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COMMUNITY THREAT ASSESSMENT PROTOCOL

South Dakota Department of Agriculture

08/16/2013

Final Report—City of Pierre's parks

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Community Threat Assessment Protocol Report

CITY OF PIERRE'S PARKS

Community Threat Assessment Protocol Project Summary

Beginning in the summer of 2012, the South Dakota Department of Agriculture, Division of Resource Conservation and Forestry (RCF), began conducting rapid community forest assessments through the "Community Threat Assessment Protocol" project, or CTAP. This effort to establish a new assessment protocol is a response to the increasing concern of approaching forest insect, disease, and wildfire threats in South Dakota. The resulting assessments provide communities with current information about their community forest resources. These assessments will enable communities to make educated management decisions to proactively address possible threats. This project was funded through US Forest Service Redesign grants.

CTAP collected data on all actively managed, publically owned trees in parks, on city managed properties, or in easements and planting strips along streets. To complete the assessments, RCF hired contractors to collect data regarding all appropriate trees. The information that was collected includes tree location (by marking the tree location using TreeWorks™), tree species, stem diameter, tree height, and tree condition (a general statement of a tree's health at the moment of inventory).

The purpose of this report is to provide the current information to assist with completing an overall management plan.

CTAP Results – City of Pierre's parks

2,276 trees representing 55 different species were assessed in Pierre's parks. The top ten species were:

- eastern red cedar
- cottonwood
- green ash
- honeylocust
- Siberian elm
- crabapple
- northern hackberry
- blue spruce
- little leaf linden
- American elm

For a full list, see appendix A.

Eastern red cedar (22%), cottonwood (12%), and green ash (11%) were above 10% of the total community forest (see Figure 1). As a rule, no single tree species should represent more than 10% of any community's tree resource.[i] When tree species exceed this 10% threshold, it can signify low species diversity, which can increase the potential impact of insect or disease issues on the community's trees.

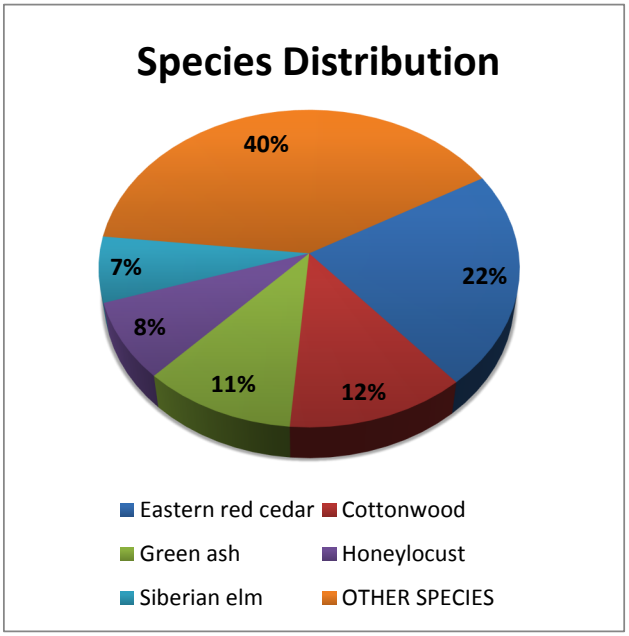

FIGURE 1: SPECIES DISTRIBUTION FOR PIERRE'S PARKS, SD COMMUNITY TREE RESOURCE.

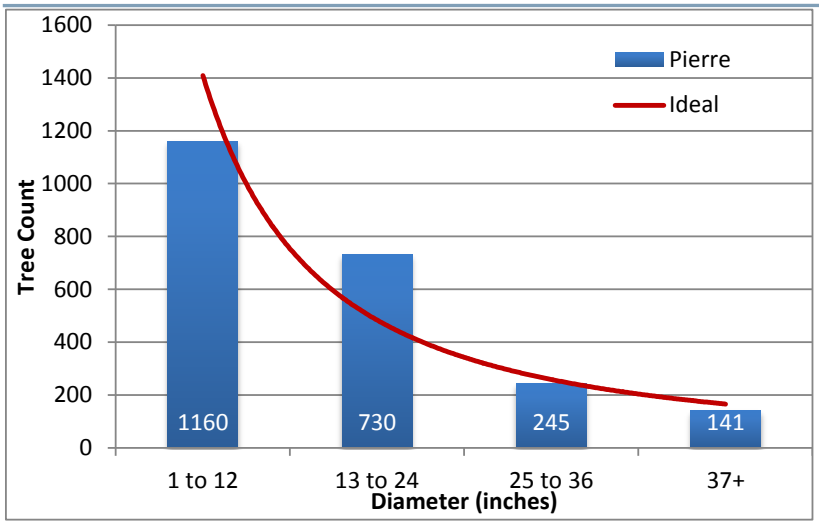

FIGURE 2: DIAMETER DISTRIBUTION FOR PIERRE'S PARKS, SD COMMUNITY TREE RESOURCE.

The relative age, or stem diameter distribution, can represent much about a community's tree resource. It can provide clues about current or previous planting initiatives, types of trees being planted, and estimates about the longevity of existing trees. Pierre's parks shows an good mix of young and old trees (see Figure 2 and Appendix B). Studies show that large shade tree species provide more environmental benefits such as reduced household energy use, improving air quality, and the better utilization of rain water.

Overall tree condition is a good estimate of the general health of a tree. In CTAP, trees were placed into one of four conditions based on the overall appearance of the tree at the time of assessment. These condition categories are:

1. Excellent – Healthy, vigorous tree. No apparent signs of insect, disease, or mechanical injury. Little or no corrective work required. Tree growth form representative of the species.
2. Good – Average condition and vigor for area. May be in need of some corrective pruning or repair. May lack desirable tree growth form characteristic of the species.
3. Fair – General state of decline. May show severe insect, disease, or mechanical damage, but death not imminent. May require major repair in renovation.
4. Poor – No chance of correcting a declining condition; death imminent.

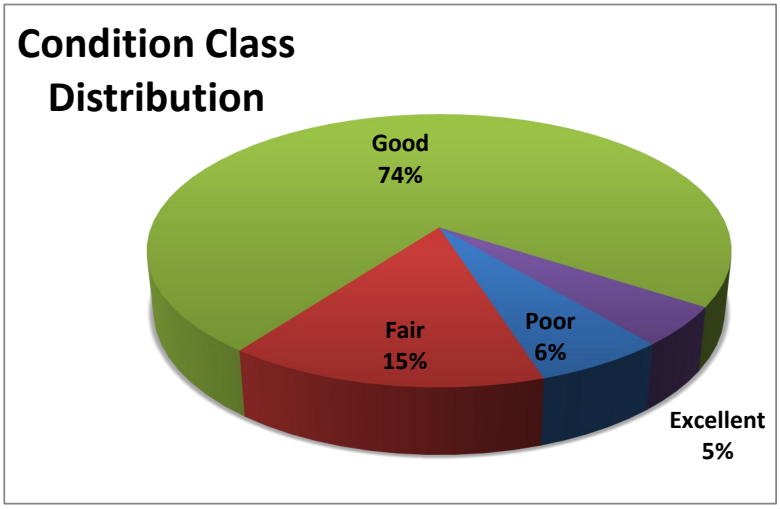

FIGURE 3: CONDITION CLASS DISTRIBUTION FOR PIERRE'S PARKS, SD COMMUNITY TREE RESOURCE.

Tree condition designation is not a substitute for in-depth tree inspections which should be completed on all questionable trees. The majority of Pierre's parks trees were in good condition (74%) with only 21% of trees in fair or poor condition (see Figure 3).

Community trees provide more than aesthetics. We can estimate the monetary value of the energy, CO_2, air quality, stormwater runoff and quality, and aesthetic benefits that community trees provide. In Pierre's parks, the community trees provides total annual net benefit of $275,984 (see Appendix C). Two things a community can do to increase the benefits they receive form the community forest are improve overall tree health in the community and plant a variety of additional large canopy shade trees.

Another important figure for communities to know is the replacement value of their trees. Replacement values are estimates for the full cost of replacing trees in their current condition, should trees need to be

removed. These estimates are meant for the population as a whole and not intended to be used on an individual tree basis. The replacement value for all of Pierre's parks public trees is $9,382,064 (see Appendix D).

While Pierre's parks community trees are relatively healthy with a good mix of species. Pierre has 11 trees per acre in the parks surveyed (Appendix E).

For ash results and replacement information, see Appendix H.

Recommendations

Below are some general recommendations to improve the Pierre's parks community forests:

1. The planting of ash species should be discontinued to reduce possible future EAB threats.
2. Reduce the planting of eastern red cedar, cottonwood, and green ash. These species represent more than 10% of the total community forest.
3. Work to increase stocking rate by increasing overall tree planting. For potential tree planting grant funds, see Appendix F.
4. Increase planting of less common species. For a list of suggested species, see Appendix I.
5. Maintain an annual tree planting regime to work towards a larger community forest.
6. Complete individual tree health assessments on poor condition trees.
7. Work with community maintenance staff and state and local resources to establish a management plan for the community.

For any questions regarding this report, please contact:

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[i] Santamour, Frank. *Trees for Urban Planting: Diversity, Uniformity, and Common Sense.* U.S. National Arboretum; Agricultural Research Service, U.S. Department of Agriculture. Washington DC. METRIA: The Metropolitan Tree Improvement Alliance, METRIA 7 Conference (June 11-12, 1990). Pg. 57. http://www.ces.ncsu.edu/fletcher/programs/nursery/metria/metria07/m79.pdf

Appendix A—Tree Species Detail

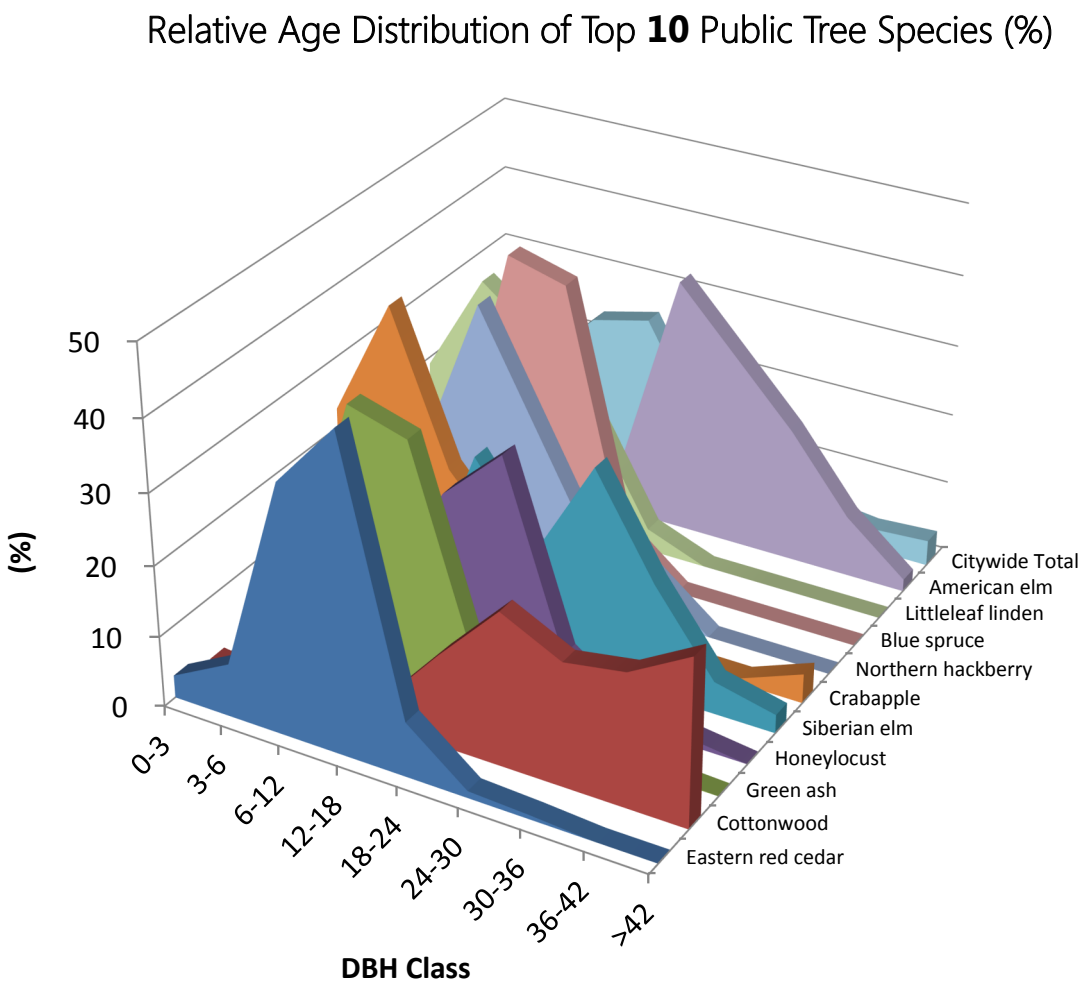
Species	DBH Class (in)									Total
	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42	
Broadleaf Deciduous Large (BDL)										
Cottonwood	4	1	1	10	37	62	50	54	68	287
Green ash	1	27	94	88	22	11	1	1	0	245
Honeylocust	6	36	18	45	59	13	2	2	0	181
Siberian elm	0	2	7	40	23	45	24	7	4	152
Northern hackberry	7	15	35	21	7	6	0	0	0	91
Littleleaf linden	12	21	17	11	2	0	0	0	0	63
American elm	0	0	0	4	21	16	11	5	1	58
Elm	13	32	3	1	0	1	0	0	0	50
Ash	5	23	12	5	0	0	0	0	0	45
Bur oak	17	17	8	1	0	0	0	0	0	43
Black walnut	0	0	10	20	6	1	0	0	0	37
Red mulberry	1	2	1	10	12	5	0	1	4	36
Kentucky coffeetree	5	16	12	1	0	0	0	0	0	34
Northern catalpa	0	0	9	6	1	0	0	0	0	16
Silver maple	0	0	3	6	3	1	0	0	1	14
American basswood	0	6	2	2	0	0	0	0	0	10
Freeman maple	4	2	0	0	0	0	0	0	0	6
White ash	0	3	2	1	0	0	0	0	0	6
Norway maple	0	1	2	1	0	0	0	0	0	4
Willow	0	1	0	2	1	0	0	0	0	4
River birch	2	0	0	1	0	0	0	0	0	3
Ginkgo	2	1	0	0	0	0	0	0	0	3
Boxelder	0	1	1	0	0	0	0	0	0	2
White poplar	0	0	0	0	0	1	1	0	0	2
Swamp white oak	0	2	0	0	0	0	0	0	0	2
Black locust	1	0	0	0	0	0	1	0	0	2
Sugar maple	0	1	0	0	0	0	0	0	0	1
White willow	1	0	0	0	0	0	0	0	0	1
Total	**81**	**210**	**237**	**276**	**194**	**162**	**90**	**70**	**78**	**1,398**
Broadleaf Deciduous Medium (BDM)										
Ohio buckeye	3	5	2	4	0	0	0	0	0	14
Quaking aspen	1	2	4	0	0	0	0	0	0	7
Pear	0	1	3	1	0	0	0	0	0	5
Broadleaf Deciduous Medium	1	1	0	0	0	0	0	0	0	2
Horsechestnut	0	1	0	0	0	0	0	0	0	1
Total	**5**	**10**	**9**	**5**	**0**	**0**	**0**	**0**	**0**	**29**

Appendix A—Tree Species Detail

Species	DBH Class (in)									Total
	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42	
Broadleaf Deciduous Small (BDS)										
Crabapple	27	47	22	11	3	2	1	1	5	119
Common chokecherry	3	11	2	1	0	0	0	0	0	17
Japanese tree lilac	1	6	8	0	0	0	0	0	0	15
Eastern redbud	0	4	4	0	0	0	0	0	0	8
Cherry plum	6	1	1	0	0	0	0	0	0	8
Amur maple	0	2	4	0	1	0	0	0	0	7
Broadleaf Deciduous Small	7	0	0	0	0	0	0	0	0	7
American mountain ash	0	0	2	0	0	0	0	0	0	2
Serviceberry	1	0	0	0	0	0	0	0	0	1
Russian olive	0	0	1	0	0	0	0	0	0	1
Plum	1	0	0	0	0	0	0	0	0	1
European buckthorn	0	0	1	0	0	0	0	0	0	1
Lilac	1	0	0	0	0	0	0	0	0	1
Total	**47**	**71**	**45**	**12**	**4**	**2**	**1**	**1**	**5**	**188**
Broadleaf Evergreen Large (BEL)										
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Broadleaf Evergreen Medium (BEM)										
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Broadleaf Evergreen Small (BES)										
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Conifer Evergreen Large (CEL)										
Blue spruce	2	8	38	36	6	0	0	0	0	90
Norway spruce	4	1	8	4	2	0	0	0	0	19
White spruce	0	1	5	2	0	0	0	0	0	8
Ponderosa pine	0	0	0	1	0	0	0	0	0	1
Total	**6**	**10**	**51**	**43**	**8**	**0**	**0**	**0**	**0**	**118**
Conifer Evergreen Medium (CEM)										
Austrian pine	0	0	2	11	3	0	0	0	0	16
Scotch pine	0	0	1	5	5	1	0	0	0	12
Total	**0**	**0**	**3**	**16**	**8**	**1**	**0**	**0**	**0**	**28**
Conifer Evergreen Small (CES)										
Eastern red cedar	16	38	177	224	39	5	3	0	0	502
Juniper	0	4	8	0	0	0	0	0	0	12
Common juniper	0	1	0	0	0	0	0	0	0	1
Total	**16**	**43**	**185**	**224**	**39**	**5**	**3**	**0**	**0**	**515**
Citywide Total	**155**	**344**	**530**	**576**	**253**	**170**	**94**	**71**	**83**	**2,276**

Appendix B—Age Distribution by Species

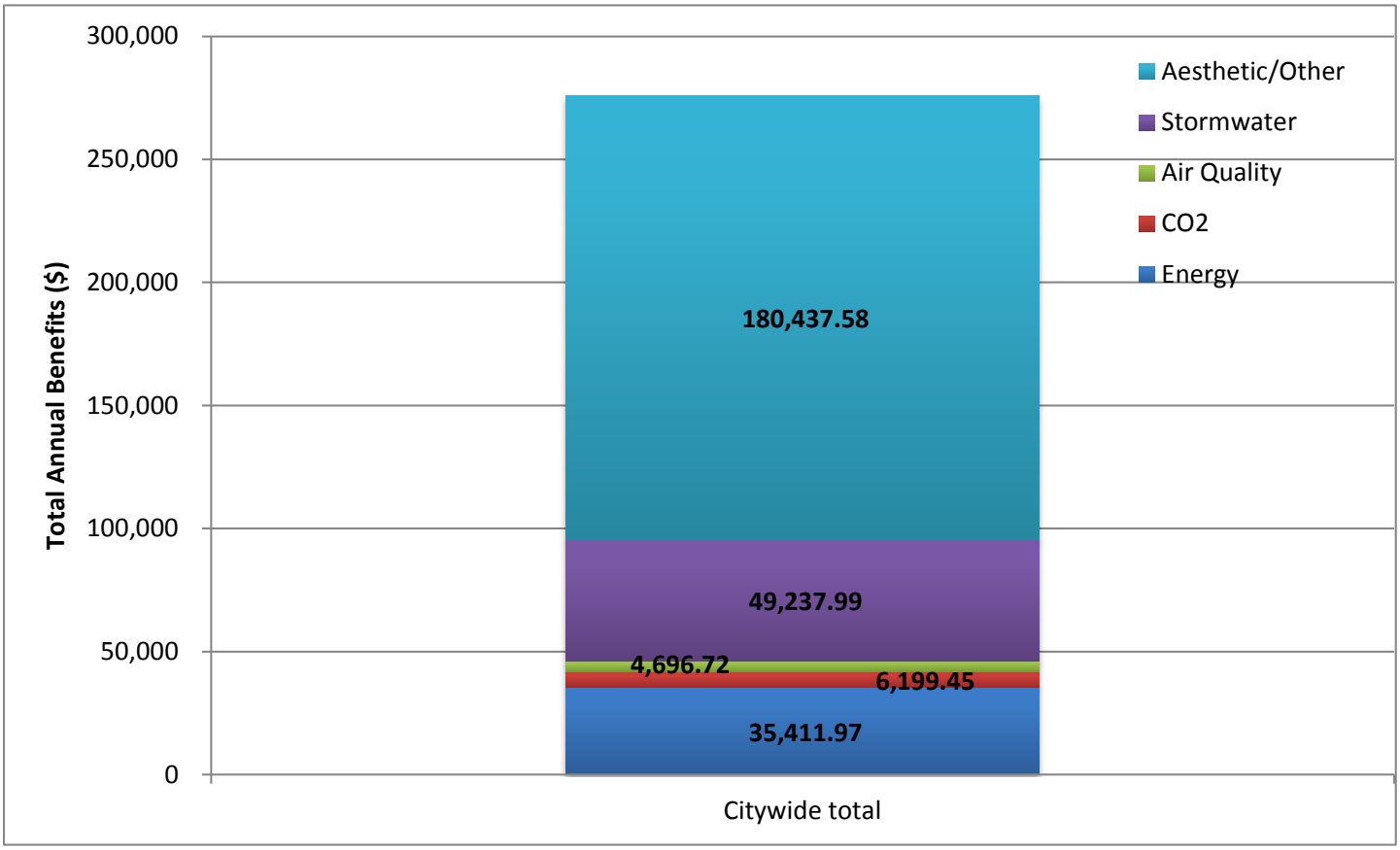
Species	DBH class (in)								
	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42
Eastern red cedar	3.19	7.57	35.26	44.62	7.77	1.00	0.60	0.00	0.00
Cottonwood	1.39	0.35	0.35	3.48	12.89	21.60	17.42	18.82	23.69
Green ash	0.41	11.02	38.37	35.92	8.98	4.49	0.41	0.41	0.00
Honeylocust	3.31	19.89	9.94	24.86	32.60	7.18	1.10	1.10	0.00
Siberian elm	0.00	1.32	4.61	26.32	15.13	29.61	15.79	4.61	2.63
Crabapple	22.69	39.50	18.49	9.24	2.52	1.68	0.84	0.84	4.20
Northern hackberry	7.69	16.48	38.46	23.08	7.69	6.59	0.00	0.00	0.00
Blue spruce	2.22	8.89	42.22	40.00	6.67	0.00	0.00	0.00	0.00
Littleleaf linden	19.05	33.33	26.98	17.46	3.17	0.00	0.00	0.00	0.00
American elm	0.00	0.00	0.00	6.90	36.21	27.59	18.97	8.62	1.72
Citywide Total	6.81	15.11	23.29	25.31	11.12	7.47	4.13	3.12	3.65



Appendix C—Annual Tree Benefits

Species	Energy	CO_2	Air Quality	Storm water	Aesthetic/ Other	Total ($)	% of Total $
Eastern red cedar	$ 3,124.05	$ 379.73	$ (318.39)	$ 5,245.88	$ 21,008.01	$ 29,439.29	11%
Cottonwood	$ 10,073.79	$ 1,601.80	$ 2,196.85	$ 13,071.99	$ 19,153.07	$ 46,097.50	17%
Green ash	$ 4,121.50	$ 815.07	$ 542.61	$ 3,853.88	$ 32,170.28	$ 41,503.34	15%
Honeylocust	$ 3,371.13	$ 633.29	$ 353.54	$ 3,921.16	$ 20,896.02	$ 29,175.15	11%
Siberian elm	$ 4,986.23	$ 1,012.46	$ 834.92	$ 11,075.40	$ 16,659.90	$ 34,568.90	13%
Crabapple	$ 551.95	$ 99.53	$ 106.81	$ 308.40	$ 3,920.18	$ 4,986.87	2%
Northern hackberry	$ 1,357.93	$ 203.92	$ 147.40	$ 2,081.52	$ 10,175.94	$ 13,966.71	5%
Blue spruce	$ 887.84	$ 157.02	$ (64.00)	$ 2,058.11	$ 6,721.95	$ 9,760.94	4%
Littleleaf linden	$ 537.94	$ 84.58	$ 59.71	$ 539.19	$ 5,381.49	$ 6,602.91	2%
American elm	$ 1,664.34	$ 316.31	$ 358.10	$ 1,757.21	$ 6,406.73	$ 10,502.69	4%
Elm	$ 208.55	$ 41.90	$ 21.12	$ 191.02	$ 3,296.85	$ 3,759.45	1%
Ash	$ 314.62	$ 61.56	$ 30.55	$ 285.94	$ 4,055.28	$ 4,747.96	2%
Bur oak	$ 132.74	$ 27.40	$ (7.97)	$ 112.73	$ 1,546.67	$ 1,811.57	1%
Black walnut	$ 757.26	$ 150.96	$ 101.92	$ 695.19	$ 5,396.29	$ 7,101.62	3%
Red mulberry	$ 961.25	$ 176.73	$ 169.80	$ 1,042.04	$ 4,305.32	$ 6,655.14	2%
Kentucky coffeetree	$ 238.86	$ 36.53	$ 19.33	$ 261.01	$ 2,294.36	$ 2,850.09	1%
OTHER STREET TREES	$ 2,121.96	$ 400.66	$ 144.43	$ 2,737.32	$ 17,049.24	$ 22,453.61	8%
CITYWIDE TOTAL	$ 35,411.97	$ 6,199.45	$ 4,696.72	$ 49,237.99	$ 180,437.58	$ 275,983.72	100%

Total Annual Benefits of Public Trees ($)



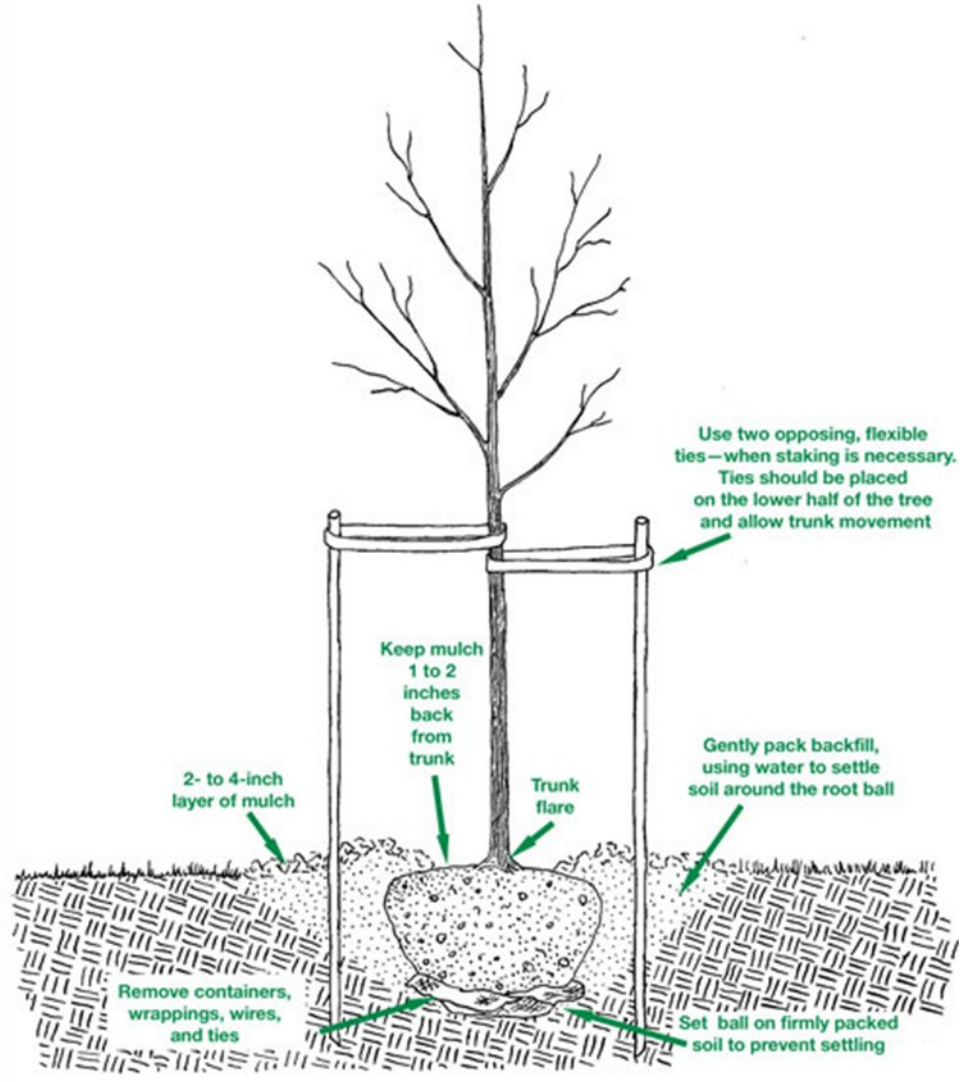
Species	DBH Class (in)									Total	% of Total
	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42		
Eastern red cedar	$ 2,272	$ 12,316	$ 163,984	$ 536,265	$ 178,333	$ 37,719	$ 34,248	$ -	$ -	$ 965,137	10%
Cottonwood	$ 895	$ 358	$ 905	$ 22,635	$ 166,385	$ 469,669	$ 537,966	$ 743,971	$ 1,062,367	$ 3,005,151	32%
Green ash	$ 284	$ 13,439	$ 120,275	$ 276,773	$ 130,260	$ 105,237	$ 14,004	$ 18,467	$ -	$ 678,738	7%
Honeylocust	$ 1,585	$ 20,453	$ 26,434	$ 165,311	$ 422,552	$ 148,539	$ 34,527	$ 45,058	$ -	$ 864,459	9%
Siberian elm	$ -	$ 787	$ 7,015	$ 113,720	$ 131,367	$ 436,385	$ 347,898	$ 139,128	$ 83,440	$ 1,259,740	13%
Crabapple	$ 5,772	$ 26,697	$ 39,946	$ 49,235	$ 25,607	$ 29,208	$ 21,227	$ 28,058	$ 144,992	$ 370,742	4%
Northern hackberry	$ 1,662	$ 8,353	$ 55,585	$ 84,140	$ 51,851	$ 76,737	$ -	$ -	$ -	$ 278,326	3%
Blue spruce	$ 376	$ 4,103	$ 61,205	$ 145,677	$ 47,213	$ -	$ -	$ -	$ -	$ 258,574	3%
Littleleaf linden	$ 3,224	$ 11,606	$ 25,233	$ 42,366	$ 14,635	$ -	$ -	$ -	$ -	$ 97,063	1%
American elm	$ -	$ -	$ -	$ 13,943	$ 135,498	$ 167,012	$ 166,297	$ 100,481	$ 23,018	$ 606,248	6%
Elm	$ 3,301	$ 16,584	$ 4,209	$ 3,486	$ -	$ 6,734	$ -	$ -	$ -	$ 34,315	0%
Ash	$ 1,386	$ 11,630	$ 15,787	$ 15,420	$ -	$ -	$ -	$ -	$ -	$ 44,223	0%
Bur oak	$ 4,297	$ 11,011	$ 14,929	$ 4,608	$ -	$ -	$ -	$ -	$ -	$ 34,845	0%
Black walnut	$ -	$ -	$ 14,394	$ 71,898	$ 42,985	$ 11,925	$ -	$ -	$ -	$ 141,203	2%
Red mulberry	$ 249	$ 905	$ 1,139	$ 24,514	$ 62,525	$ 41,127	$ -	$ 16,159	$ 72,161	$ 218,778	2%
Kentucky coffeetree	$ 1,190	$ 9,665	$ 20,507	$ 4,697	$ -	$ -	$ -	$ -	$ -	$ 36,058	0%
Norway spruce	$ 785	$ 282	$ 10,278	$ 13,465	$ 13,331	$ -	$ -	$ -	$ -	$ 38,140	0%
Common chokecherry	$ 604	$ 6,376	$ 3,576	$ 4,057	$ -	$ -	$ -	$ -	$ -	$ 14,614	0%
Northern catalpa	$ -	$ -	$ 14,662	$ 24,169	$ 7,660	$ -	$ -	$ -	$ -	$ 46,491	1%
Austrian pine	$ -	$ -	$ 2,875	$ 40,967	$ 21,784	$ -	$ -	$ -	$ -	$ 65,626	1%
Japanese tree lilac	$ 263	$ 3,038	$ 14,331	$ -	$ -	$ -	$ -	$ -	$ -	$ 17,632	0%
Silver maple	$ -	$ -	$ 2,661	$ 17,101	$ 15,821	$ 8,959	$ -	$ -	$ 16,729	$ 61,271	1%
Ohio buckeye	$ 1,006	$ 3,194	$ 3,643	$ 17,773	$ -	$ -	$ -	$ -	$ -	$ 25,616	0%
Juniper	$ -	$ 1,288	$ 7,661	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,948	0%
Scotch pine	$ -	$ -	$ 871	$ 18,127	$ 34,863	$ 11,435	$ -	$ -	$ -	$ 65,297	1%
American basswood	$ -	$ 3,221	$ 3,265	$ 8,163	$ -	$ -	$ -	$ -	$ -	$ 14,649	0%
Eastern redbud	$ -	$ 2,334	$ 6,472	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,806	0%
White spruce	$ -	$ 517	$ 5,859	$ 5,931	$ -	$ -	$ -	$ -	$ -	$ 12,307	0%
Cherry plum	$ 1,266	$ 366	$ 1,788	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,421	0%
Amur maple	$ -	$ 762	$ 6,199	$ -	$ 7,722	$ -	$ -	$ -	$ -	$ 14,683	0%
Broadleaf Deciduous Small	$ 1,166	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,166	0%
Quaking aspen	$ 176	$ 815	$ 4,756	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,747	0%
Freeman maple	$ 1,156	$ 1,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,315	0%
White ash	$ -	$ 1,689	$ 2,964	$ 3,713	$ -	$ -	$ -	$ -	$ -	$ 8,366	0%
Pear	$ -	$ 655	$ 5,237	$ 2,867	$ -	$ -	$ -	$ -	$ -	$ 8,759	0%
Norway maple	$ -	$ 655	$ 3,643	$ 2,867	$ -	$ -	$ -	$ -	$ -	$ 7,165	0%
Willow	$ -	$ 379	$ -	$ 4,421	$ 4,143	$ -	$ -	$ -	$ -	$ 8,943	0%
River birch	$ 295	$ -	$ -	$ 3,605	$ -	$ -	$ -	$ -	$ -	$ 3,900	0%
Ginkgo	$ 514	$ 626	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,140	0%
Boxelder	$ -	$ 478	$ 699	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,177	0%
Broadleaf Deciduous Mediur	$ 310	$ 655	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 965	0%
White poplar	$ -	$ -	$ -	$ -	$ -	$ 7,699	$ 11,143	$ -	$ -	$ 18,843	0%
Swamp white oak	$ -	$ 1,506	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,506	0%
Black locust	$ 284	$ -	$ -	$ -	$ -	$ -	$ 8,956	$ -	$ -	$ 9,240	0%
American mountain ash	$ -	$ -	$ 2,901	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,901	0%
Sugar maple	$ -	$ 546	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 546	0%
Horsechestnut	$ -	$ 655	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 655	0%
Serviceberry	$ 257	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 257	0%
Russian olive	$ -	$ -	$ 1,562	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,562	0%
Common juniper	$ -	$ 322	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 322	0%
Ponderosa pine	$ -	$ -	$ -	$ 3,273	$ -	$ -	$ -	$ -	$ -	$ 3,273	0%
Plum	$ 144	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 144	0%
European buckthorn	$ -	$ -	$ 1,562	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,562	0%
White willow	$ 245	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 245	0%
Lilac	$ 263	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 263	0%
Citywide total	$ 35,226	$ 179,426	$ 679,010	$ 1,745,187	$ 1,514,535	$ 1,558,387	$ 1,176,265	$ 1,091,322	$ 1,402,706	$ 9,382,064	100%

Appendix E—Stocking Rate Math & Planting Vacancies

- 2,276 assessed trees ÷ 202.96 acres = 11.21 trees per acre

Identifying Planting Vacancies

1. Look into community ordinances involving tree planting near streets.
2. Visit planting site(s) in question.
3. Look for overhead utility lines and surface obstacles (mailboxes, fire hydrants, etc.).
4. Locate underground obstacles (water lines, utility lines, etc.).
5. If no issues found, identify proper tree species for the site.



Appendix F—Community Forestry Challenge Grant Funds

Through the Community Forestry Program, the division has provided financial assistance to our communities each year since 1991. A portion of the division's annual allocation of Urban and Community Forestry Assistance funds from the US Forest Service is awarded to communities in the form of Challenge grants. These grants are used to fund community forestry projects which solve a specific community forestry problem, demonstrate the importance of trees in our communities. The community or service organization must match challenge grants.

The Division has developed the challenge grant program to require increased commitment and effort from a community. The criteria for the challenge grant are outlined below: (listed highest to lowest priority)

- Professional Services – ($5,000)
- Tree Inventory/Assessment – ($5,000)
- Existing Tree Care & Maintenance – ($1,000) – An applicant may receive a maximum of $1,000 per year for existing tree care & maintenance.
- Education/Training – ($,5000)
- New Tree Planting – ($1,000) – An applicant may receive a maximum of $1,000 per year for new tree plantings.
- Other Activities – ($5,000)

Grants have a maximum limit of $5,000 (with the exception of New Tree Planting or Existing Tree Care & Maintenance grants which have a minimum limit of $1,000). The required match may be met through volunteer labor, donated and/or purchased supplies, or actual cash expenditures.

For additional information, visit our website at: http://sdda.sd.gov/grants/community-forestry-challenge-grants/.

Grant applications will be accepted at any time during the year. Application forms are available from the state office and field service offices of the Division Resource Conservation and Forestry.

Mail applications to:

Community Forestry Specialist
South Dakota Department of Agriculture
523 E. Capitol Avenue
Pierre, SD 57501

Appendix G—Structural (Wood) Condition of All Trees by Species

Species	Condition	Tree Count	% of Species	% of Public Trees
American basswood	Poor	2	20.00	0.09
	Fair	0	0.00	0.00
	Good	7	70.00	0.31
	Excellent	1	10.00	0.04
	Total	10	100.00	0.44
American elm	Poor	2	3.45	0.09
	Fair	6	10.34	0.26
	Good	50	86.21	2.20
	Excellent	0	0.00	0.00
	Total	58	100.00	2.55
American mountain ash	Poor	1	50.00	0.04
	Fair	0	0.00	0.00
	Good	1	50.00	0.04
	Excellent	0	0.00	0.00
	Total	2	100.00	0.09
Amur maple	Poor	1	14.29	0.04
	Fair	1	14.29	0.04
	Good	5	71.43	0.22
	Excellent	0	0.00	0.00
	Total	7	100.00	0.31
Ash	Poor	1	2.22	0.04
	Fair	5	11.11	0.22
	Good	36	80.00	1.58
	Excellent	3	6.67	0.13
	Total	45	100.00	1.98
Austrian pine	Poor	0	0.00	0.00
	Fair	1	6.25	0.04
	Good	15	93.75	0.66
	Excellent	0	0.00	0.00
	Total	16	100.00	0.70
Black locust	Poor	1	50.00	0.04
	Fair	0	0.00	0.00
	Good	1	50.00	0.04
	Excellent	0	0.00	0.00
	Total	2	100.00	0.09
Black walnut	Poor	5	13.51	0.22
	Fair	3	8.11	0.13
	Good	29	78.38	1.27
	Excellent	0	0.00	0.00
	Total	37	100.00	1.63

Appendix G—Structural (Wood) Condition of All Trees by Species

Species	Condition	Tree Count	% of Species	% of Public Trees
Blue spruce	Poor	1	1.11	0.04
	Fair	17	18.89	0.75
	Good	50	55.56	2.20
	Excellent	22	24.44	0.97
	Total	90	100.00	3.95
Boxelder	Poor	1	50.00	0.04
	Fair	0	0.00	0.00
	Good	1	50.00	0.04
	Excellent	0	0.00	0.00
	Total	2	100.00	0.09
Broadleaf Deciduous Medium	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	2	100.00	0.09
	Excellent	0	0.00	0.00
	Total	2	100.00	0.09
Broadleaf Deciduous Small	Poor	5	71.43	0.22
	Fair	0	0.00	0.00
	Good	2	28.57	0.09
	Excellent	0	0.00	0.00
	Total	7	100.00	0.31
Bur oak	Poor	4	9.30	0.18
	Fair	3	6.98	0.13
	Good	28	65.12	1.23
	Excellent	8	18.60	0.35
	Total	43	100.00	1.89
Cherry plum	Poor	2	25.00	0.09
	Fair	1	12.50	0.04
	Good	5	62.50	0.22
	Excellent	0	0.00	0.00
	Total	8	100.00	0.35
Common chokecherry	Poor	1	5.88	0.04
	Fair	2	11.76	0.09
	Good	14	82.35	0.62
	Excellent	0	0.00	0.00
	Total	17	100.00	0.75
Common juniper	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	1	100.00	0.04
	Excellent	0	0.00	0.00
	Total	1	100.00	0.04

Appendix G—Structural (Wood) Condition of All Trees by Species

Species	Condition	Tree Count	% of Species	% of Public Trees
Cottonwood	Poor	14	4.88	0.62
	Fair	61	21.25	2.68
	Good	211	73.52	9.27
	Excellent	1	0.35	0.04
	Total	287	100.00	12.61
Crabapple	Poor	8	6.72	0.35
	Fair	10	8.40	0.44
	Good	94	78.99	4.13
	Excellent	7	5.88	0.31
	Total	119	100.00	5.23
Eastern red cedar	Poor	9	1.79	0.40
	Fair	85	16.93	3.73
	Good	394	78.49	17.31
	Excellent	14	2.79	0.62
	Total	502	100.00	22.06
Eastern redbud	Poor	1	12.50	0.04
	Fair	0	0.00	0.00
	Good	7	87.50	0.31
	Excellent	0	0.00	0.00
	Total	8	100.00	0.35
Elm	Poor	4	8.00	0.18
	Fair	4	8.00	0.18
	Good	36	72.00	1.58
	Excellent	6	12.00	0.26
	Total	50	100.00	2.20
European buckthorn	Poor	0	0.00	0.00
	Fair	1	100.00	0.04
	Good	0	0.00	0.00
	Excellent	0	0.00	0.00
	Total	1	100.00	0.04
Freeman maple	Poor	1	16.67	0.04
	Fair	0	0.00	0.00
	Good	5	83.33	0.22
	Excellent	0	0.00	0.00
	Total	6	100.00	0.26
Ginkgo	Poor	1	33.33	0.04
	Fair	0	0.00	0.00
	Good	2	66.67	0.09
	Excellent	0	0.00	0.00
	Total	3	100.00	0.13

Appendix G—Structural (Wood) Condition of All Trees by Species

Species	Condition	Tree Count	% of Species	% of Public Trees
Green ash	Poor	5	2.04	0.22
	Fair	14	5.71	0.62
	Good	224	91.43	9.84
	Excellent	2	0.82	0.09
	Total	245	100.00	10.76
Honeylocust	Poor	2	1.10	0.09
	Fair	19	10.50	0.83
	Good	146	80.66	6.41
	Excellent	14	7.73	0.62
	Total	181	100.00	7.95
Horsechestnut	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	1	100.00	0.04
	Excellent	0	0.00	0.00
	Total	1	100.00	0.04
Japanese tree lilac	Poor	4	26.67	0.18
	Fair	2	13.33	0.09
	Good	9	60.00	0.40
	Excellent	0	0.00	0.00
	Total	15	100.00	0.66
Juniper	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	12	100.00	0.53
	Excellent	0	0.00	0.00
	Total	12	100.00	0.53
Kentucky coffeetree	Poor	2	5.88	0.09
	Fair	3	8.82	0.13
	Good	20	58.82	0.88
	Excellent	9	26.47	0.40
	Total	34	100.00	1.49
Lilac	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	1	100.00	0.04
	Excellent	0	0.00	0.00
	Total	1	100.00	0.04
Littleleaf linden	Poor	6	9.52	0.26
	Fair	0	0.00	0.00
	Good	51	80.95	2.24
	Excellent	6	9.52	0.26
	Total	63	100.00	2.77

Appendix G—Structural (Wood) Condition of All Trees by Species

Species	Condition	Tree Count	% of Species	% of Public Trees
Northern catalpa	Poor	0	0.00	0.00
	Fair	2	12.50	0.09
	Good	11	68.75	0.48
	Excellent	3	18.75	0.13
	Total	16	100.00	0.70
Northern hackberry	Poor	5	5.49	0.22
	Fair	12	13.19	0.53
	Good	70	76.92	3.08
	Excellent	4	4.40	0.18
	Total	91	100.00	4.00
Norway maple	Poor	1	25.00	0.04
	Fair	0	0.00	0.00
	Good	3	75.00	0.13
	Excellent	0	0.00	0.00
	Total	4	100.00	0.18
Norway spruce	Poor	2	10.53	0.09
	Fair	1	5.26	0.04
	Good	14	73.68	0.62
	Excellent	2	10.53	0.09
	Total	19	100.00	0.83
Ohio buckeye	Poor	0	0.00	0.00
	Fair	2	14.29	0.09
	Good	10	71.43	0.44
	Excellent	2	14.29	0.09
	Total	14	100.00	0.62
Pear	Poor	1	20.00	0.04
	Fair	1	20.00	0.04
	Good	3	60.00	0.13
	Excellent	0	0.00	0.00
	Total	5	100.00	0.22
Plum	Poor	1	100.00	0.04
	Fair	0	0.00	0.00
	Good	0	0.00	0.00
	Excellent	0	0.00	0.00
	Total	1	100.00	0.04
Ponderosa pine	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	1	100.00	0.04
	Excellent	0	0.00	0.00
	Total	1	100.00	0.04

Appendix G—Structural (Wood) Condition of All Trees by Species

Species	Condition	Tree Count	% of Species	% of Public Trees
Quaking aspen	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	7	100.00	0.31
	Excellent	0	0.00	0.00
	Total	7	100.00	0.31
Red mulberry	Poor	6	16.67	0.26
	Fair	27	75.00	1.19
	Good	3	8.33	0.13
	Excellent	0	0.00	0.00
	Total	36	100.00	1.58
River birch	Poor	2	66.67	0.09
	Fair	0	0.00	0.00
	Good	1	33.33	0.04
	Excellent	0	0.00	0.00
	Total	3	100.00	0.13
Russian olive	Poor	0	0.00	0.00
	Fair	1	100.00	0.04
	Good	0	0.00	0.00
	Excellent	0	0.00	0.00
	Total	1	100.00	0.04
Scotch pine	Poor	1	8.33	0.04
	Fair	0	0.00	0.00
	Good	11	91.67	0.48
	Excellent	0	0.00	0.00
	Total	12	100.00	0.53
Serviceberry	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	1	100.00	0.04
	Excellent	0	0.00	0.00
	Total	1	100.00	0.04
Siberian elm	Poor	35	23.03	1.54
	Fair	55	36.18	2.42
	Good	62	40.79	2.72
	Excellent	0	0.00	0.00
	Total	152	100.00	6.68
Silver maple	Poor	2	14.29	0.09
	Fair	3	21.43	0.13
	Good	9	64.29	0.40
	Excellent	0	0.00	0.00
	Total	14	100.00	0.62

Appendix G—Structural (Wood) Condition of All Trees by Species

Species	Condition	Tree Count	% of Species	% of Public Trees
Sugar maple	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	1	100.00	0.04
	Excellent	0	0.00	0.00
	Total	1	100.00	0.04
Swamp white oak	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	1	50.00	0.04
	Excellent	1	50.00	0.04
	Total	2	100.00	0.09
White ash	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	5	83.33	0.22
	Excellent	1	16.67	0.04
	Total	6	100.00	0.26
White poplar	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	2	100.00	0.09
	Excellent	0	0.00	0.00
	Total	2	100.00	0.09
White spruce	Poor	1	12.50	0.04
	Fair	2	25.00	0.09
	Good	5	62.50	0.22
	Excellent	0	0.00	0.00
	Total	8	100.00	0.35
White willow	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	0	0.00	0.00
	Excellent	1	100.00	0.04
	Total	1	100.00	0.04
Willow	Poor	0	0.00	0.00
	Fair	0	0.00	0.00
	Good	4	100.00	0.18
	Excellent	0	0.00	0.00
	Total	4	100.00	0.18

Appendix H—Ash Species Results

Species	Community Total	Canopy Percentage	Average Condition	Annual Benefits ($)	Replacement Value ($)
green ash	245	10.76%	80 (Good)	$ 41,503.34	$ 678,738.00
black ash	44	1.93%	80 (Good)		$ 44,223.00
white ash	6	0.26%	80 (Good)		$ 8,366.00
TOTAL	295	12.95%		$ 41,503.34	$ 731,327.00

Purdue University EAB Calculator Results—Based on a 7 year removal / replacement plan.

Year	Replace All Cost This Year	Remove All Cost This Year
1	$ 22,437	$ 6,588
2	$ 21,780	$ 6,367
3	$ 21,130	$ 6,130
4	$ 21,598	$ 6,990
5	$ 22,128	$ 7,891
6	$ 22,966	$ 9,082
7	$ 23,352	$ 9,804
TOTAL Costs	$ 155,391	$ 52,852

TOTAL PROJECT COST:	$ 208,243

Total Removal / Replacement Costs Ranges:

$208,243—$731,327

Appendix I—Recommended Tree Species List

Hardwood Tree Species	Drought Tolerance	Alkaline (high pH) Tolerance (3)	Planting Region (1)	Size, Form, and Other Information (2)
Oak Leaf Mountain Ash	Moderate	Moderate	East, Central, Black Hills	30', Upright, Oval, Hybrid, Fruit, Fireblight Resistant
Showy Mountain Ash	Moderate	Poor	East, Central, Black Hills	20-25", Rounded, Fowers, Fruit, Fall Color
Boxelder	Good	Good	Statewide	40-50', Rounded, Broad
Sensation Boxelder	Good	Good	East, Central, Black Hills	30-40', Rounded, Fall Color
Ohio Buckeye	Poor	Moderate	East, Central, Black Hills	20-40', Rounded, Oval, Nuts, Fall Color
Northern Catalpa	Good	Good	East, Central, Black Hills	50-60', Tall, Upright, Oval
Schubert Chokecherry	Good	Good	Statewide	20-25', Oval, Rounded, Purple Foliage, Suckers
Amur Chokecherry	Moderate	Moderate	East, Central, Black Hills	20-30', Rounded, Flowers, Fruit, Showy Bark
Kentucky Coffeetree	Moderate	Moderate	East, Central, Black Hills	50-60', Open, Spreading, Has Pods
Macho Amur Corktree	Good	Good	East, Cetral, Black Hills	25-35', Rounded, Fruitless
Crabapple Cultivars	Moderate	Moderate	Statewide	10-30', Upright to Rounded, Flowers, Fruit
Discovery Elm	Moderate	Moderate	Statewide	35-40', Upright, Disease Resistant
Accolade Elm	Moderate	Moderate	Statewide	70', Upright, Spreading, Disease Resistant
Triumph Elm	Moderate	Moderate	Statewide	60'. Upright, Disease Resistant
Vanguard Elm	Moderate	Moderate	Statewide	40-50', Loosly Rounded, Disease Resistant
Gingko Cultivars	Moderate	Good	East, Central, Black Hills	40-60', Pyramidal, Narrow to Broad, Non Fruiting
Hackberry	Good	Good	Statewide	50-75', Broad
Thronless Cockspur Hawthorn	Good	Good	Statewide	15-20', Rounded, Spreading, Fruit, Fall Color
Crimson Cloud Hawthron	Good	Good	East, Central, Black Hills	15', Rounded, Red and White Flowers, Fruit
Northern Acclaim Honeylocust	Good	Moderate	Statewide	35-45', Upright to Spreading, Hardy, Podless, Thornless
Shademaster Honeylocust	Good	Moderate	Statewide	40-50', Broad, Podless, Thornless
Skyline Honeylocust	Moderate	Moderate	Statewide	50', Broad, Podless, Thornless
Sunburst Honeylocust	Moderate	Moderate	East, Central, Black Hills	35', Broad, Podless, Thornless, Yellow to Green Foliage
American Hornbeam	Moderate	Moderate	East, Central, Black Hills	20-30', Spreading, Irregular, Tolerates Shade, Fall Color

Appendix I—Recommended Tree Species List—Continued

Hardwood Tree Species	Drought Tolerance	Alkaline (high pH) Tolerance (3)	Planting Region (1)	Size, Form, and Other Information (2)
Ivory Silk Japanese Tree Lilac	Moderate	Moderate	East, Central, Black Hills	25', Compact, Oval, Ivory Flowers Mid Summer
Japanese Tree Lilac	Moderate	Moderate	East, Central, Black Hills	25', Spreading, Ivory Flowers Mid Summer
American Linden	Moderate	Moderate	East, Central, Black Hills	40-60', Pryamidal, Fragrant Flowers
American Sentry Linden	Moderate	Moderate	East, Central, Black Hills	40', Pyramidal, Fragrant Flowers
Boulevard Linden	Moderate	Moderate	East, Central, Black Hills	60', Pyramidal, Fragrant Flowers
Frontyard Linden	Moderate	Moderate	East, Central, Black Hills	60-75', Rounded, Fragrant Flowers
Redmond Linden	Moderate	Moderate	East, Central, Black Hills	40-60', Pyramidal, Fragrant Flowers
Littleleaf Linden	Moderate	Moderate	East, Central, Black Hills	35-45',Pyramidal, Broad, Fragrant flowers
Littleleaf Linden Cultivars	Moderate	Moderate	East, Central, Black Hills	35-50', Broad, Pyramidal to Oval
Harvest Gold Mongolian Linden	Moderate	Moderate	East, Central, Black Hills	30-40', Upright, Oval
Purple Robe Black Locust	Good	Good	Statewide	50', Upright, Oval, Pink Flowers, Spines
Amur Maple - Tree Form	Moderate	Good	East, Central, Black Hills	15-20', Rounded, Tolerates Shade, Fall Color
State Street Maple	Good	Good	East, Central, Black Hills	20-25', Pyramidal
Silver Maple	Moderate	Poor	East, Central, Black Hills	60-100', Oval, Loose, Requires Acidic Soil
Bur Oak	Good	Good	Statewide	60-80', Rounded, Broad
Newport Plum	Moderate	Moderate	Statewide	15-20', Rounded, Purple Leaves, Flowers, Fruit,
Redbud (Minnesota strain)	Poor	Good	East, Central, Black Hills	20-30', Vase shape, Early Pink Flowers
Autumn Brilliance Serviceberry	Moderate	Moderate	East, Central, Black Hills	20-25', Rounded, Hybrid, Fruit, Fall Color
Black Walnut	Moderate	Moderate	East, Central, Black Hills	50-75', Rounded to Oval, Nuts
Weeping Willow	Moderate	Moderate	Statewide	50', Rounded to Oval, Wide Spreading

Appendix I—Recommended Tree Species List—Continued

Hardwood Tree Species	Drought Tolerance	Alkaline (high pH) Tolerance (3)	Planting Region (1)	Size, Form, and Other Information (2)
Golden Curls Willow	Poor	Moderate	East, Central, Black Hills	30-40', Irregular, Curly Branches
Corkscrew Willow	Moderate	Moderate	East, Central, Black Hills	30-40', Wide, Oval, Twisted Branches
American Yellowwood	Moderate	Good	East, Central	30-40', Broad, Rounded, Flowers, Requires Pruning
Evergreen Tree Species	**Drought Tolerance**	**Alkaline (high pH) Tolerance**	**Planting Region**	**Size, Form, and Other Information**
Rocky Mountain Douglas Fir	Good	Good	East, Central, Black Hills	40-50', Upright
Austrian Pine	Good	Good	East, Central	40-60', Pyramidal to Broad
Ponderosa Pine	Good	Good	Statewide	60-80', Upright
Scotch Pine	Good	Moderate	East, Central, Black Hills	30-50', Pyramidal to Broad
Black Hills Spruce	Good	Good	East, Central, Black Hills	30-60', Upright
Colorado Blue Spruce	Moderate	Good	East, Central, Black Hills	30-60', Upright, Color Can be Blue to Green
Meyers Spruce	Good	Good	East, Central, Black Hills	40'+, Upright, Wide

Appendix J—Importance Value by Species

Species	Number of Trees	% of Total Trees	Leaf Area (ft^2)	% of Total Leaf Area	Canopy Cover (ft^2)	% of Total Canopy Cover	Importance Value
Eastern red cedar	502	22.06	801,765.43	8.16	169,386.20	8.40	12.87
Cottonwood	287	12.61	3,474,422.02	35.35	630,730.53	31.28	26.41
Green ash	245	10.76	928,047.36	9.44	210,911.61	10.46	10.22
Honeylocust	181	7.95	859,512.57	8.74	209,633.09	10.40	9.03
Siberian elm	152	6.68	1,483,663.97	15.10	260,903.76	12.94	11.57
Crabapple	119	5.23	118,345.74	1.20	45,163.58	2.24	2.89
Northern hackberry	91	4.00	307,804.28	3.13	64,177.98	3.18	3.44
Blue spruce	90	3.95	162,608.61	1.65	32,677.36	1.62	2.41
Littleleaf linden	63	2.77	104,130.75	1.06	21,752.24	1.08	1.64
American elm	58	2.55	533,770.68	5.43	128,506.56	6.37	4.78
Elm	50	2.20	39,477.22	0.40	11,119.44	0.55	1.05
Ash	45	1.98	58,490.96	0.60	16,286.86	0.81	1.13
Bur oak	43	1.89	22,445.34	0.23	6,737.45	0.33	0.82
Black walnut	37	1.63	170,682.37	1.74	37,911.80	1.88	1.75
Red mulberry	36	1.58	271,852.71	2.77	53,077.81	2.63	2.33
Kentucky coffeetree	34	1.49	42,455.34	0.43	12,871.60	0.64	0.85
OTHER TREES	243	10.68	449,299.31	4.57	104,335.55	5.17	6.81
Total	2,276	100.00	9,828,774.68	100.00	2,016,183.43	100.00	100.00

Appendix K—Maps

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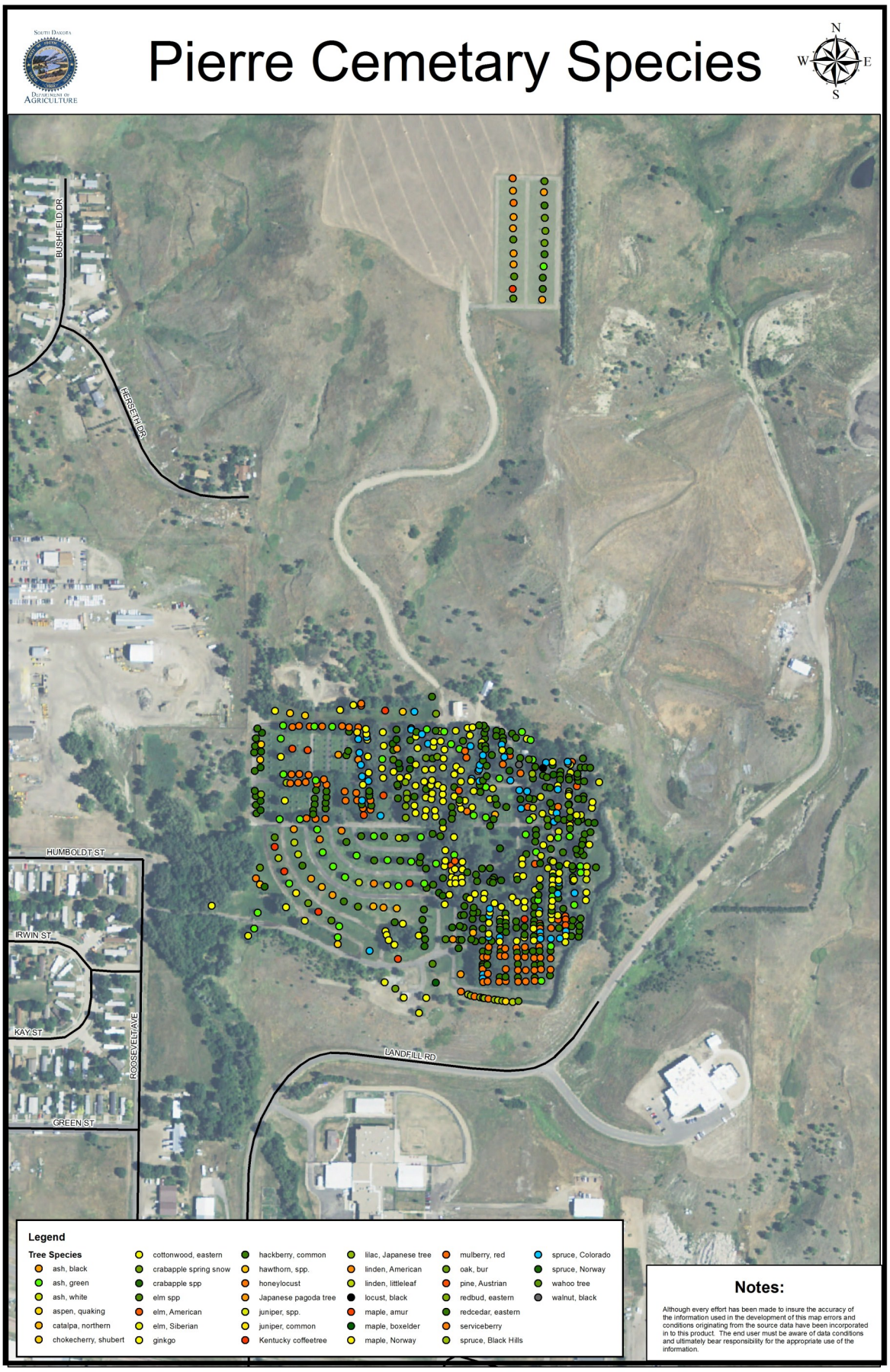

Appendix K—Maps

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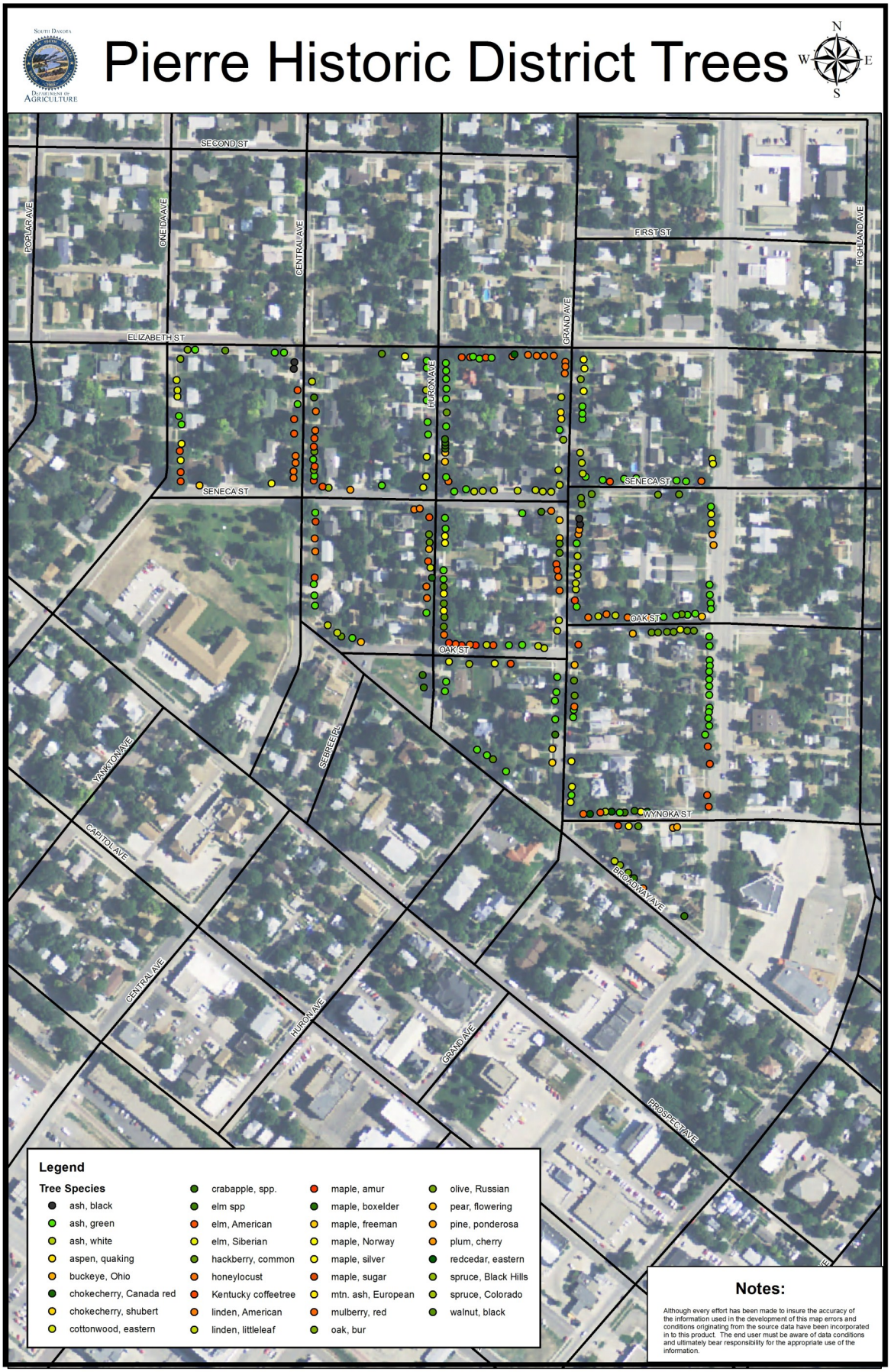
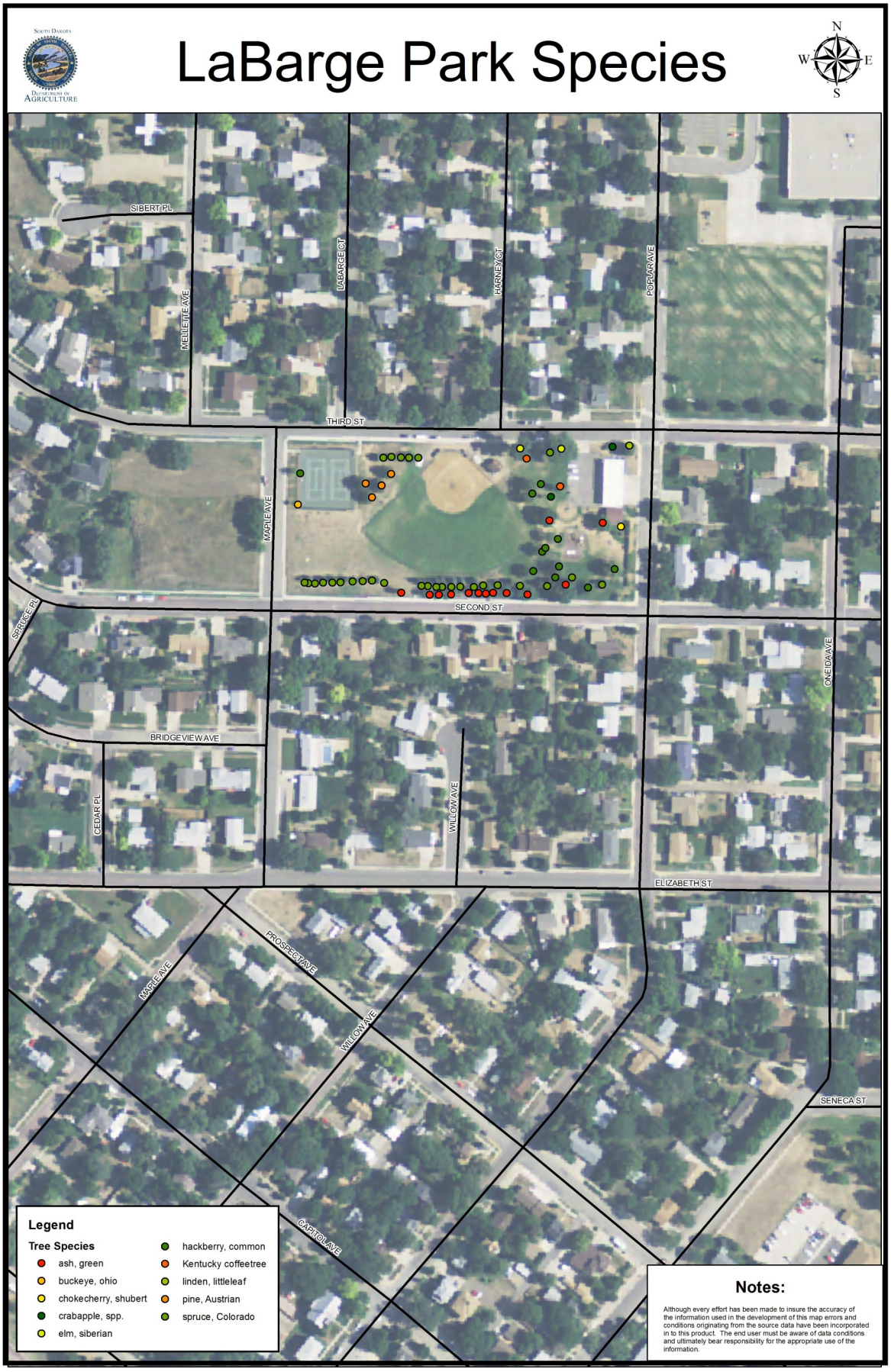


Appendix K—Maps



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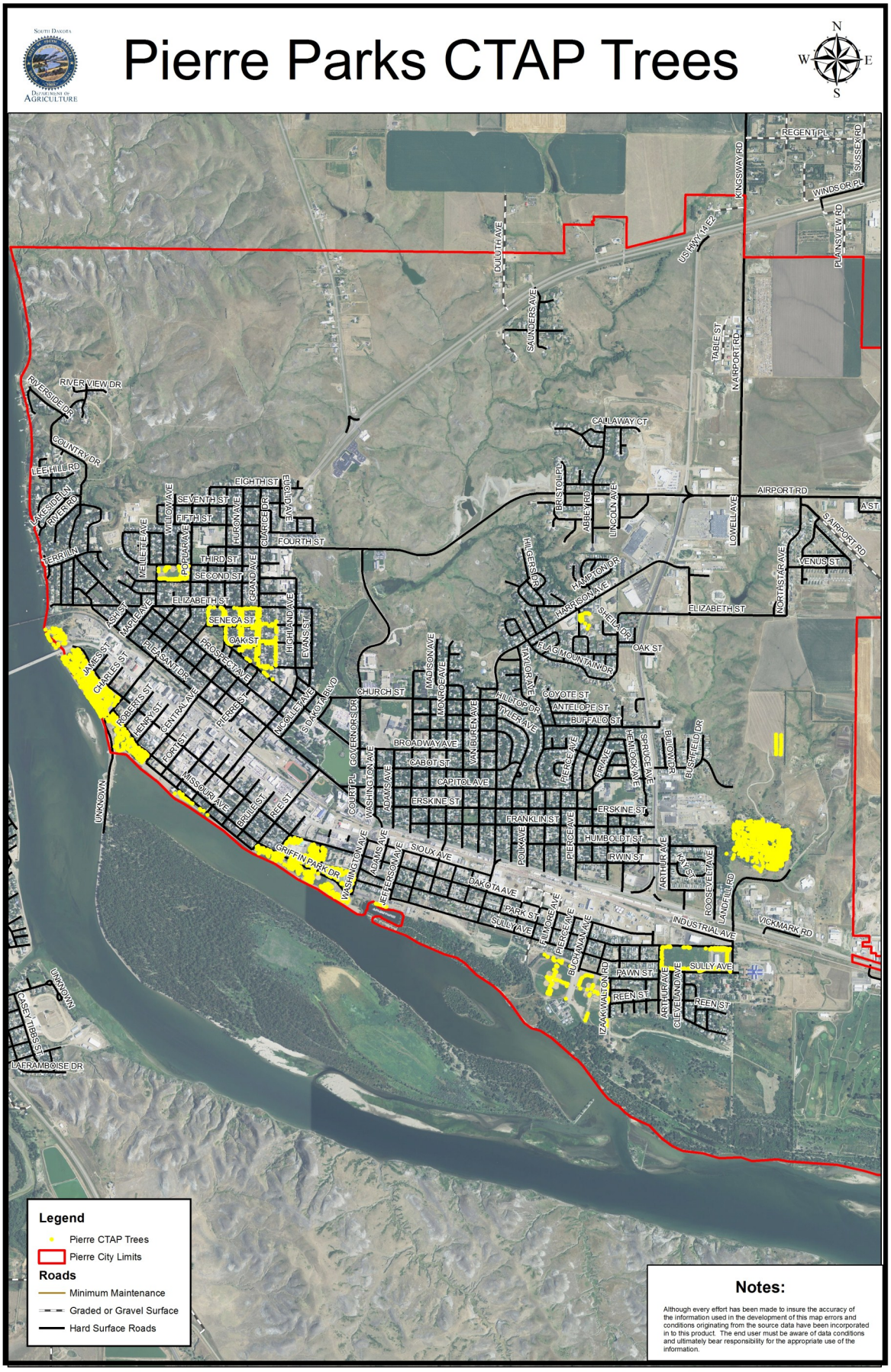

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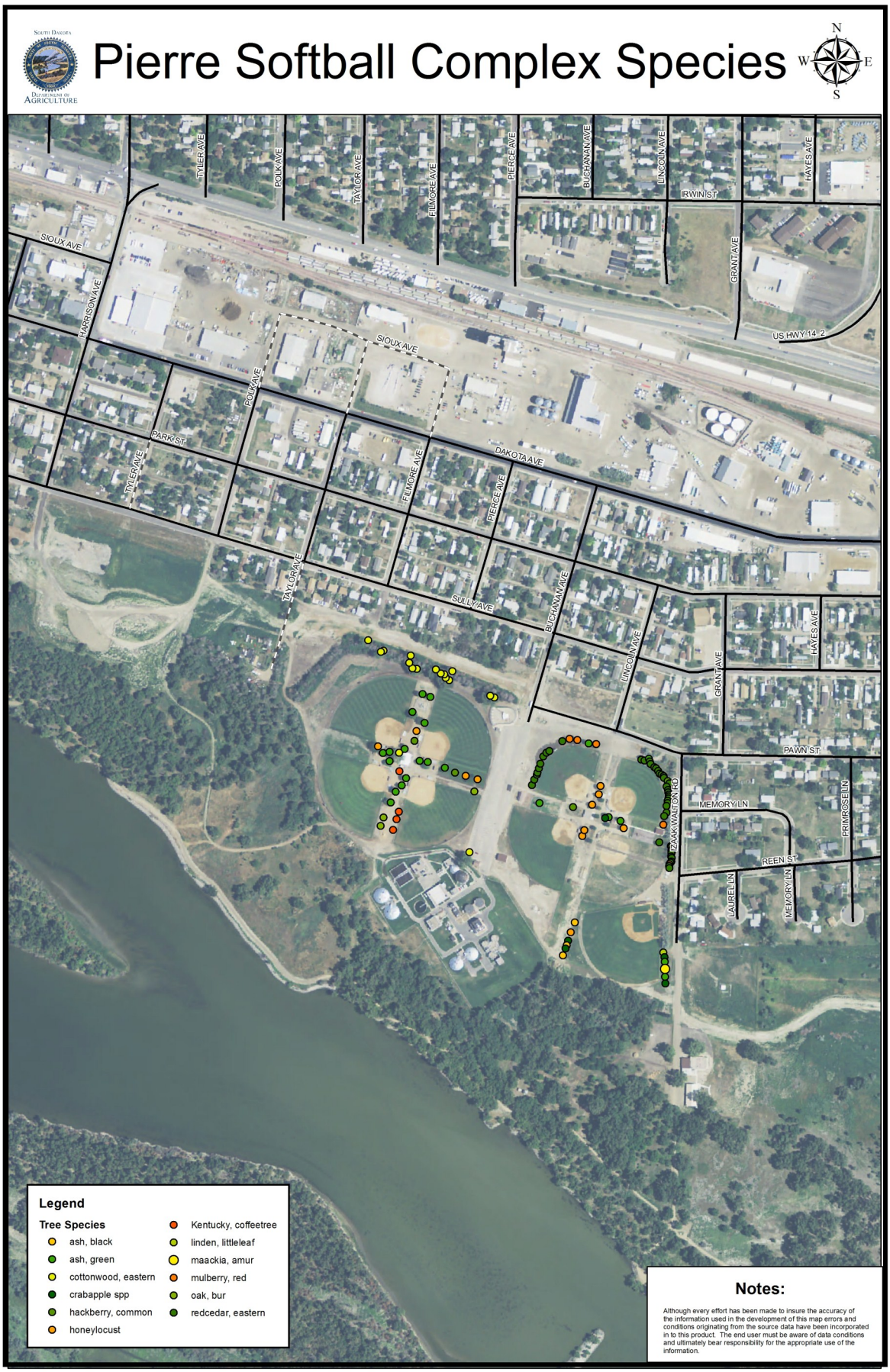

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