± 15% error = ± 10% formulaic ± 3% sampling
± 2% measurement

This copy assigned to Green Minneapolis. Proprietary and confidential CFC information. Do not forward to third parties without CFC permission.

Using the information you provide and background data, the tool provides estimates of co-benefits after 25 years in Resource Units per year and $ per year.

Table 7. Co-Benefits per year after 25 years (all live trees, includes tree losses)

Ecosystem Services	Resource Units Totals	Resource Unit/site	Total $	$/site
Rainfall Interception (m3/yr)	124,911.99	5.26	$894,252.94	$37.645
Air Quality (t/yr)				
O3	1.7725	0.0001	$5,920.11	$0.249
NOx	0.2948	0.0000	$984.65	$0.041
PM10	0.9655	0.0000	$2,742.11	$0.115
Net VOCs	0.6841	0.0000	$5,655.79	$0.238
Air Quality Total	3.7169	0.0002	$15,302.66	$0.64
Energy (kWh/yr & kBtu/yr)				
Cooling - Electricity	3,983,352.77	167.68	$302,336.48	$12.73
Heating - Natural Gas	55,614,135.61	2,341.15	$541,388.71	$22.79
Energy Total ($/yr)			$843,725.18	$35.52
Grand Total ($/yr)			$1,753,280.78	$73.81