Environment and Natural Resources Committee

December 7, 2022

Outline

I. Guiding Principles – Wendy Anderson

II. Goal Setting

III. Low Impact Development Primer – Katrina Locke

IV. Tree Protection Presentation - Staff

   I. Minimum Standards

   II. Implementing Ordinance

V. Committee Discussion

Guiding Principles

Goals and Workplan

Designated topics by County Council include:

- Updates and revisions to the Tree Preservation standards
- Creation of Low Impact Development standards
- Updates and revisions to the Wetland Protection standards
- Creation of Habitat Protection standards
- Updates and revisions to the Indian River Lagoon Overlay standards
- Creation of standards to adapt to sea level rise and promote resilience

Low Impact Development

Katrina Locke, Sustainability and Resilience Manager

Low Impact Development (LID)

- LID includes a variety of practices that mimic or preserve natural drainage processes to manage stormwater. “LID practices typically retain rain water and encourage it to soak into the ground rather than allowing it to run off into ditches and storm drains where it would otherwise contribute to flooding and pollution problems.”
- “LID includes site planning and overall design to promote the use of natural systems for infiltration, evapotranspiration, and the harvesting and use of rainwater” as close to its source as possible.

www.epa.gov/sites/default/files/2015-09/documents/bbfs2terms.pdf

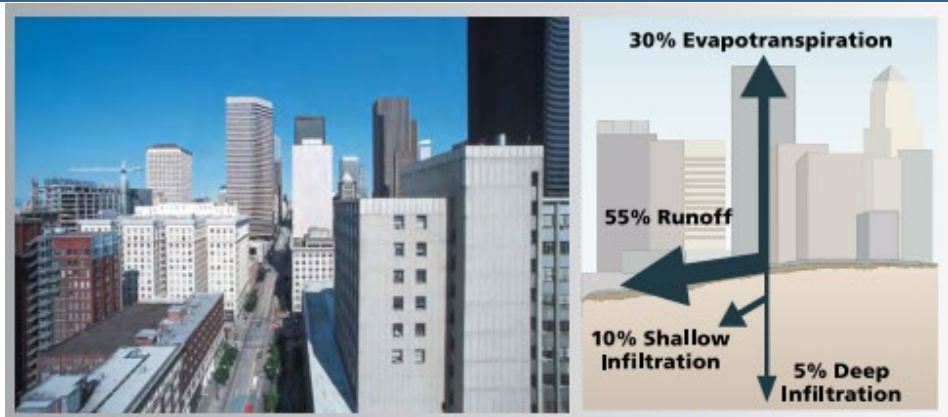


Figure 1. When roads, rooftops and parking lots cover much of the land, more than half of the rainfall runs off and flows directly into surface waters. In highly developed areas, such as in Seattle, Washington (above left), only 15 percent of rain water has the opportunity to soak into the ground.

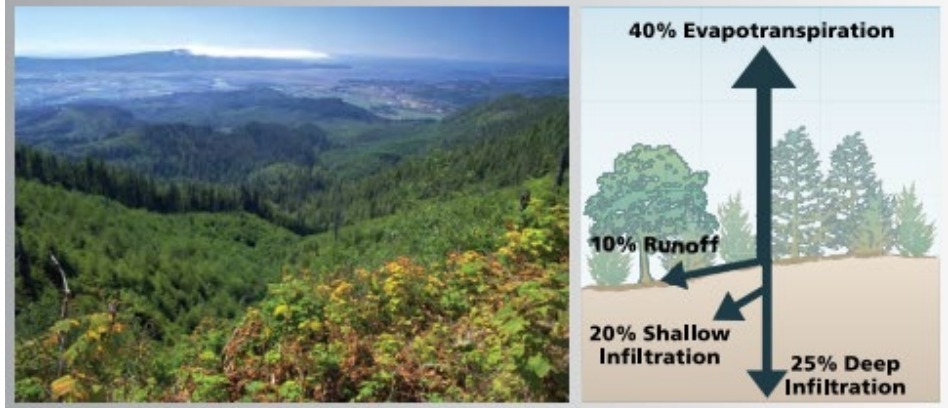


Figure 2. When vegetation and natural areas cover most of the land, such as in Oregon’s Upper Tillamook Bay watershed (above left), very little water (only 10 percent) runs off into surface waters. Nearly half of the rainfall soaks into the soil. The remaining water evaporates or is released into the air by vegetation.

Green Infrastructure

- Green Infrastructure (GI) includes natural or living features (including engineered structures built to mimic natural features in look and functionality) that perform critical natural processes.
- Grey Infrastructure includes human engineered or designed infrastructure, assets and technology that provide one or multiple services required by society.

Examples of LID and GI

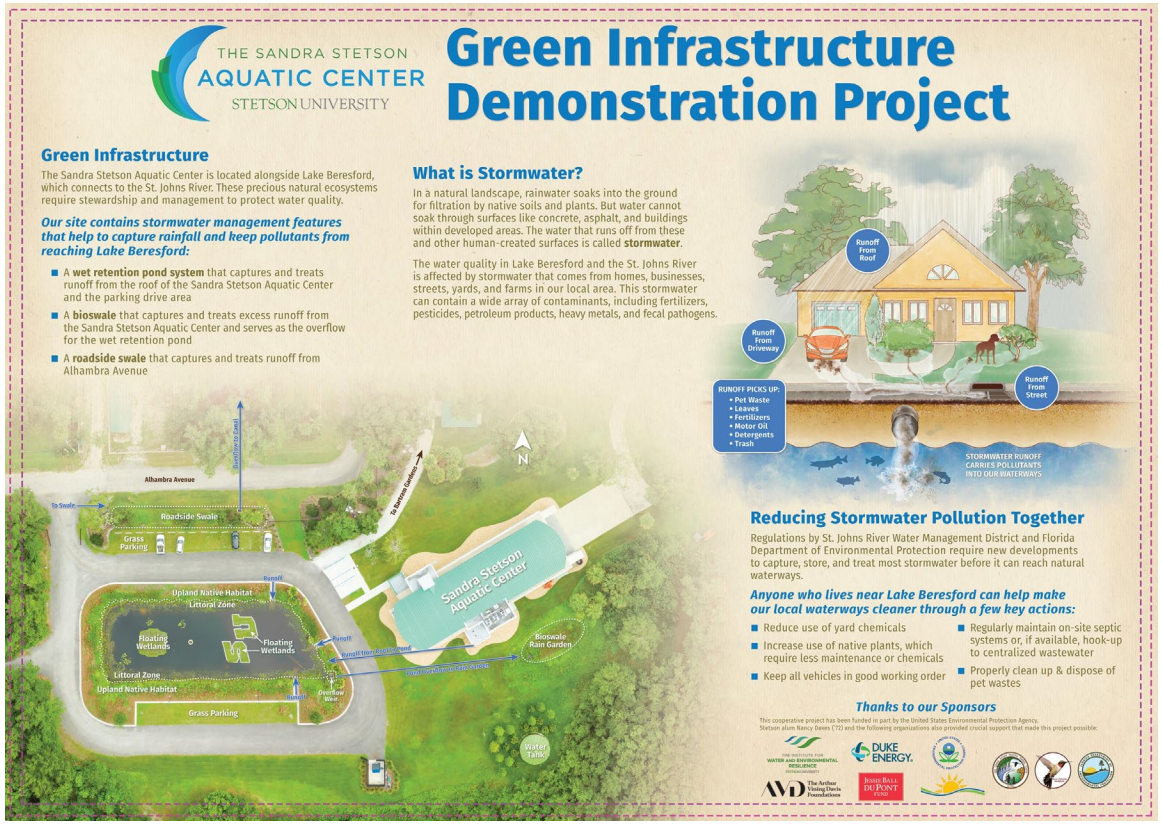
- Conserving green spaces on site
- Reducing impervious surfaces
- Clustering homes
- Permeable paving
- Bioswales
- Rain gardens
- Green roofs and vegetated walls
- Rain barrels and cisterns for water capture
- Exfiltration
- Curb alternatives
- Living shorelines
- Tree box filters

Benefits of Green Infrastructure

- Water quality – manages stormwater on site, slows down the speed of the water,
- Water quantity - reduces runoff
- Aquifer recharge – rainwater harvesting and infiltration
- Aesthetics – green spaces, reduced impervious surfaces
- Air quality from planting vegetation
- Resiliency to climate changes
- Small to large scale application
- Habitat for wildlife
- Reduces urban heat island effect
- Economic

LID Projects

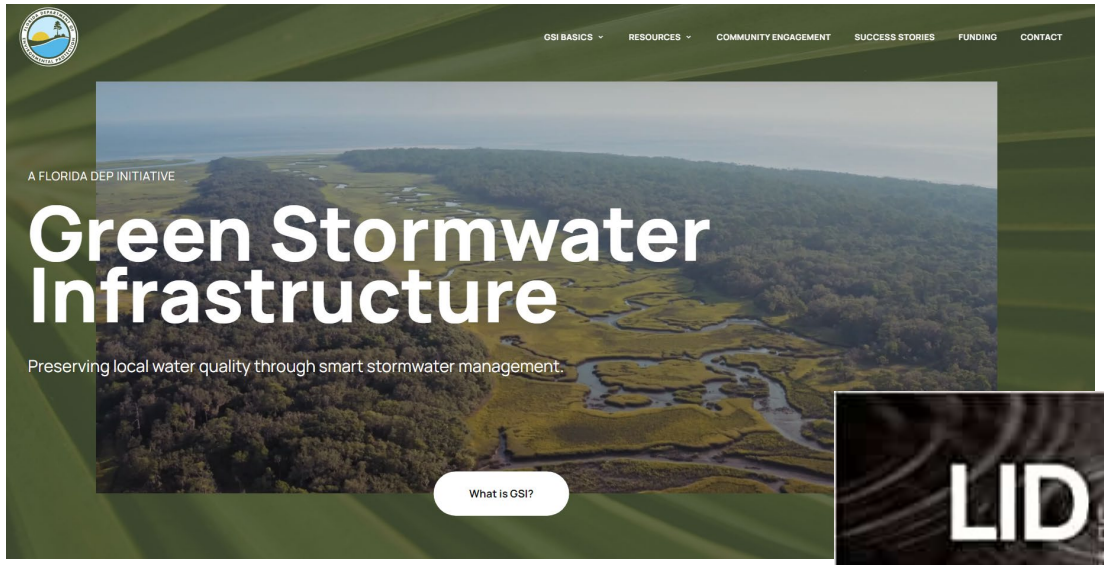
- Sandra Stetson Aquatic Center – Stormwater and Green Infrastructure Demonstration

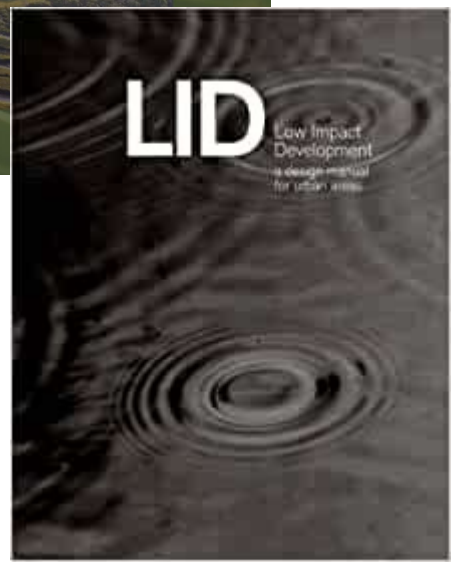


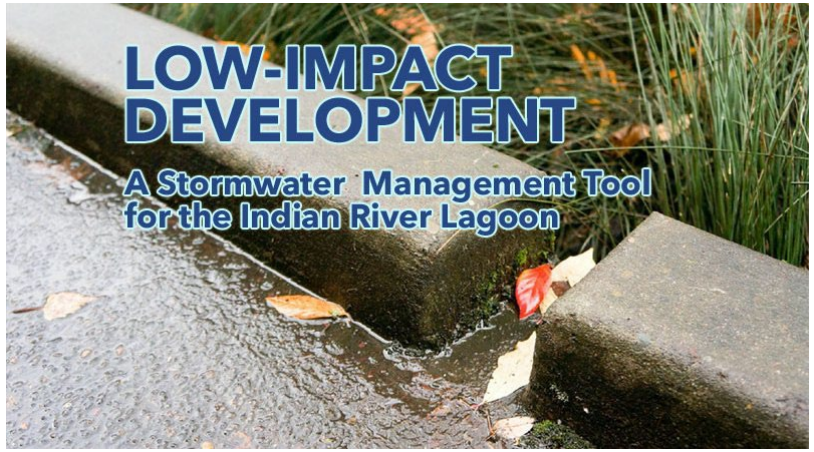
LID Projects

- Spring Hill – Community Resilience through Green Infrastructure

Resources







- University of Florida Program for Resource Efficient Communities
- Stetson Institute for Water and Environmental Resilience
- VCARD
- Environmental advocacy groups
- Marine Resources Council
- 1000 Friends of Florida
- Other stakeholders

LID grant

- Department of Economic Opportunity grant
  - $75,000 – completion June 2023
  - Develop ordinance recommendations for LID
    - Best equitable practices to incorporate LID into land development codes – March 31, 2023
    - Ordinance recommendations for County Council to consider to advance resilient nature-based stormwater solutions – May 31, 2023
  - LID Implementation guidebook
    - Aid in implementing LID regionally – May 31, 2023

Deltona Amphitheater

Tree Protection Standards

Review Chapter 50 minimum standards documents

Review Chapter 72 land development code documents (time permitting)

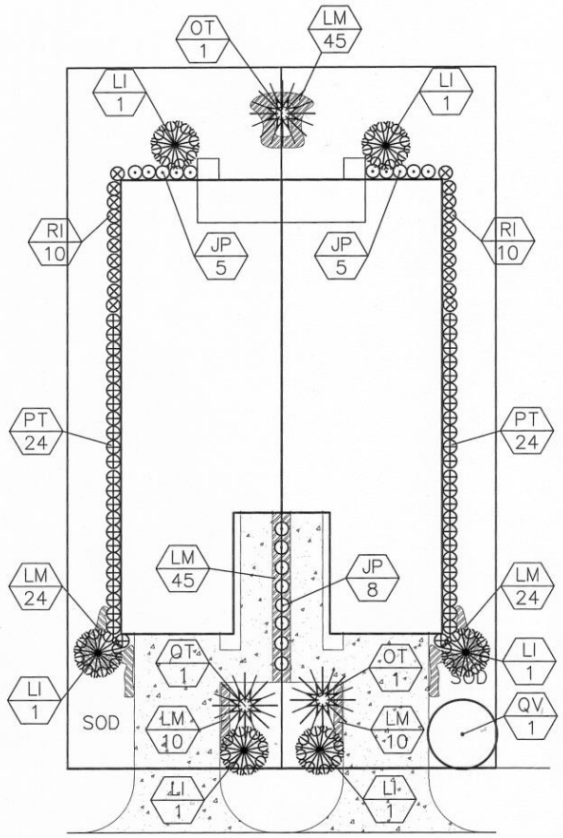
Minimum tree coverage

1 tree per 2500 square feet of lot area – for example:

A half acre lot = 21,780 sq. feet and needs a minimum of 8.7 trees (rounded up to 9)

PLANT LIST

SYMBOL	ABB.	QTY.	BOTANICAL NAME	COMMON NAME	SIZE
	OT	3	QUERCUS VIRGINIANA MAGNOLIA GRANDIFLORA	LIVE OAK SOUTHERN MAGNOLIA	65 GAL.; 10'–12' HT., 2.5" MIN. CAL. DBH
	QV	1	QUERCUS VIRGINIANA	LIVE OAK	65 GAL.; 10'–12' HT. 2.5" MIN. CAL. DBH
	LI	6	LAGERSTROEMIA INDICA	CREPE MYRTLE	30 GAL., 2" CAL.
⊗	RI	20	RAPHIOLEPIS INDICA	INDIAN HAWTHORN	3 GAL; 18"–24" X 24" HT. 30" O.C.
⊙	JP	18	JUNIPEROUS PARSONI	PARSONS JUNIPER	3 GAL; 18"–24" X 24" HT. 30" O.C.
⊕	PT	48	PITTOSPORUM TOBIRA "GREEN"	GREEN PITTOSPORUM	3 GAL; 18"–24" x 24" HT. 30" O.C.
	LM	158	LIRIOPE MUSCARI	BORDER GRASS	1 GAL., 12"–15" SPD. 20" O.C.
SOD			ST. AUGUSTINE "FLORATAM" SOLID SOD (SQ. FT.)		



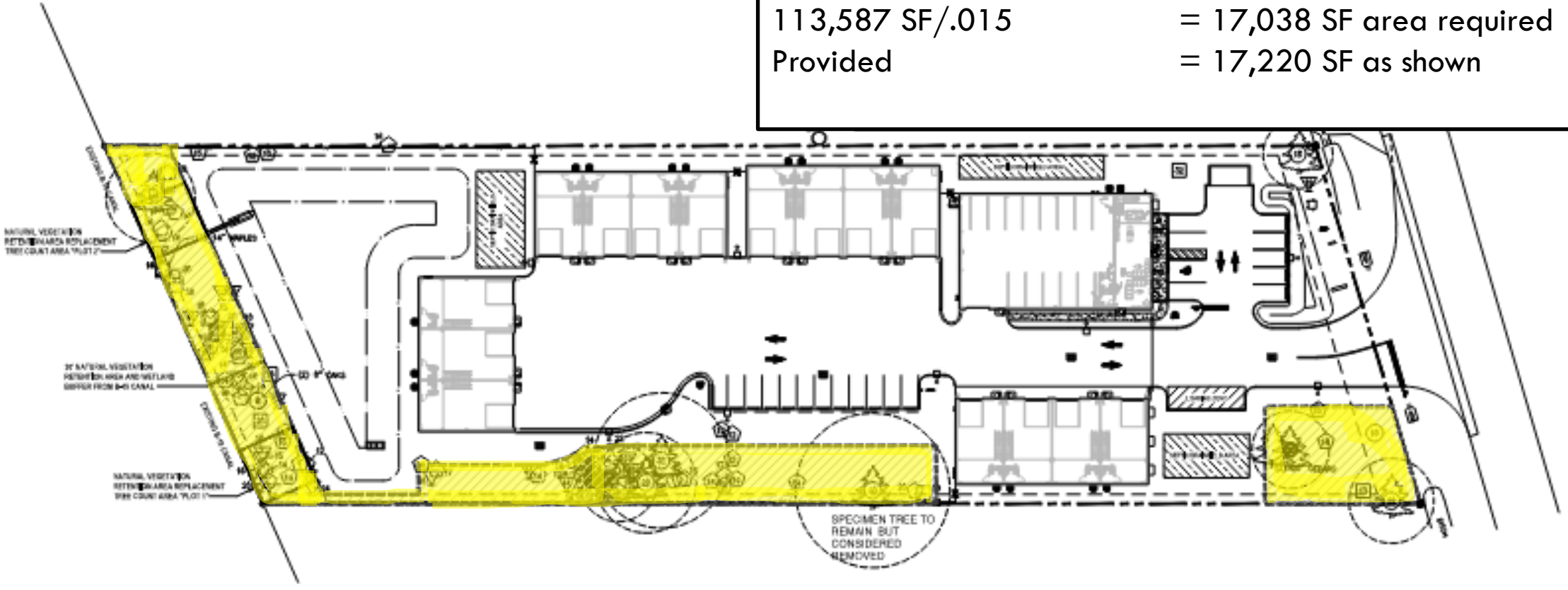
EACH LOT WILL BE REQUIRED TO MEET THE MINIMUM TREE COVERAGE STANDARD OF ONE TREE PER 2,500 SQUARE FEET OF LOT AREA AND THAT STREET TREES MAY BE USED TO MEET THIS REQUIREMENT.

DUPLEX LAYOUT (PLANT LIST QUANITIES FOR 2 LOTS)

Tree Protection Area

- 15% of the square footage of any development shall be designated for the protection of trees

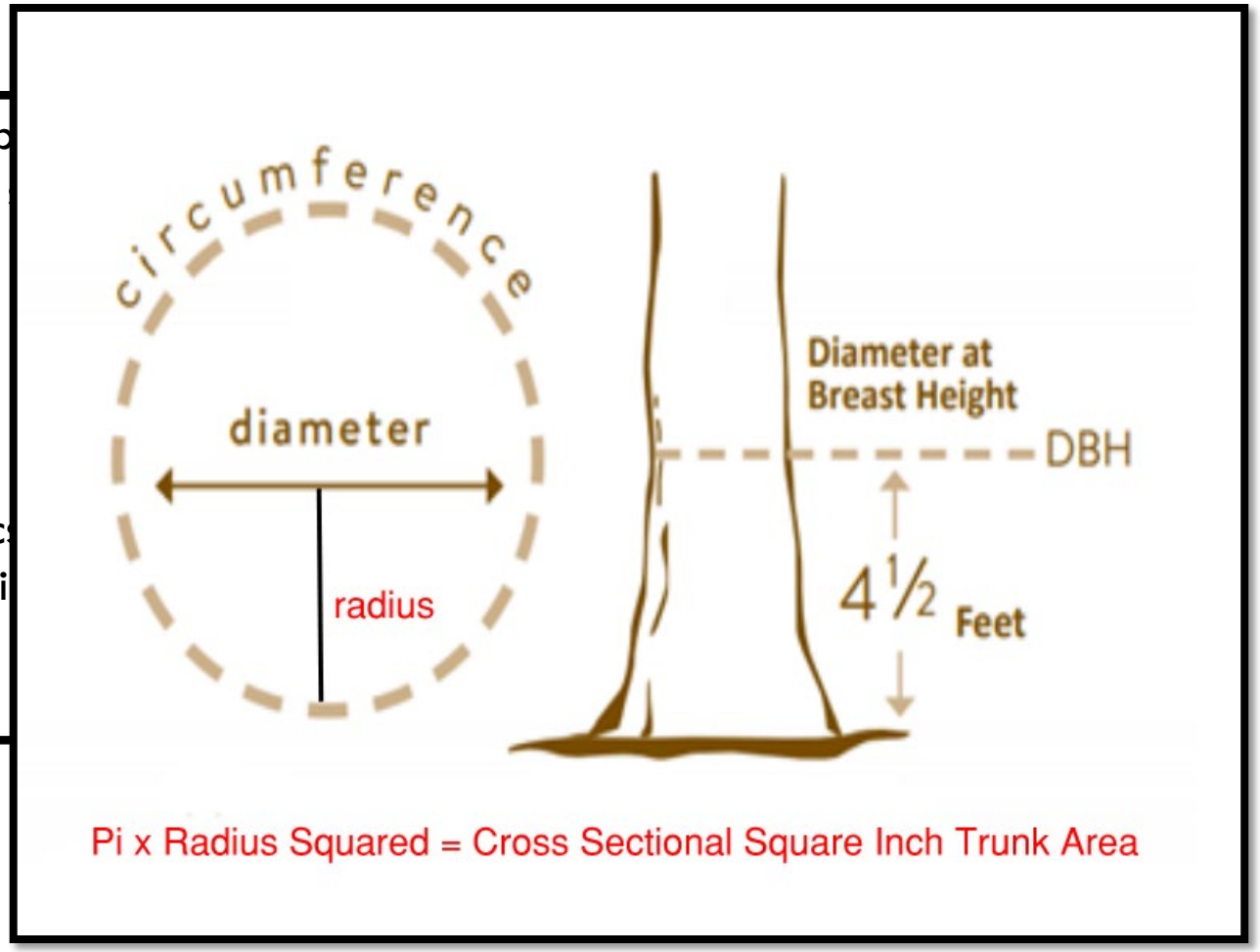
Tree Preservation Required	= 15% of lot area
113,587 SF/.015	= 17,038 SF area required
Provided	= 17,220 SF as shown



Tree replacement

Trees removed must be rep
of the total cross-sectional
trees removed.

For example:
A 15" DBH tree:
Radius = 7.5"
3.14 x $(7.5)^2$ = 176.625 c
176.625 x 15% = 26.49 i



Tree and root protection