



AUSTIN

Independent School District

TREE INVENTORY

OVERVIEW

- What it is
- How
- Why
- Outcomes
- Recommendations



WHAT IT IS



Collecting data on individual trees to have information about the condition and diversity of urban forest



1. Visit all schools and facilities
2. Identify the species, DBH, estimated height and canopy size
3. Map their location
4. Photograph them
5. Indicate the health status (condition) and maintenance needs of each tree





PRIORITIZED ALL TREES OVER 8" DBH

DBH = Diameter at Breast Height

PLUS NEWLY PLANTED TREES

Usually 0-3" DBH

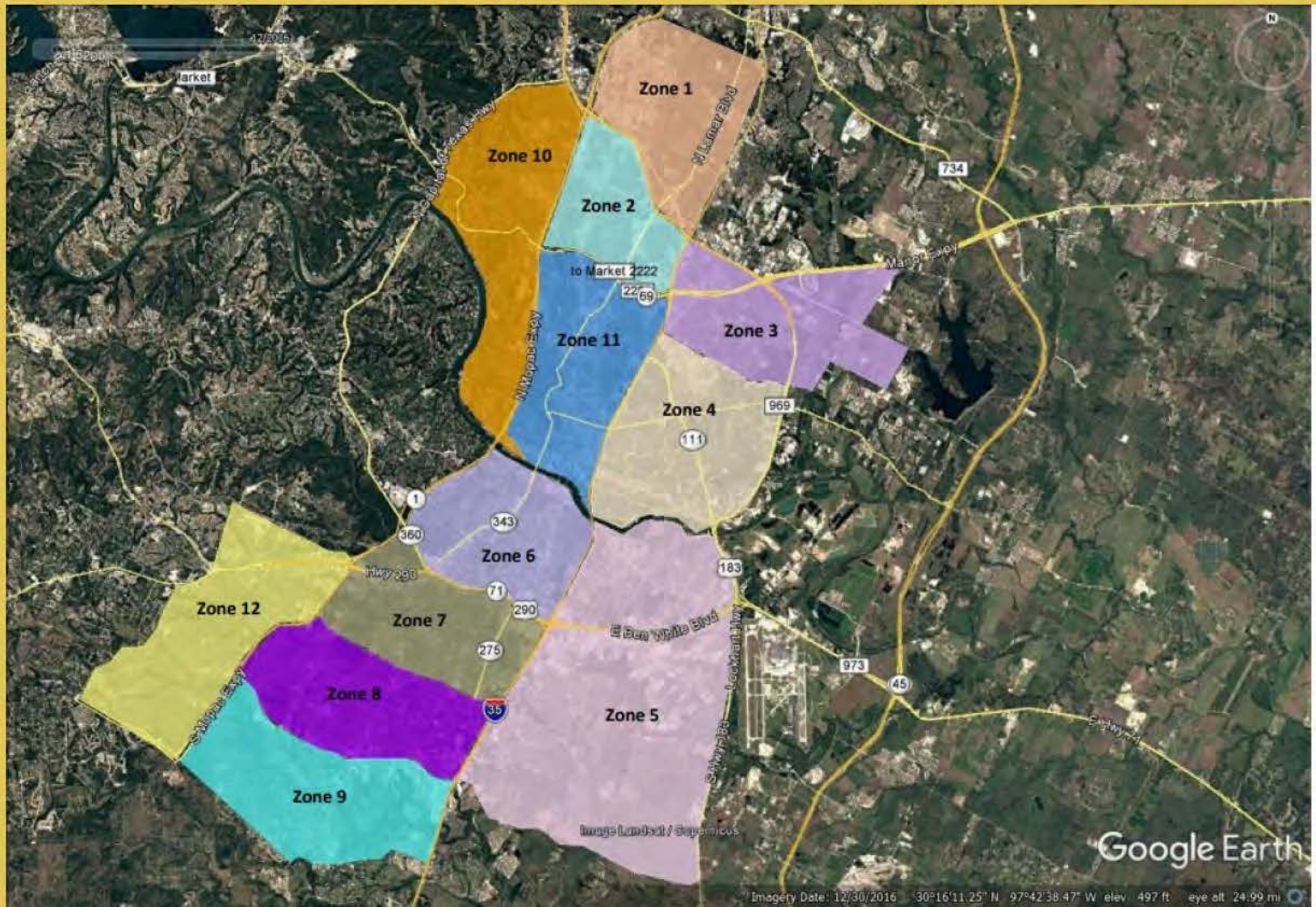
HOW?

URBAN FOREST GRANT

City of Austin

TIMELINE

- Oct 2017 - Start Phase I - Zones 1-5
- Dec 2018- Start Phase II - Zones 6-12
- Oct 2019 - Finished





15,500

Total Trees Inventoried

130

Total Properties



Austin High Tennis Center

JLL Austin
BBVA Bank

Mean Eyed Cat
The Bar Method
Hilo Hilo Dry Bar
Sushi Zushi
Corridor Title Co

Ext 100A-Care For Kids

The Austin Stone Community Church

Austin High School

Stephen F. Austin High School

Texas Rowing Center

Austin High Track

North Shore Overlook

Colorado River

W Cesar Chavez St

W Cesar Chavez St

W Cesar Chavez St

W Cesar Chavez St

W Cesar Chavez St

W Cesar Chavez St

W Cesar Chavez St

W Cesar Chavez St

W Cesar Chavez St

W Cesar Chavez St

W Cesar Chavez St

W Cesar Chavez St

Tree Detail

Site Details | Work History | Sales



Property: Baranoff

Area: Building

Location: main entry

Tree Tag: Site ID: 212

Status: Active Tree

Condition: Good

Rec Maint: No Work

Hardscape: No

DBH: 19-24 Exact: 20

Height: 15-30 Exact: 25

Crown: 17 ft Trunks: 2

Site #: 85 Value: \$

Asset ID:

Target Rating: Select One

Observations: co dominant trunk

Clearance Reqd: 8 foot clearance over

Species

Cedar Elm

Ulmus crassifolia

Code: 689

Replacement Species

Code:

Notes: In heavily used pathway/bench area

Lon: Lat: Inspected: 11/12/2019 by:

Tree ID: 210284 - Active Tree

Picture | Documents | Map

[Deselect This Tree](#)



[< Previous](#)

WIN_20190618_12_05_29_Pro

[Next >](#)

[Delete This Photo](#)

[Full Size](#)

[Upload Photo - This Site](#)

Updated: 11/12/2019

by: e169132

GPS Date: 6/18/2019

by:

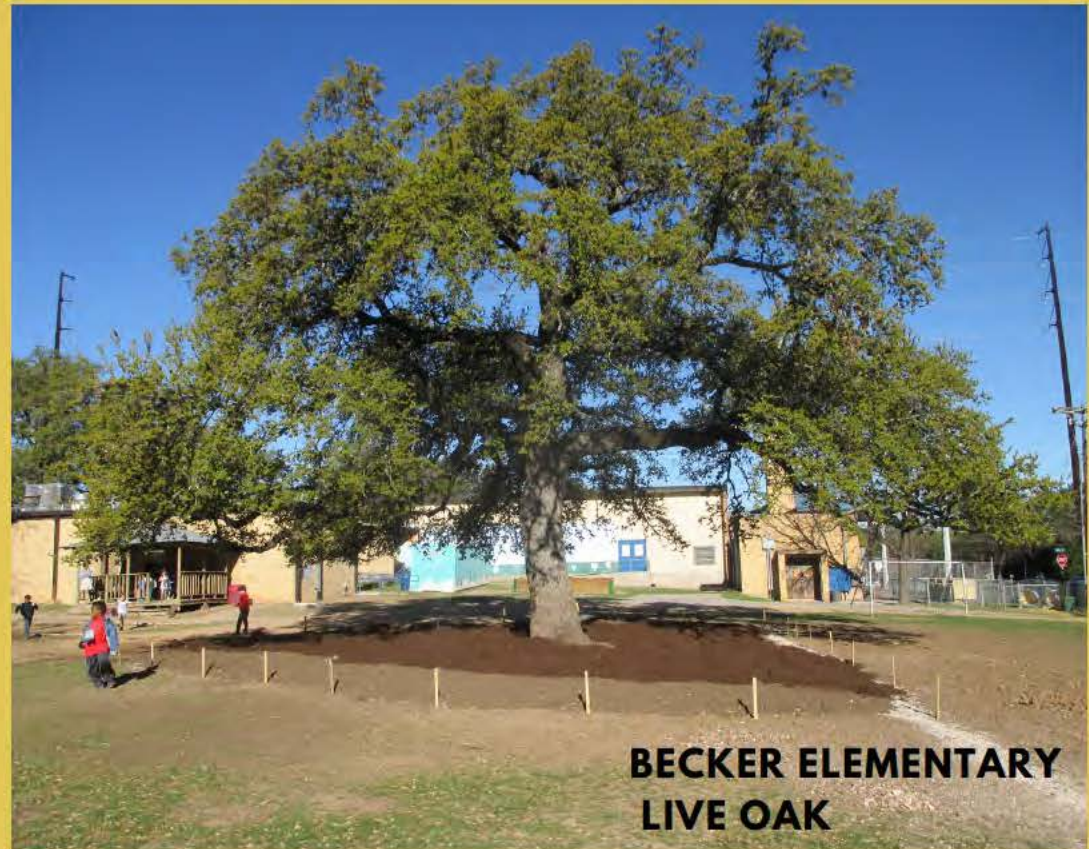
[Report](#)

[OK](#)

WHY?

First step in managing an *asset* is to know what you have

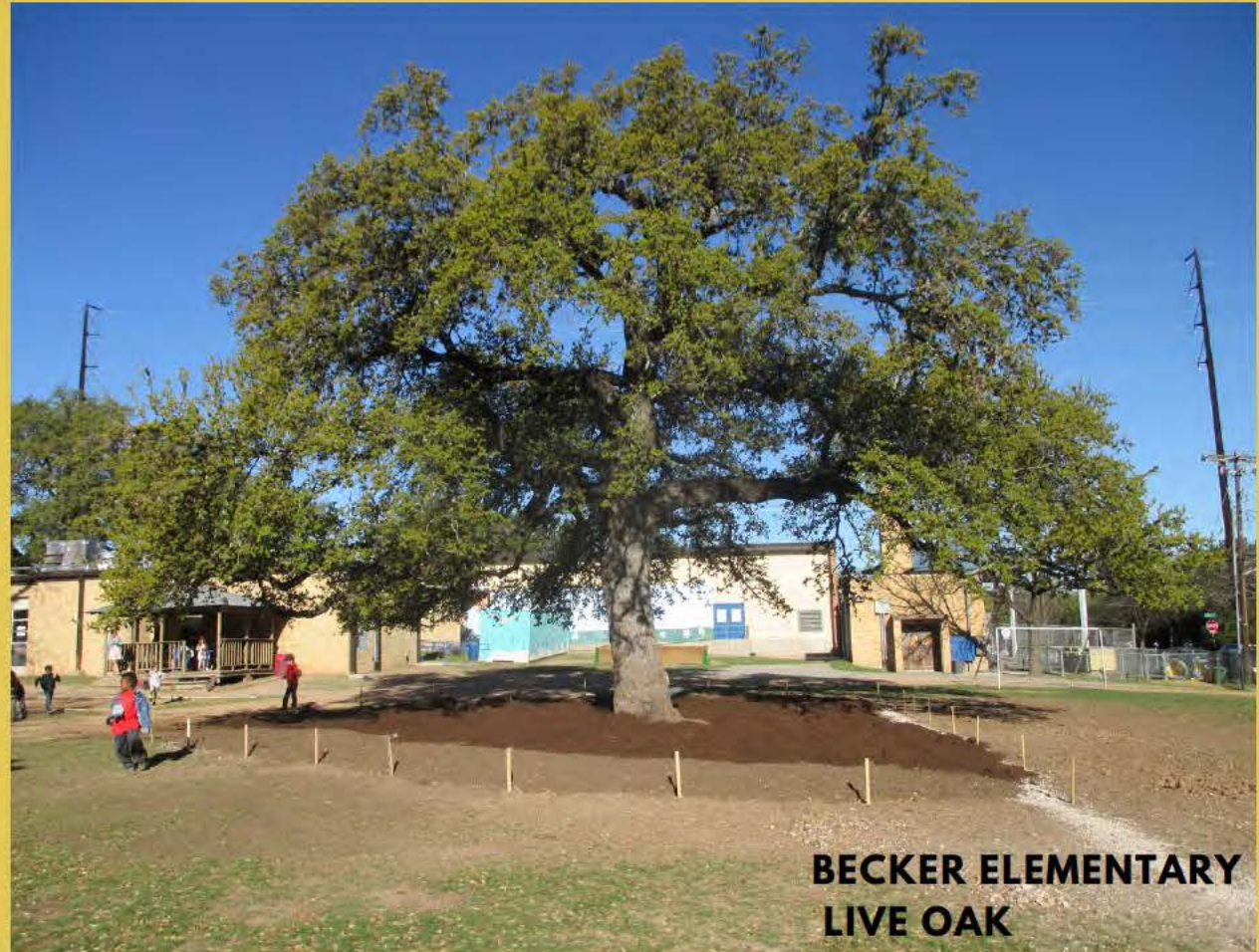
- \$Financial asset\$
- Environmental Benefits
 - Air Pollution
 - Provide Oxygen
 - Store Carbon Dioxide
 - Reduce Stormwater Runoff
 - Cool Buildings (energy savings\$)
 - Shade Playgrounds
 - Windbreaks
 - Reduce Heat Island Effect
 - Prevent Erosion
 - Wildlife Habitat
- Aesthetic and Social Benefits
- Physical/Mental Health Benefits
- Learning Benefits



WHY?

First step in managing an *asset* is to know what you have

- Assists in the planning, management, and maintenance of our urban forest
- Having actual numbers is useful in creating awareness and outreach
- Creating educational materials





**BLACKSHEAR
ELEMENTARY
UNKNOWN DATE**



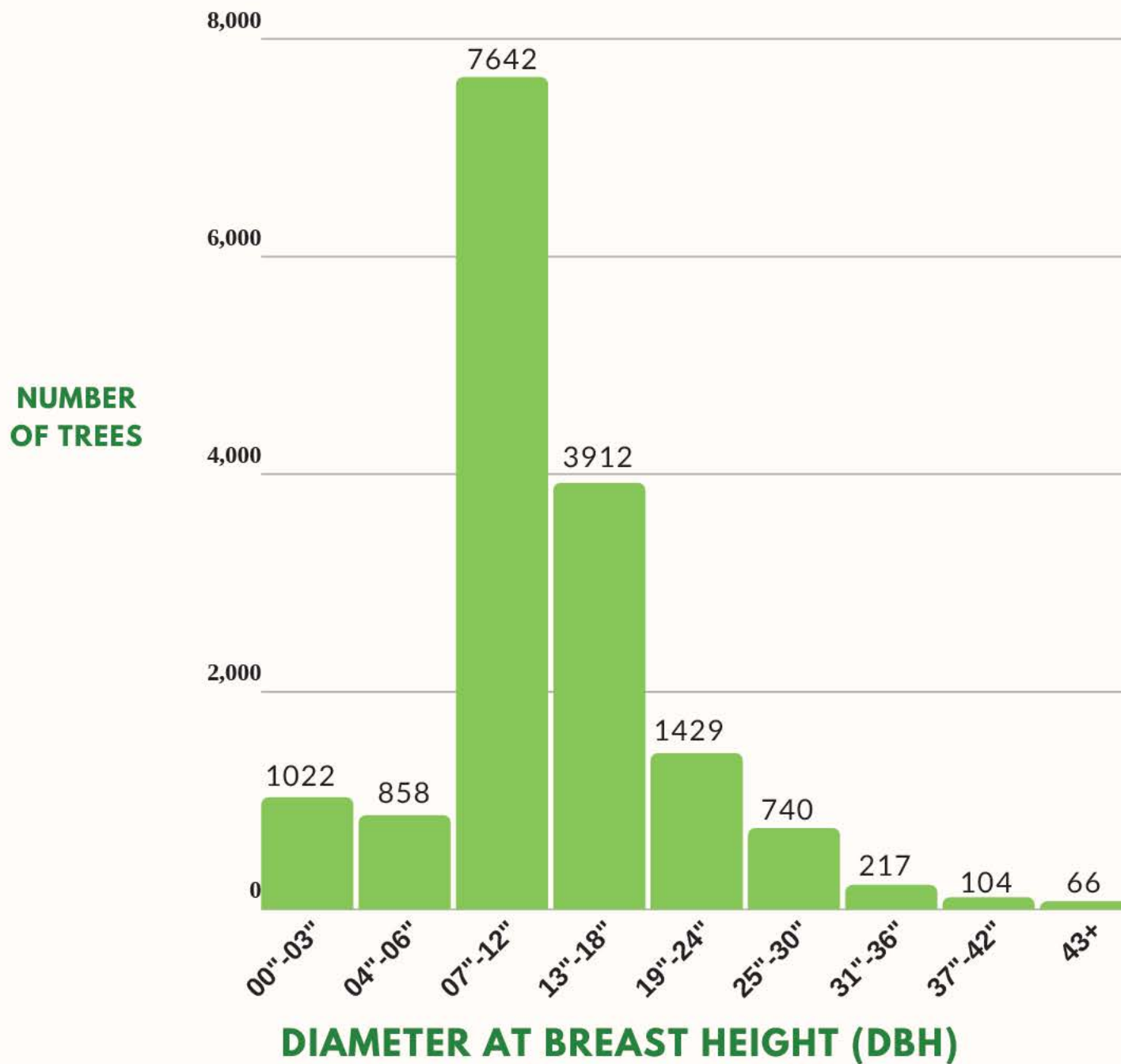
**BLACKSHEAR
ELEMENTARY
2019**

OUTCOMES



- Identified tree care needs
- Prioritized hazard tree risk mitigation
- Assisted in planning for schoolyard and construction projects
- Identified tree deficient schools for future plantings
- Enables the district to strategically plan for the long term

SIZE DIVERSITY



BIGGER=BETTER

Large diameter trees generally have larger tree crowns than small diameter trees. Thus, large diameter trees contribute significantly to the ecosystem services provided by the urban forest primarily because leaf area has a positive correlation with environmental benefits (Nowak et al. 2014, US Forest Service).



Protected Trees

Any tree >19"
DBH

2,504

17%

Heritage Trees

Texas Ash

Bald Cypress

American Elm

Cedar Elm

Texas Madrone

Bigtooth Maple

Pecan

Walnut

Oaks

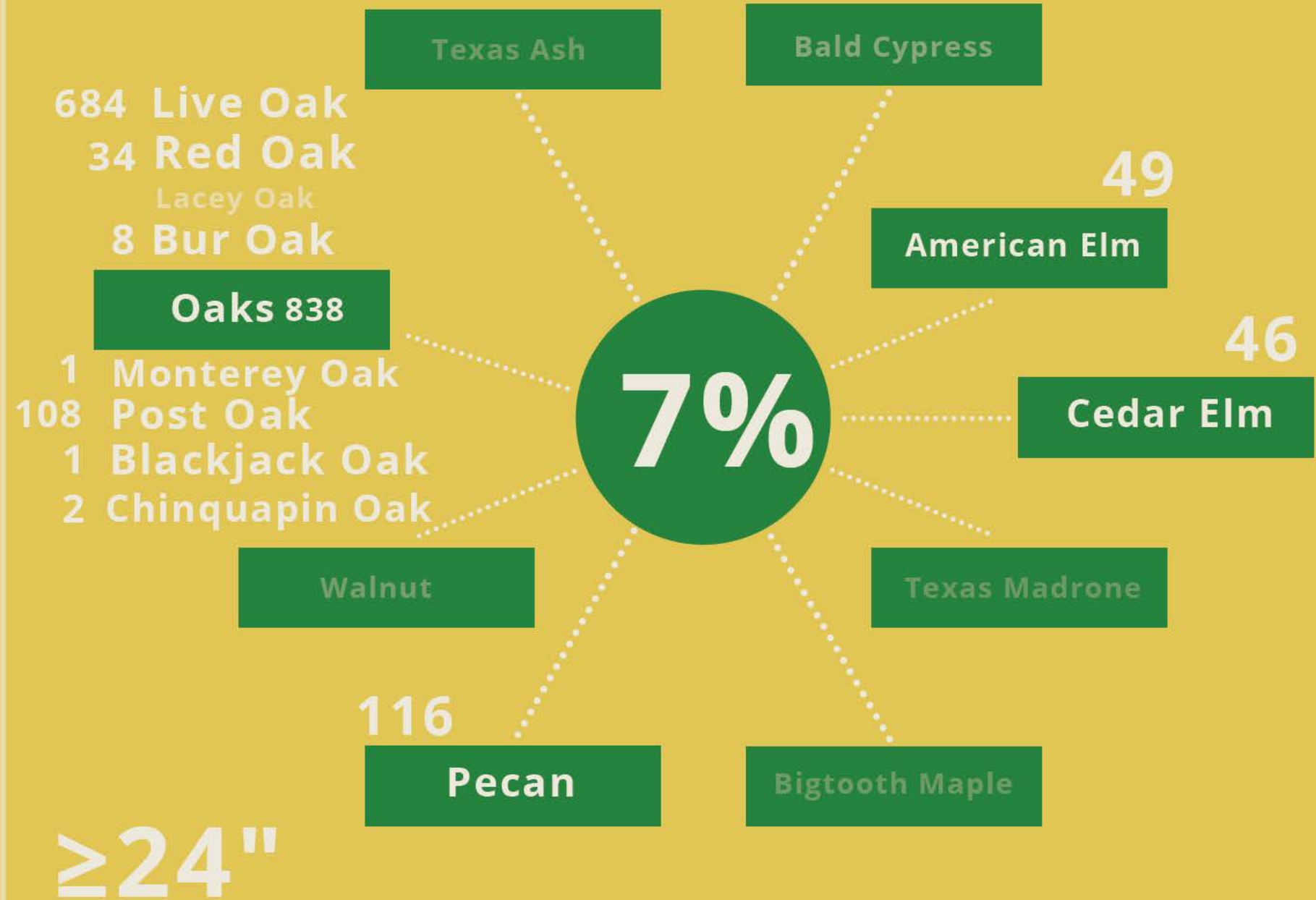
Live Oak
Red Oak
Lacey Oak
Bur Oak

Monterey Oak
Post Oak
Blackjack Oak
Chinquapin Oak

≥24"



≥24"



Trees sequester carbon – the process of removal and long-term storage of carbon dioxide (CO₂) from our atmosphere.

Table 22.— Average tree effects by tree diameter class, Austin, 2014

Diameter^a	Carbon storage			Carbon sequestration			Pollution removal	
	<i>lbs</i>	<i>\$</i>	<i>miles^b</i>	<i>lbs/yr</i>	<i>\$/yr</i>	<i>miles^b</i>	<i>lbs/yr</i>	<i>\$/yr</i>
2	5	0.34	22	1.3	0.08	5	0.02	0.02
4	26	1.62	102	3.0	0.19	12	0.05	0.05
6	67	4.20	266	5.2	0.33	21	0.07	0.08
8	126	8.00	507	7.3	0.46	29	0.11	0.12
10	207	13.08	829	10.4	0.66	42	0.15	0.17
12	337	21.34	1,352	15.6	0.99	63	0.22	0.24
14	492	31.11	1,971	20.3	1.28	81	0.26	0.29
16	706	44.65	2,828	25.6	1.62	103	0.35	0.38
18	949	59.96	3,799	31.1	1.97	125	0.42	0.46
20	1,218	76.97	4,876	39.3	2.49	158	0.36	0.40
22	2,054	129.83	8,224	63.4	4.01	254	0.42	0.47
24	1,771	111.97	7,093	43.3	2.74	174	0.59	0.66
26	3,000	189.64	12,014	67.0	4.23	268	0.40	0.45
28	3,240	204.82	12,975	79.5	5.02	318	0.48	0.53
30+	6,453	407.93	25,842	67.1	4.24	269	0.58	0.65

^a Diameter classes are designated by their midpoint (e.g. 2 is actually 1.0 to 2.9 inches).

Diameter measurements were taken at breast height (d.b.h.) or root collar (d.r.c.) for woodland species.

^b miles = number of automobile miles driven that produces emissions equivalent to tree effect

(one hundred 2" trees = one 14" tree)

(US Forest Service)

7,745.77 tons
\$1,321,047.78

Carbon Storage

311.42 tons/yr
\$53,113.05/yr

Carbon Sequestration

5.23 tons/yr
\$13,093.07/yr

Pollution Removal

371,013.66 cubic ft/yr
\$24,800.72/yr

Avoided Runoff

\$52,264,173.55

Structural Value

(Value of Size)

Data Source: USDA Forest Service. 2019 i-Tree Eco V6.0 Software accessed on Nov 6, 2019 at <https://www.itreetools.org/tools/i-tree-eco>

CANOPY COVER

CITY OF AUSTIN

30.8%

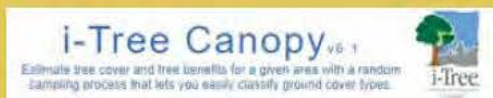
TWO AISD SAMPLES

**HARRIS
ELEMENTARY**

7.23%

**OAK HILL
ELEMENTARY**

32.9%



Data Source: USDA Forest Service. 2019 i-Tree Eco V6.0 Software accessed on Nov 8, 2019 at <https://canopy.itreetools.org/>

HARRIS ELEMENTARY



7.23%

OAK HILL ELEMENTARY



32.9%



Fredericksburg Rd

Ashford Montessori

Westcreek Dr

Westcreek Dr

Patton Elementary School

Westcreek Dr

Small Middle School

Brush Country Rd

Brush Country Rd

Brush Country Rd

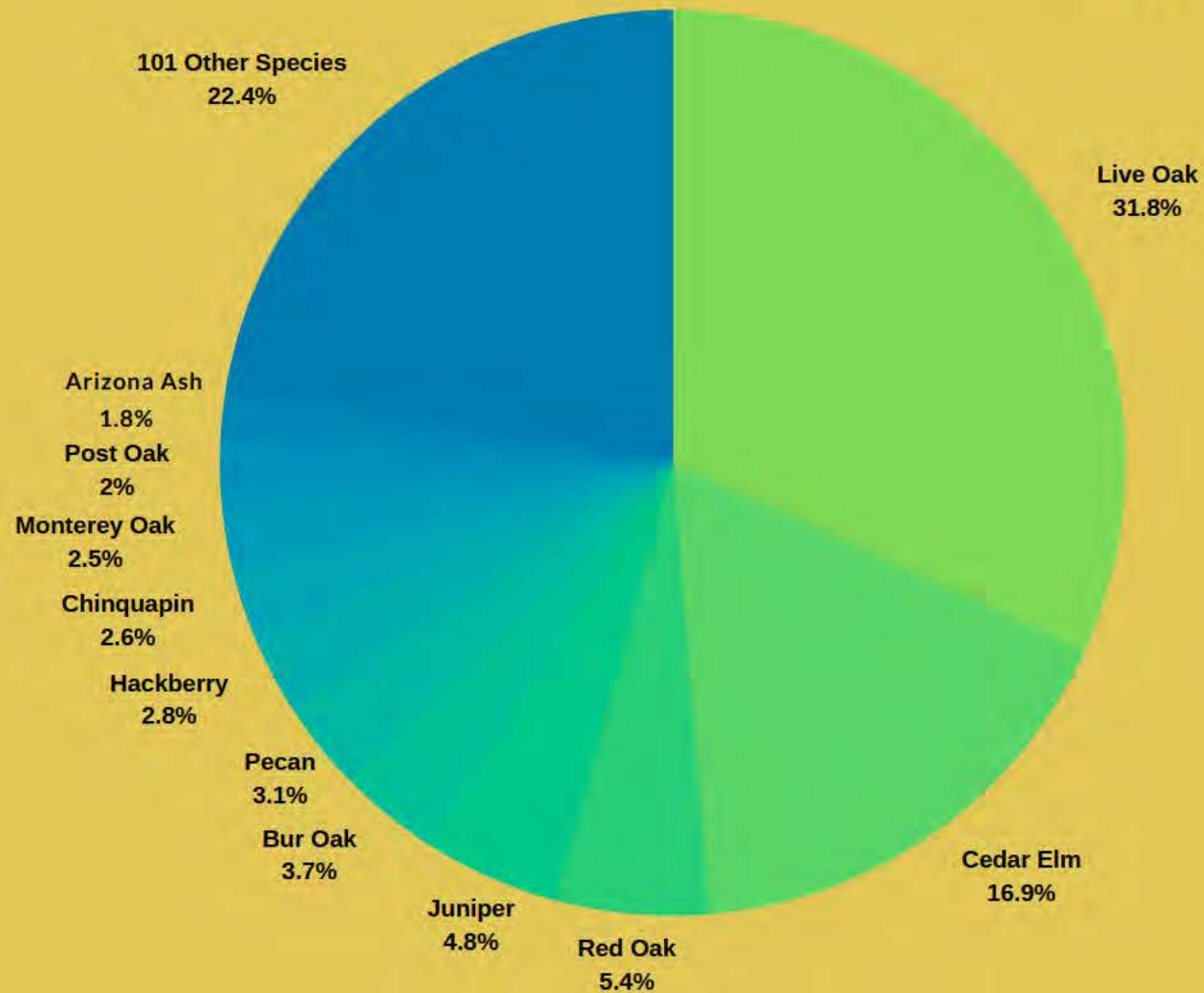
Monterey Oaks Blvd

Kratom Pros

Activate Window

SPECIES DIVERSITY

**2 MOST COMMON TREES
MAKE UP 48.7%**

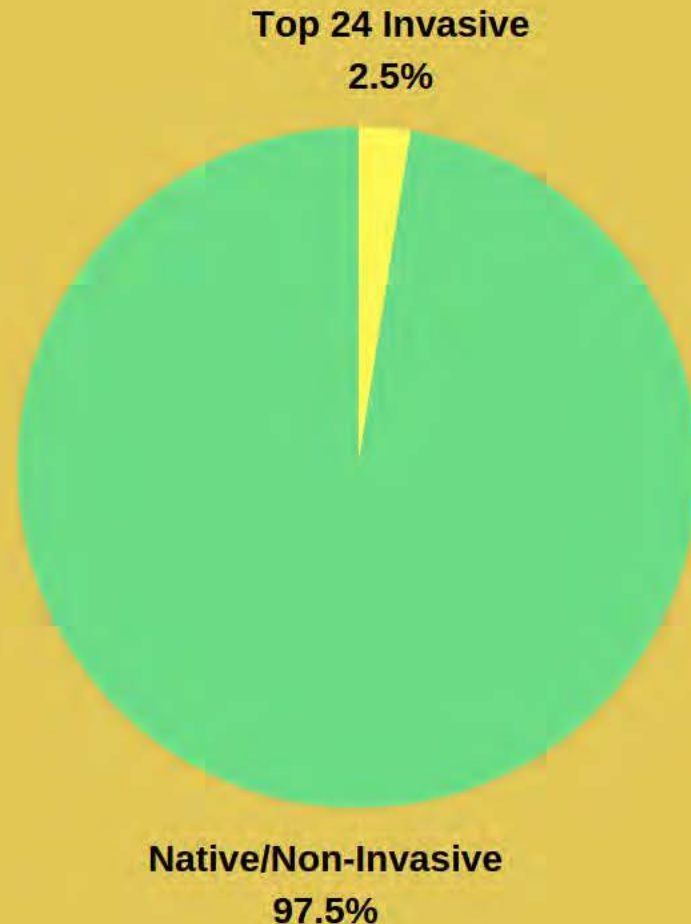


113 SPECIES

INVASIVES

Based on COA Top 24 Invasives

https://www.texasinvasives.org/plant_database/coa_results.php



Chinese Pistache 121
Chinaberry 55
Chinese Privet 57
Chinese Parasol Tree 8
Paper Mulberry 3
Chinese Tallow Tree 142

IDENTIFIED TREE CARE PRIORITIES





EXTRA FINDS









ALSO FOUND ALL THE REALLY GREAT ONES...



CASIS ELEMENTARY
TEXAS RED OAKS



MAPLEWOOD ELEMENTARY
LIVE OAK





**LEE ELEMENTARY
LIVE OAK**

A large, leafless tree with a complex network of dark branches dominates the foreground, its silhouette set against a sky filled with soft, white clouds. In the background, the Chicago skyline is visible, featuring several prominent skyscrapers. The scene is captured from a low angle, emphasizing the height of both the tree and the city.

**AUSTIN HIGH SCHOOL
CEDAR ELM**



**BOWIE HIGH SCHOOL
LIVE OAK**



OUR CHAMPIONS



PEASE ELEMENTARY LIVE OAK



58" DBH, 1 TRUNK

BECKER ELEMENTARY LIVE OAK



66" DBH, 2 TRUNKS



OUR CHAMPIONS



TRAVIS HEIGHTS ELEMENTARY

LIVE OAK



59" DBH, 1 TRUNK

LIVELY MIDDLE SCHOOL

LIVE OAK



57" DBH, 1 TRUNK



OUR CHAMPIONS



**ANITA FERRALES COY FACILITY
(FORMERLY ALLAN ELEMENTARY)**

AMERICAN ELM



52" DBH, 1 TRUNK

DAVIS ELEMENTARY

PECAN



43.5" DBH, 2 TRUNKS



OUR CHAMPIONS



MCCALLUM HIGH SCHOOL

RED OAK



45" DBH, 1 TRUNK

MATTHEWS ELEMENTARY

POST OAK




36" DBH, 2 TRUNKS


ENGAGEMENT OUTCOMES



WEBSITE CREATED

[HTTPS://WWW.AUSTINISD.ORG/SUSTAINABILITY/URBAN-FOREST](https://www.austinisd.org/sustainability/urban-forest)

OUR DISTRICTOUR SCHOOLSDEPARTMENTSCAREERSCOMMUNICATIONS



Home / Sustainability / AISD Urban Forest

Sustainability

Energy & Water

Food & Nature

Transportation & Air Quality

Urban Forest

Waste & Procurement

Our Commitment

Sustainability Plan

Get Involved

Earth Week 2019


Schoolyard Improvements Projects

Austin ISD recognizes the importance of the urban forest as an asset that provides public health, environmental and social benefits to students and the public. With thousands of acres of land, AISD has a rich and varied tree canopy that includes some of Austin's most notable heritage trees. The AISD Urban Forest Initiative ensures that our trees stay healthy and safe, and that they are able to grow and thrive as valuable assets to our schools and community.

AISD Urban Forest Priorities

- Maintain a rich and varied tree canopy that includes and preserves some of Austin's most notable Heritage Trees.
- Keep our trees healthy and safe and ensure that they are able to thrive and grow as valuable assets to our schools and community.
- Reforest our urban canopy through partnerships with local organizations.

AISD Urban Forest Strategies




Mulching Guidelines

TREE CARE

A Healthy Tree is a Safe Tree!

AISD's tree care program includes proper pruning and plant health practices that adhere to the International Society of Arboriculture standards to promote tree health and ensure the safety of our schoolyards.

[Tree care tips](#)



REFORESTATION

AISD is committed to continued reforestation efforts on our campuses to ensure that there is a thriving urban forest that will continue to grow with

SCHOOL TREE MAPS

Campus Forest Map Clayton Elementary School

Date Exported: 10/14/2019



Source: Esri, DeLorme, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- | | |
|---------------------|---------------------|
| ● American Sycamore | ● Post Oak |
| ● Blackjack Oak | ● Southern Live Oak |
| ● Cedar Elm | ● Texas Red Oak |
| ● Juniper species | ▲ Texas Redbud |

0 62.5 125 250 Feet





	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Map ID	Tree ID	Common Name	Botanical Name	DBH (diameter)	Height (in feet)										
2	2	102	Post Oak	Quercus stellata	29	40										
3	3	103	Post Oak	Quercus stellata	28	20										
4	4	104	Post Oak	Quercus stellata	31	40										
5	5	105	Arborvitae	Platycladus orientalis	20	20										
6	6	106	Southern Live Oak	Quercus virginiana	11	20										
7	7	107	Southern Live Oak	Quercus virginiana	15	0										
8	8	108	Southern Live Oak	Quercus virginiana	10	25										
9	9	109	American Elm	Ulmus americana	19	25										
10	10	101005	Post Oak	Quercus stellata	32	50										
11	11	101022	Post Oak	Quercus stellata	28	25										
12	12	101023	Post Oak	Quercus stellata	26	30										
13	15	201420	Arborvitae	Platycladus orientalis	15	15										
14	16	201421	Arborvitae	Platycladus orientalis	16	15										
15	17	201422	Post Oak	Quercus stellata	27	40										
16	18	201423	Post Oak	Quercus stellata	25	35										
17	19	201424	Chinquapin Oak	Quercus muehlenbergii	8	10										
18	20	201425	American Elm	Ulmus americana	18	20										
19	21	201426	Pecan	Carya illinoensis	19	25										
20	22	201427	Pecan	Carya illinoensis	18	25										
21	23	201428	Monterey Oak	Quercus polymorpha	2	5										
22	24	201429	Red Oak	Quercus rubra	2	7										
23	25	201430	Chinquapin Oak	Quercus muehlenbergii	2	5										
24	26	201431	Chinquapin Oak	Quercus muehlenbergii	2	5										
25	27	201432	Mexican Sycamore	Platanus mexicana	2	5										
26	28	201433	Chinquapin Oak	Quercus muehlenbergii	2	5										
27	29	201434	Chinquapin Oak	Quercus muehlenbergii	2	5										
28	30	201435	Chinquapin Oak	Quercus muehlenbergii	2	5										

Protected Tree
 - All trees 19" DBH and greater
 - Requires tree permit for work

Heritage Tree
 - All trees 24" DBH and greater of the following species:
 Texas Ash
 Bald Cypress
 American Elm
 Cedar Elm
 Texas Madrone
 Bigtooth Maple
 All Oaks
 Pecan

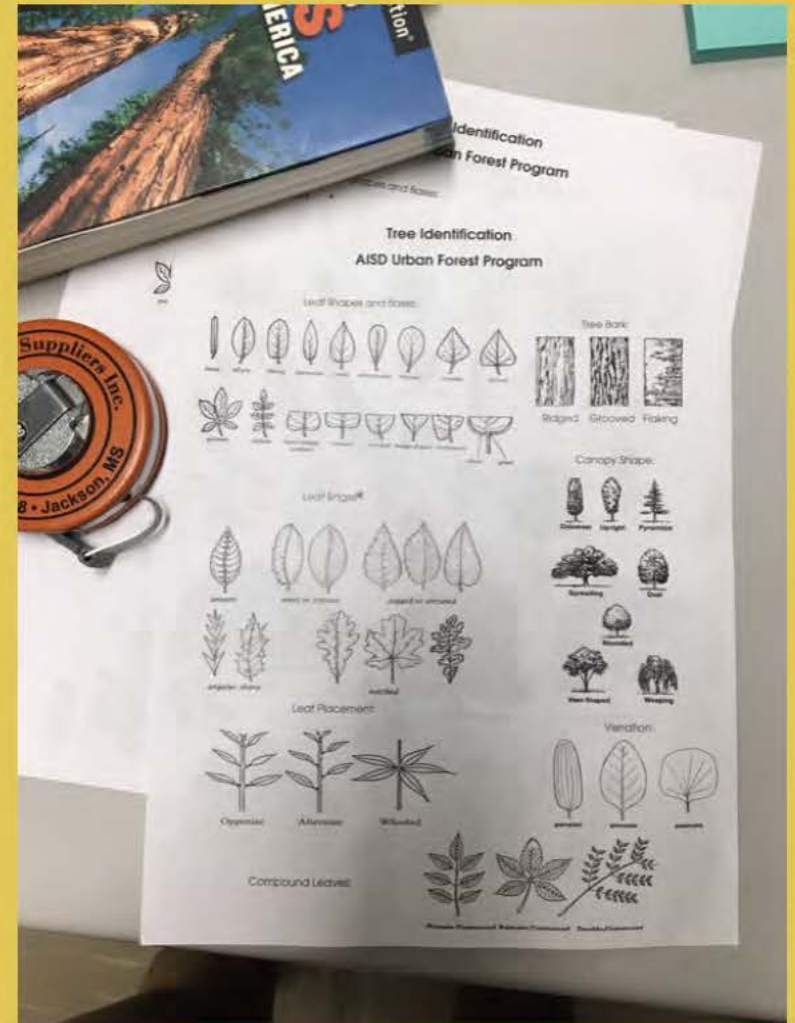
For more information on Austin tree ordinances see:
https://library.municode.com/tx/austin/codes/environmental_criteria_manual?nodeId=S3TRNAARPR
<http://austintexas.gov/departments/community-tree-preservation>

Tools to calculate value of a tree:
<https://mytree.itreetools.org/>
<http://www.treebenefits.com/calculator/>



[TINYURL.COM/AISDTREEMAPS](https://tinyurl.com/AISDTREEMAPS)

SCHOOL TREE TALKS



PROMOTION ON SOCIAL MEDIA

#AISD Green Austin ISD Green @AustinISDGreen · Nov 1, 2018
Say hello to 10 new trees at @RidgetopRattler Elementary thanks to an Urban Forest Grant from the City of Austin! @naturecityATX @AISD_Science @CityArboristATX #aisdoutside



Ridgetop Elementary

1 7



austinisdgreen

Check out the Fiddle Elementary School tree map! Each dot represents a tree that was recently added to AISD Tree Inventory. We've got a total of 203 trees at this school - now that's green! @CityArboristATX #AISDgreen #naturecityaustin @PickleECP

Liked by blueindexaustin and others

Add a comment...



austinisdgreen Allison Elementary

Recent preservation work was done on a heritage post oak at Allison Elementary. Soil can become compacted over time and this can affect a tree's health. Special excavation tools were used to loosen the soil around the roots of this tree. Now it's ready for many more decades at Allison!

So cool! Thank you, Lisa and others, for protecting such a beautiful and beneficial tree! The [unclear] thanks you :)

Liked by ghislalocycling and others

Add a comment...

#AISD Green Austin ISD Green @AustinISDGreen · Nov 13, 2018
Brrr, it's definitely fall outside today! Take a look around your campus and you may be surprised at how much color Central Texas trees can display for us. #aisdoutside @NatureCityATX #aisdtrees #urbanforest



1 3

#AISD Green Austin ISD Green @AustinISDGreen · Dec 19, 2018
Erosion control is important for controlling soil loss and water pollution. Check out this new ground covering at @Ohenryms that will help us control runoff from rain and allow water to go into the ground where we need it to be! #aisdoutside



6

Austin ISD Green @AustinISDGreen · Feb 8
Our tree facts for the day from @TravisHeights1 Elementary: Translation: "The pecan tree is native in all of the Southeast United States. It is a refuge for many animals such as owls, spiders, squirrels, and ants. It can live up to 300 years." #aisdoutside



Nature in the City and 2 others

3 12

RECOMMENDATIONS: MAINTENANCE

PROACTIVE INSTEAD OF REACTIVE



Tree removal and successive planting replacement plan
Now we know which and how many will need to be removed in the near future and we can allocate budget to remove and replace those each year

Preventative maintenance on a cycle
Clearance pruning/regular maintenance can be arranged in a cycle to also help with budgeting

RECOMMENDATIONS: OUTREACH

General Tree Awareness: Continue to engage schools and community members with downloading tree maps, more planting events, tree talks, tree care events and education

Celebrate Our Trees: We have great trees! Let's highlight them online, in publications and with events

Energy Conservation: can use the data in iTree to show savings and importance



ENERGY SAVINGS

BECKER ELEMENTARY LIVE OAK



Serving Size: 66.00 in. diameter

Condition: Good

Total benefits for this year:

\$67.97

Carbon Dioxide (CO₂) Sequestered \$45.15

Annual CO₂ equivalent of carbon¹ < 0.10 lbs

Storm Water Runoff Avoided \$7.38

Runoff Avoided 825.9 gal

Rainfall Intercepted 4,773.31 gal

Air Pollution Removed Each Year \$0.00

Carbon Monoxide 0.57 oz

Ozone 28.85 oz

Nitrogen Dioxide 1.88 oz

Sulfur Dioxide 0.41 oz

PM_{2.5} 0.4 oz

Energy Usage Per Year² \$12.14

Electricity Savings (A/C) 122.35 kWh

Fuel Savings (natural gas, oil) -0.12 MMBtu

Avoided Energy Emissions \$3.30

Carbon Dioxide 141.95 lbs

Carbon Monoxide 1.96 oz

Nitrogen Dioxide 0.3 oz

Sulfur Dioxide 4.18 oz

PM_{2.5} 0.2 oz

CO₂ Stored To Date³ \$2,802.10

Lifetime CO₂ equivalent of carbon³

120,484.72 lbs



Data Source: USDA Forest Service. 2019 i-Tree Eco V6.0 Software accessed on Nov 20, 2019 at <https://mytree.itreetools.org>

RECOMMENDATIONS

Reforestation:

- **Replacement and growth of number of building, street, playground trees**
- **Restore disturbed sites** (construction areas)
 - De-compact soil, restore nutrients, replant, revegetate quickly afterwards
- **Include "no-mow" zones**
 - Restoration of natural landscape
 - Connecting habitat corridors
 - Creates outdoor learning space where we don't have any (equity)
 - Meditation, hiking trails, nature/ecology/biology educational opportunities
 - Improves learning capabilities, health, stress, etc.



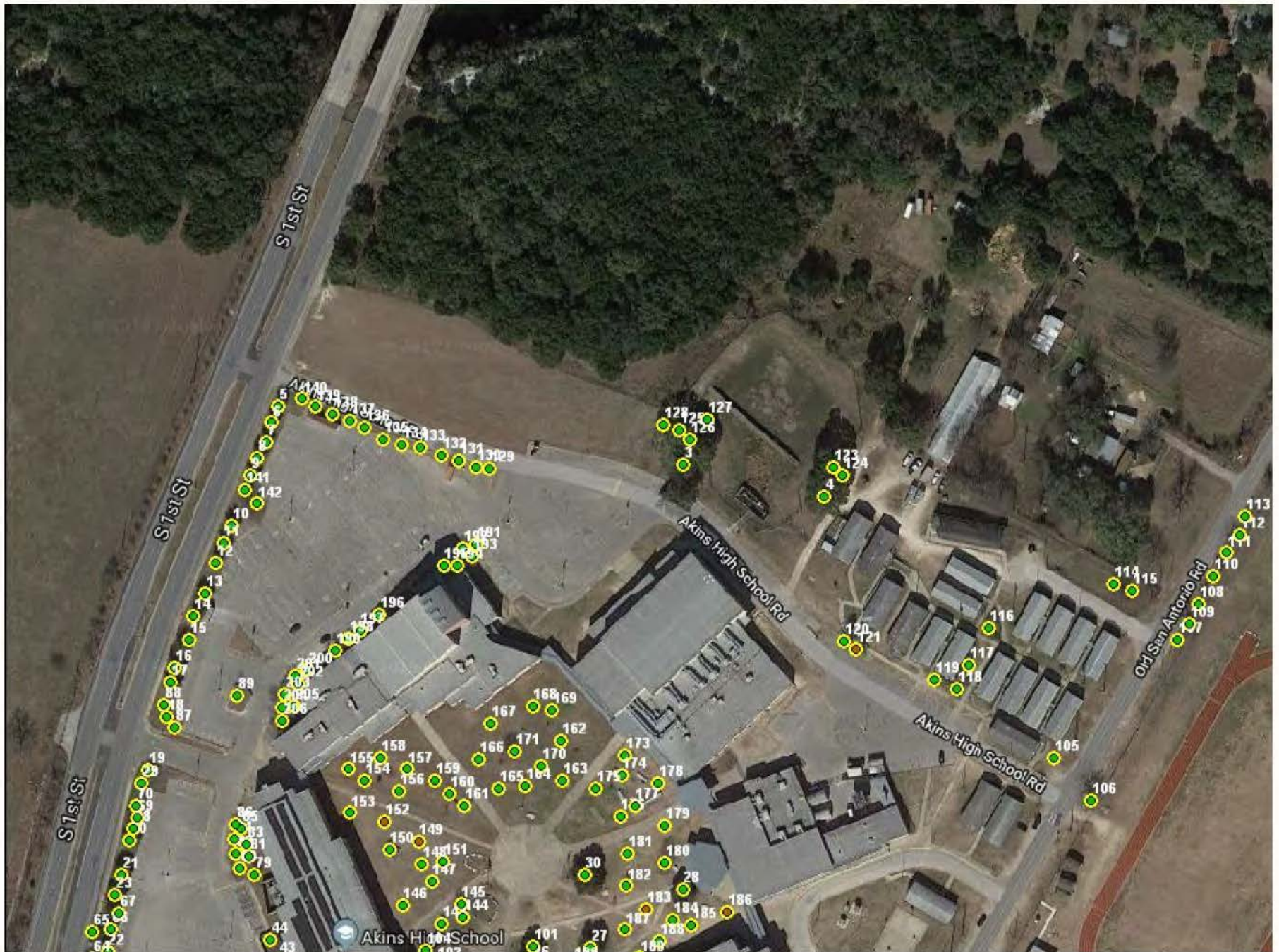
BRENTWOOD ELEMENTARY 1952



PICA 26131 Austin History Center, Austin Public Library

CASEY ELEMENTARY 2019







CLIMATE CHANGE IMPACT

Austin becoming hotter and drier

- Plant more species that are more likely to adapt
 - Texas Mountain Laurel, Honey Mesquite, Retama, Monterey Oak
 - Data Source: Northern Institute of Applied Climate Science and US Forest Service modeling
- Reduce stressors, restore soils, nutrients, and hydrology
- Promote diverse age structure
- Maintain habitat corridors
- Prioritize at risk species



<https://forestadaptation.org/>

THANKS TO PARTNERS

City of Austin Urban Forest Grant Program

AISD Grounds and Maintenance

AISD Construction Management

AISD Office of Innovation and Development

AISD Urban Foresters

AISD Sustainability Department



A large, leafless tree silhouette is centered against a light gray background. The tree's branches are intricate and spread out, creating a complex pattern of dark lines. The word "QUESTIONS" is superimposed in white, bold, sans-serif capital letters across the middle of the tree's canopy.

QUESTIONS