City of Delray Beach
M E M O R A N D U M

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TO: **Green Implementation Advancement Board**

FROM: **Molly Daly, Sustainability Intern**

DATE: **April 23, 2019**

SUBJECT: **Synopsis of E Sciences' Delray Beach Tree Canopy Assessment Report**

In order to assess the potential for improving green infrastructure in Delray Beach, the City of Delray Beach contracted E Sciences to conduct a Tree Canopy Assessment that was finalized in February 2019. The scope of this assessment was as follows:

1. Estimate the acreage of tree canopy, impervious surface, pervious areas and non-tree vegetation within the City
2. Estimate the environmental benefits of the tree canopy
3. Develop guidance on how to set and obtain a goal canopy cover, including the number of trees to reach that goal
4. Identify high prioritization areas to plant trees that will benefit the residents

The Green Implementation Advancement Board (GIAB) presented the assessment's findings to the City Commission on April 8, 2019. The Commission expressed the importance of increasing the acreage of tree canopy cover within the City due to its many benefits, and to further sustainability in Delray Beach.

In addition, GIAB made motion during their April 18, 2019 meeting to recommend to the City Commission to conduct a tree inventory with the intent of this leading into an urban forestry management plan.

To assist this process, I have synopsized E Sciences' Tree Canopy Assessment Report in this memorandum.

1. Estimate the acreage of tree canopy, impervious surface, pervious areas and non-tree vegetation within the City

Zone	Tree Canopy	Impervious Surface	Ground Cover	Bare Ground	Water	Total Acreage
1	247.5	504.9	158.4	0	79.2	990
2	402.96	789.13	386.17	16.79	83.95	1679
3	372.65	578.25	218.45	12.85	102.8	1285
4	171.6	323.4	59.4	13.2	92.4	660
5	191.42	698.12	225.2	5.63	5.63	1126

6	224.01	672.03	141.48	11.79	129.7	1179
7	334.62	669.24	154.44	12.87	115.8	1287
8	58.8	205.8	11.76	2.94	14.7	294
9	60.75	148.23	17.01	0	17.01	243
10	77.55	346.39	72.38	5.17	15.51	517
11	253.05	723	180.75	12.05	36.15	1205
Total Acres	2394.91	5658.49	1625.44	93.29	692.9	10465
Total %	**23%**	**54%**	**16%**	**1%**	**7%**	**100%**

2. Estimate the environmental benefits of the tree canopy

List environmental benefits in table + UHI

Planting additional trees is correlated with an increase in a range of ecological, economic and social benefits. Trees provide shade, which increases energy savings and lessens the urban heat index. Furthermore, the more trees that are planted, the more pollutants are removed from both air and water, more carbon is stored and sequestered at a faster rate, and the more money is saved associated with stormwater management. E Sciences has quantified the environmental services provided with a 23% tree canopy coverage in Delray Beach, which is summarized in the table below.

	CO_2 Sequestration (lbs/year)	Greenhouse Gas Removal (lbs/year)	Rain Interception (m^3/year)
Total	10,194,000	152,298	2,026,954
Total $/year	$709,989	$909,109	$54,784,864

3. Develop guidance on how to set and obtain a goal canopy cover, including the number of trees to reach that goal

Delray Beach has a moderate density tree canopy of 23% or 2,395 acres out of a total of 10,465 acres. If we subtract the number of acres covered by water, then the overall canopy cover of land parcels is 24.5%. In comparison to nearby municipalities, Lake Worth has roughly a tree canopy of 28%, and Fort Lauderdale has a tree canopy of approximately 26%.

E Sciences recommends the City of Delray Beach plants 10,000 new trees by 2035 to attain an average of 28% tree canopy.

4. Identify high prioritization areas to plant trees that will benefit the residents

There are 1,653 acres of land covered with ground cover, and if all these areas were forested then the City's tree canopy would increase to 39%. However, not all of these areas are suitable for planting as some are golf courses or athletic fields, but much of the remaining ground cover areas can be found in passive parks, individual residential lots, churches, schools and community association common areas.

City owned parcels that have a capacity for more trees:

- Parcel across from the Village at Delray
- Parcels between SW 7 and 8 Avenue north of SW 3 Avenue
- 1026 SW 9 Avenue
- Corner of SW 4 Street and SW 3 Avenue
- Delray Water Treatment Plant

- Parcel east of railroad tracks in Zone 9
- 2350 Jaeger Drive
- Parcels on Lake Ida Road
- 301 NW 9 Street

Other identified areas where additional trees can be planted:

- Delray Beach Memorial Gardens Municipal Cemetery
- Pompey Park
- Public schools
- Cavalry Baptist Church
- Ebenezer Wesleyan Methodist Church
- Veterans Park
- Homes adjacent to Lindell Blvd
- Commercial/industrial areas between Congress Ave and the I-95 right-of-way
- Retail areas
- "For Corners" at intersection of Military Trail and Atlantic Ave
- School board properties at 101 Barwick Rd, Lake Ida Road, at 2501 Seacrest Blvd and 1712 NE 2 Ave
- Along Lake Ida (County property)

Low-income areas with low canopy cover:

- Zones 5, 11 and 10
- Zone 2 also has a low-income area with ground cover that has the capacity for tree planting

Zones with the lowest canopy coverage

- Zones 5 and 10

Recommendations

Staff recommends additional analysis should be taken with ArcGIS. By using data provided by E Sciences, the following maps should be created to allow further examination to better identify priority areas for tree planting:

  - Map 1: Overlay ground cover and bare ground layers with household incomes.
  - Map 2: Overlay ground cover and bare ground layers and remove golf courses. Then overlay with City parcels, open spaces, recreation, commercial and industrial properties. Add a layer for flood zones.
  - Map 3: Use Map 2 but add information for sea level rise to identify areas where saltwater intrusion will occur in the next 100 years.
  - Map 4: Overlay ground cover and bare ground layers with private property.

E Sciences recommends that the City of Delray Beach continues with the process of establishing an urban forestry management plan that will plan where trees should be planted in order to reach the City's tree canopy goal. The following tasks were outlined as part of this process:

Immediate Actions

- Conduct additionally surveys
  - Complete a tree inventory (as part of the Urban Forestry Management Plan)
  - Investigate the possibility of planting trees in parking lot green spaces
- Review landscape code to ensure landscaping in commercial areas are meeting requirements (e.g. parking lots)
- Conduct outreach in community

    - Support tree advocates in community
    - Contact local nurseries and support tree giveaways
        - E.g.: Palm Beach County residents can receive two free native trees through Native Canopy program and events. (More information: http://discover.pbcgov.org/erm/Pages/Native-Canopy.aspx)
    - Work with school system to increase tree canopy on their properties (schools and school board properties)
    - Incentivize owners of undeveloped and underdeveloped lots to plant trees that might eventually fit into a site plan
    - Encourage tree planting at churches

Long-term Planning

- Update tree ordinance
    - The City of Delray Beach does not have an ordinance relating to planting and managing trees. Although, it is included in the current draft of the City Comprehensive Plan.
        - Stricter tree removal process for new development that requires relocation/mitigation
- Adopt recommended goal of 28% tree canopy coverage by 2035, or establish tree canopy goal through stakeholder and public input
    - Establish tree canopy goal
    - Assess tree planting budget
- Train and certify City staff through International Society of Arboriculture Certified Arborists
- Establish an Urban Forestry Management Plan
    - Conduct a tree inventory, establish a tree canopy goal, and plan phases of implementation based on priority areas and budget
- Review and update landscape code as needed