

Mitigation Calculation



Forest Clearing and
Buffer Disturbance

Tree Clearing Outside the Buffer

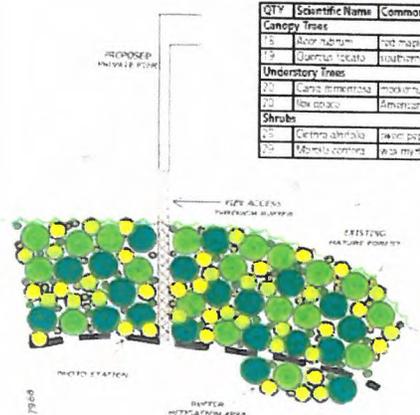
- Applies to forests and developed woodlands (i.e. individual, scattered trees)
- Mitigated based on square footage of area cleared for forests and developed woodlands
- Mitigated on a tree-for-tree basis in certain situations
- **GOAL: NO NET LOSS**

Planting Standards

SAMPLE SITE PLAN Single lot homeowner needs to establish buffer and mitigate for shore access impact.

Planting Schedule

QTY	Scientific Name	Common Name	Size	Condition	Spacing
Canopy Trees					
15	<i>Rosa rugosa</i>	rot maple	2' Caliper	container/B&B	70'
19	<i>Quercus laevis</i>	southern red oak	2' Caliper	container/B&B	70'
Understory Trees					
20	<i>Carya imrorencia</i>	mockernut hickory	#3	container	5'
20	<i>Ilex opaca</i>	American holly	#3	container	5'
Shrubs					
20	<i>Citrus aurantiaca</i>	sweet pepperbush	#1	container	5'
20	<i>Rubus coccineus</i>	red raspberry	#1	container	5'



BUFFER MITIGATION CALCULATION
 643' of Invasives
 2:1 Shore Access Mitigation Ratio
 1,286 SF of Mitigation
 BUFFER REFORESTATION AREA = 15,425 SF

- LEGEND**
- Existing Tree Line
 - 100' Critical Area Buffer
 - Permanent 150' Buffer Mitigation
 - Red Raspberry
 - Southern Red Oak
 - Mockernut Hickory
 - American Holly
 - Sweet Pepperbush
 - Red Raspberry

BUFFER MANAGEMENT PLAN
 FOR THE SMITH PROPERTY
 523 Pine Bluff
 HARTFORD, CT 06112
 455-555-1212
 Tax Map 3, Parcel B, Lot D

SCALE: 1" = 40'
 DATE: 5-27-09

7 Invasive Plants

Invasive plants are nonnative plant species that grow aggressively and can outcompete native plant communities.

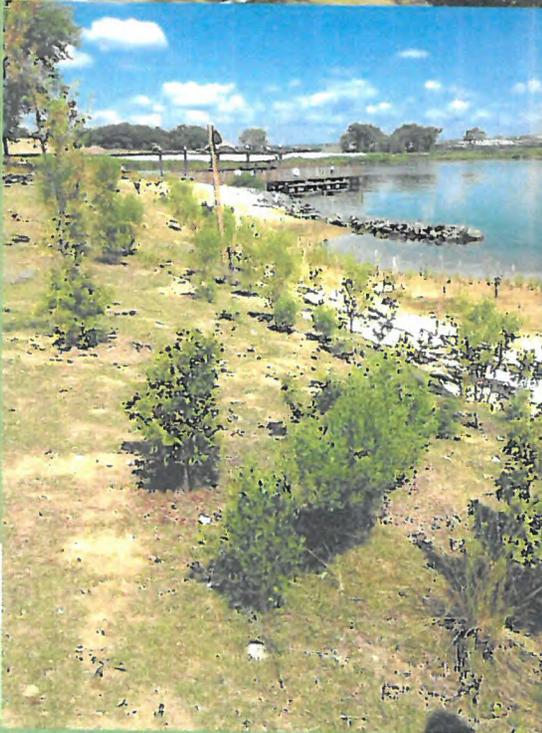
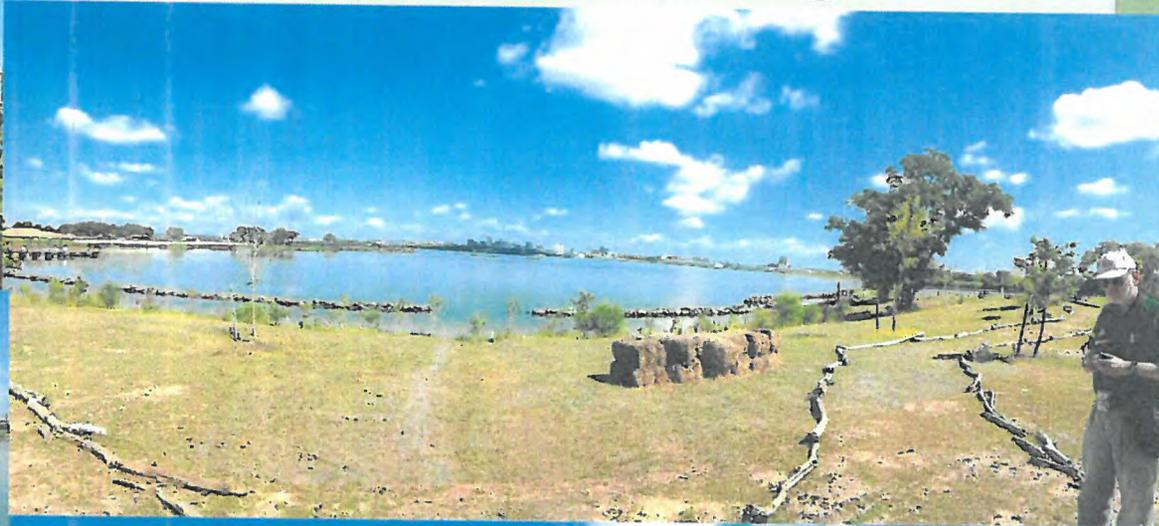
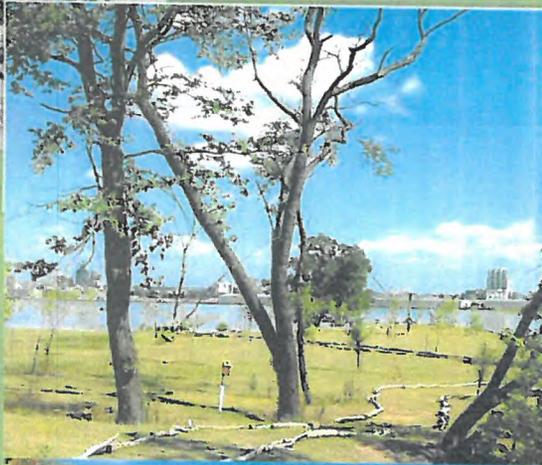
Invasives generally reproduce prolifically and spread aggressively, adapt to a wide variety of conditions, are difficult to control naturally, and are extremely difficult to control or eliminate once established. Natural and recently disturbed areas in the Critical Area, including wetlands and forests, are particularly vulnerable to invasive plants. Controlling invasive plant species on your property should be part of your Integrated Pest Management (IPM) strategy. Both start with a walk. Regularly explore your property and examine the plants.



Japanese honeysuckle
 22 PINE BLUFF - 100' BUFFER
 100' BUFFER - 100' BUFFER
 100' BUFFER - 100' BUFFER

1. **Prevention.** Efforts to establish full ground coverage of healthy native plants is your best deterrent against invasive species. Proper plant installation, plant choices, and care will help prevent invaders.
2. **Monitor and Identify.** Regularly walk your property. Take note of any invasive species on adjoining properties as well as on your own. Learn to identify common invasive plants. The chart on pages 50 and 51 shows the Mid-Shores most common problem plants in residential areas.
3. **Address the Problem Early.** Research the options and talk with professionals. Critical Area properties are located where chemical treatments may contaminate surface water. Mechanical control techniques such as digging can cause erosion. Both strategies may disturb wildlife. By tackling small clusters of early invaders, you can save time and money, and minimize excessive damage to potentially sensitive habitats.
4. **Secure Proper Approvals.** Invasive plant removal in the Buffer will require the *First Stop for the Bay*—calling your county or town planning office for guidance on the approval process. Invasive plant control should be included in any Buffer Management Plan. Removal of invasive plants in the Critical Area may require local government approval, depending on the species and the extent of the affected area.
5. **Treat and Repeat.** Invasive plant species often require several treatments to eliminate them successfully and permanently. Treatments are often plant specific, so do your research and consult a professional if necessary.

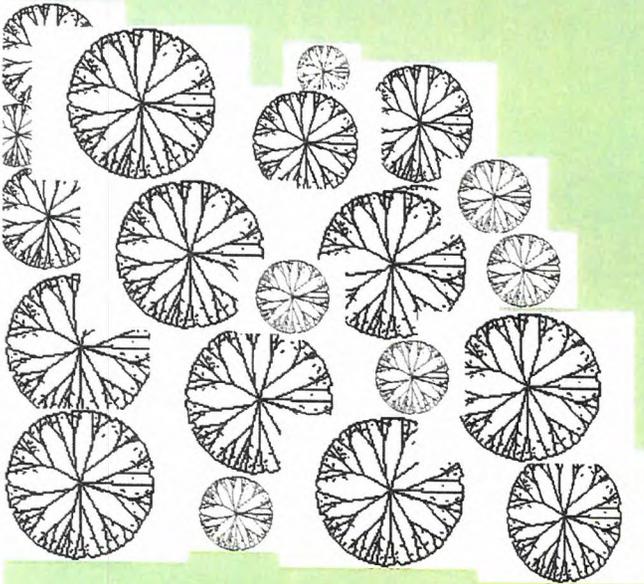
Masonville Cove Mitigation Plantings



Impacts to Existing Forest within the Critical Area

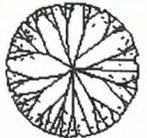
Existing Forest

Critical Area 1000-foot Boundary

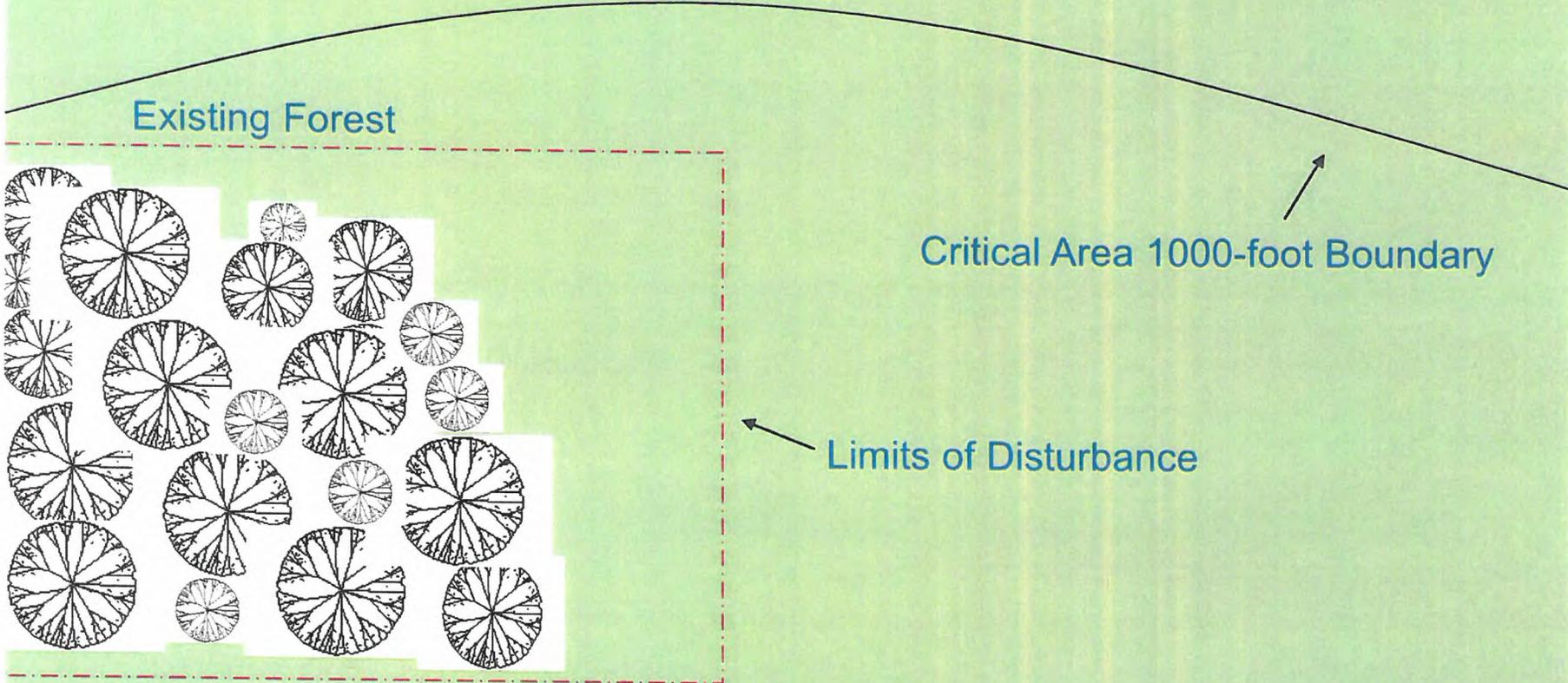


 = Shrub

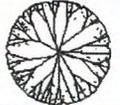
 = Understory Tree

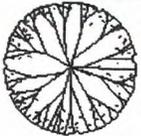
 = Overstory Tree

Impacts to Existing Forest within the Critical Area

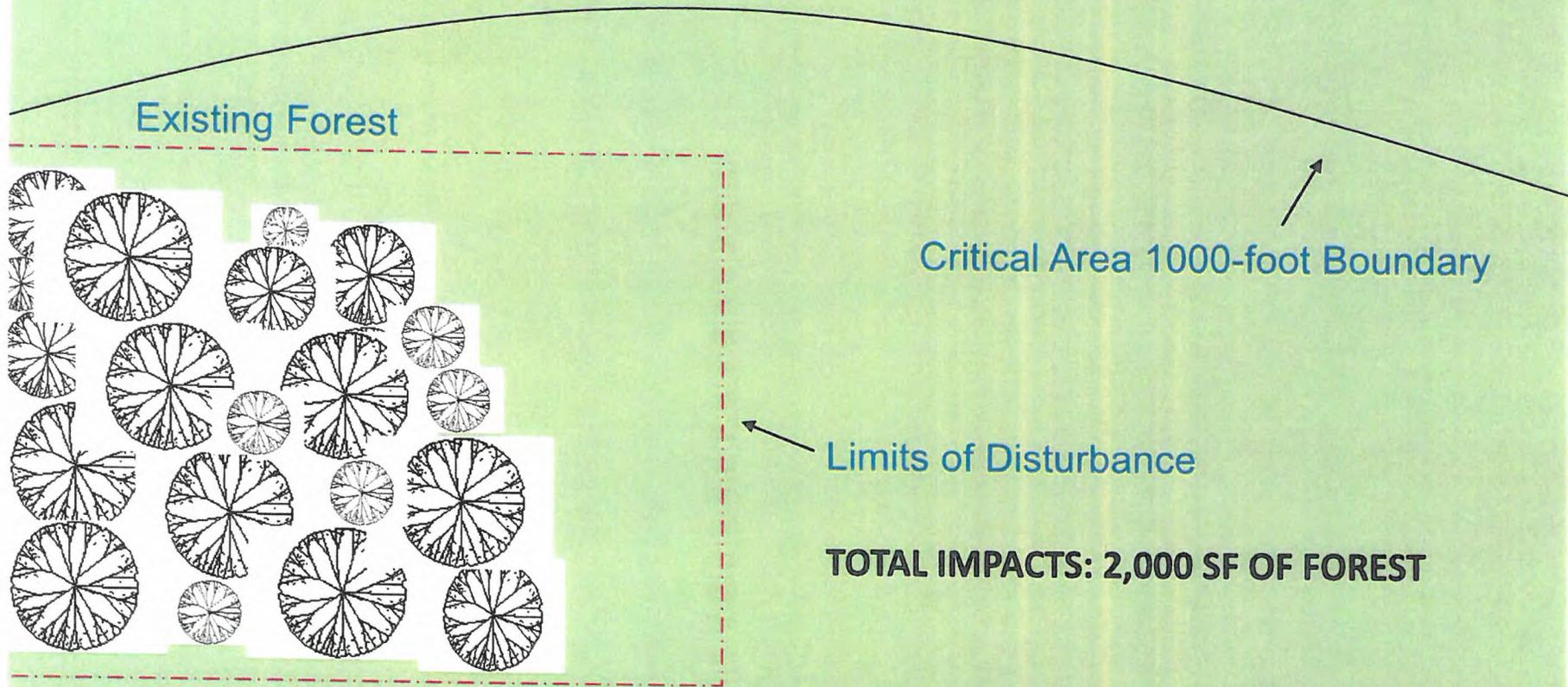


 = Shrub

 = Understory Tree

 = Overstory Tree

Impacts to Existing Forest within the Critical Area



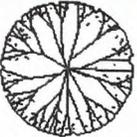
Critical Area 1000-foot Boundary

Limits of Disturbance

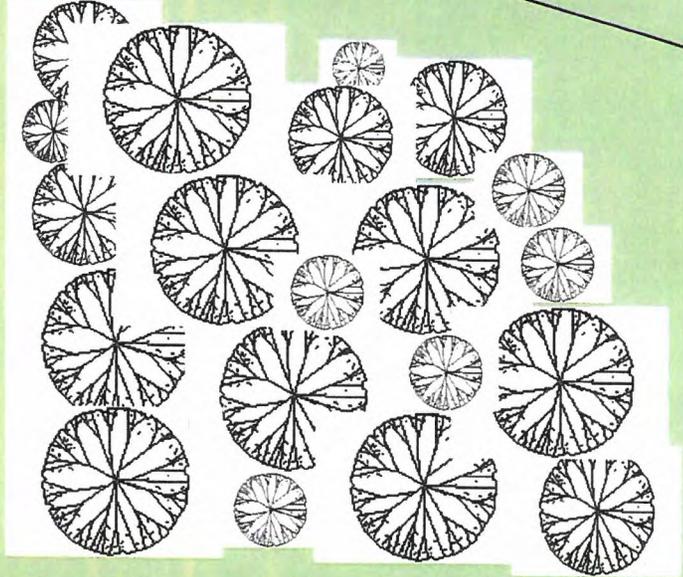
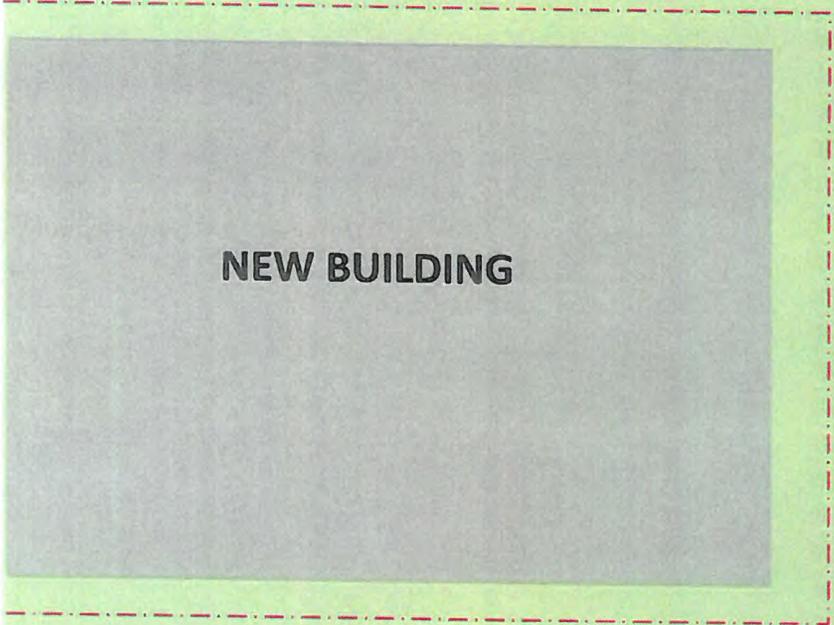
TOTAL IMPACTS: 2,000 SF OF FOREST

 = Shrub

 = Understory Tree

 = Overstory Tree

Mitigation for Forest Clearing in the Critical Area



MITIGATION = 2,000 SF OF FOREST

 = Shrub

 = Understory Tree

 = Overstory Tree

Buffer Mitigation

- Mitigation = (square footage of disturbance within the Buffer) + (square footage of canopy removed)
 - Canopy removed must be replaced with trees at 1:1
 - Buffer mitigation ratios apply to disturbance only, depend on the activity
 - Can deduct net lot coverage removed from Buffer from total mitigation requirement, if area is stabilized

Buffer Mitigation Ratios

- MOU projects have their own ratios, based on the type of project:
- Full Commission project mitigation ratios can also vary

3.1.10 Non-Buffer forest/developed woodland mitigation = 1:1 mitigation.

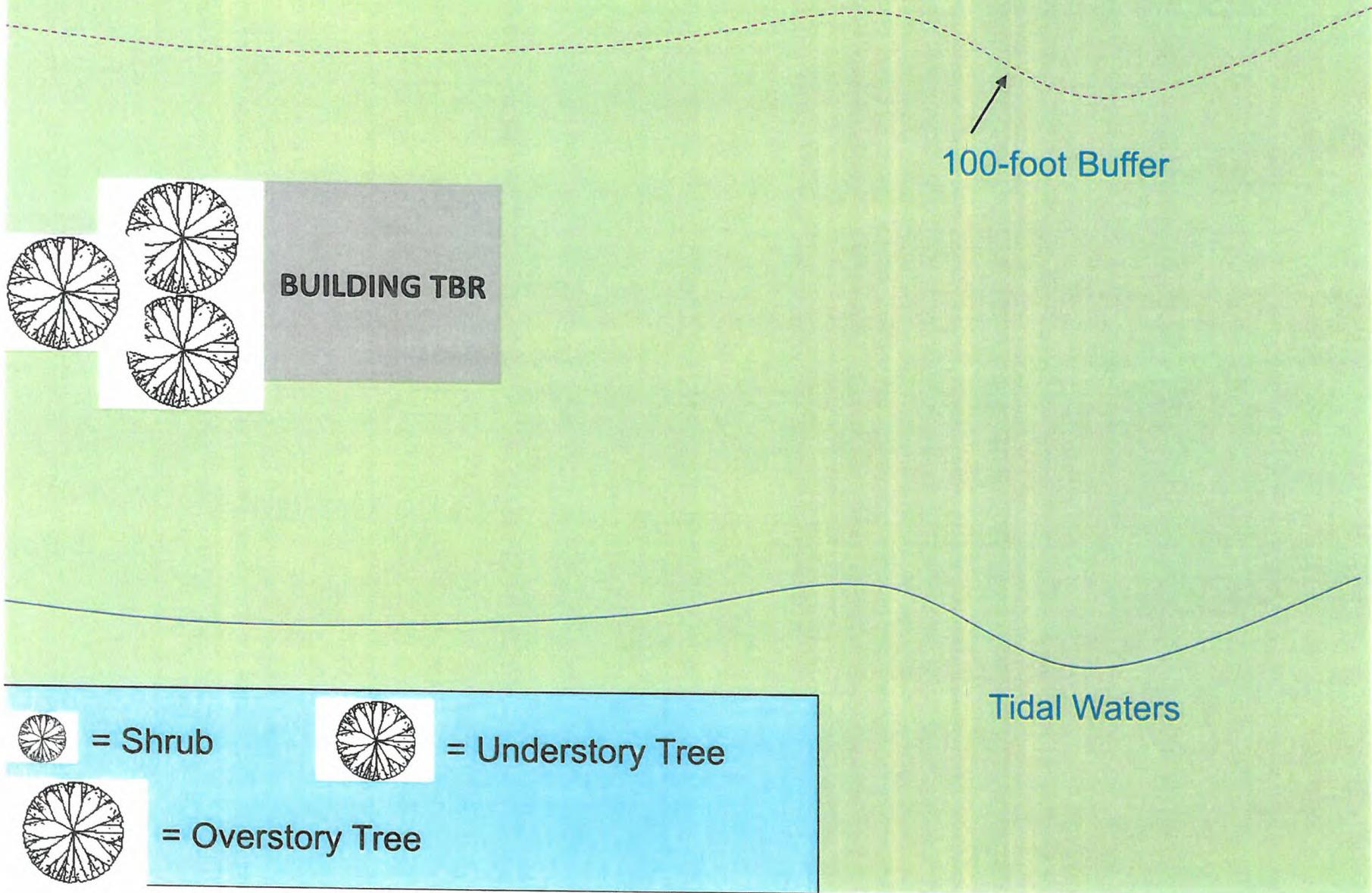
3.1.11 Buffer Mitigation

- 2:1 for a new water-dependent facility.
- 1:1 for redevelopment of an existing facility or for shore erosion control.
- Linear Project Buffer Mitigation
 - = New linear project: 2:1
 - = Redevelopment
 - Ground disturbance within existing right-of-way or access path: 1:1
 - Ground disturbance outside of existing right-of-way or access path: 2:1
- An additional 1:1 mitigation is required for any area of canopy coverage removed.

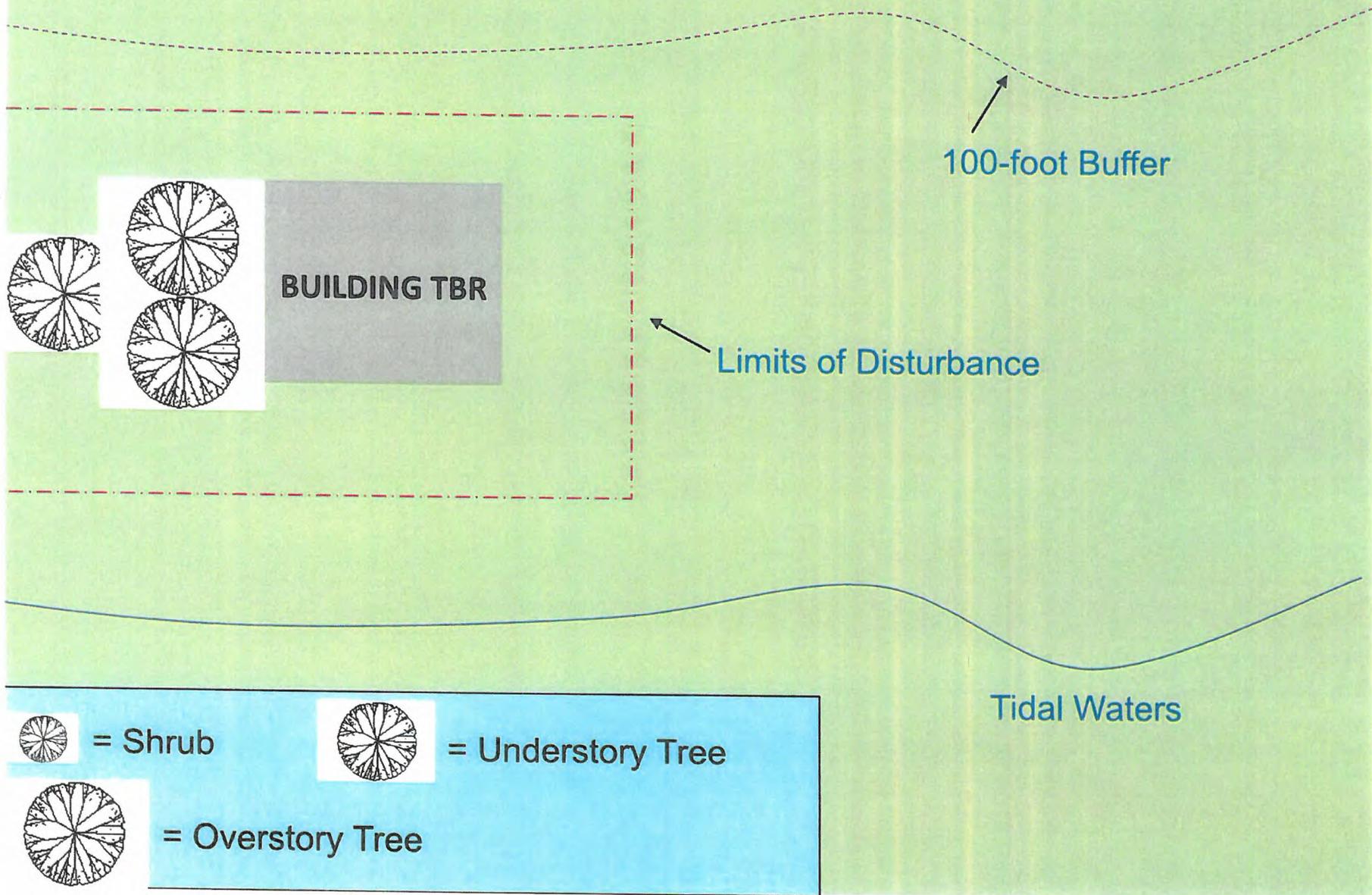
COMAR 27.01.09.01-2: Planting Credits

Vegetation Type	Minimum Size Eligible for Credit	Maximum Credit Allowed (Square Feet)	Maximum Percent of Landscape Stock Credit
Canopy tree	2-inch caliper	200	N/A
Canopy tree	3/4-inch caliper	100	N/A
Understory tree	3/4-inch caliper	75	N/A
Large shrub	3 feet high	50	30
Small shrub	18 inches high	25	20
Herbaceous perennial	1 quart or based on the area covered by plugs or seed mix	2	10
Planting Cluster for buffer establishment or mitigation of less than 1/2 acres	1 canopy tree; and 3 large shrubs or 6 small shrubs of sizes listed above	300	N/A
Planting Cluster for buffer establishment or mitigation of less than 1/2 acres	2 understory trees; and 3 large shrubs or 6 small shrubs of sizes listed above	350	N/A

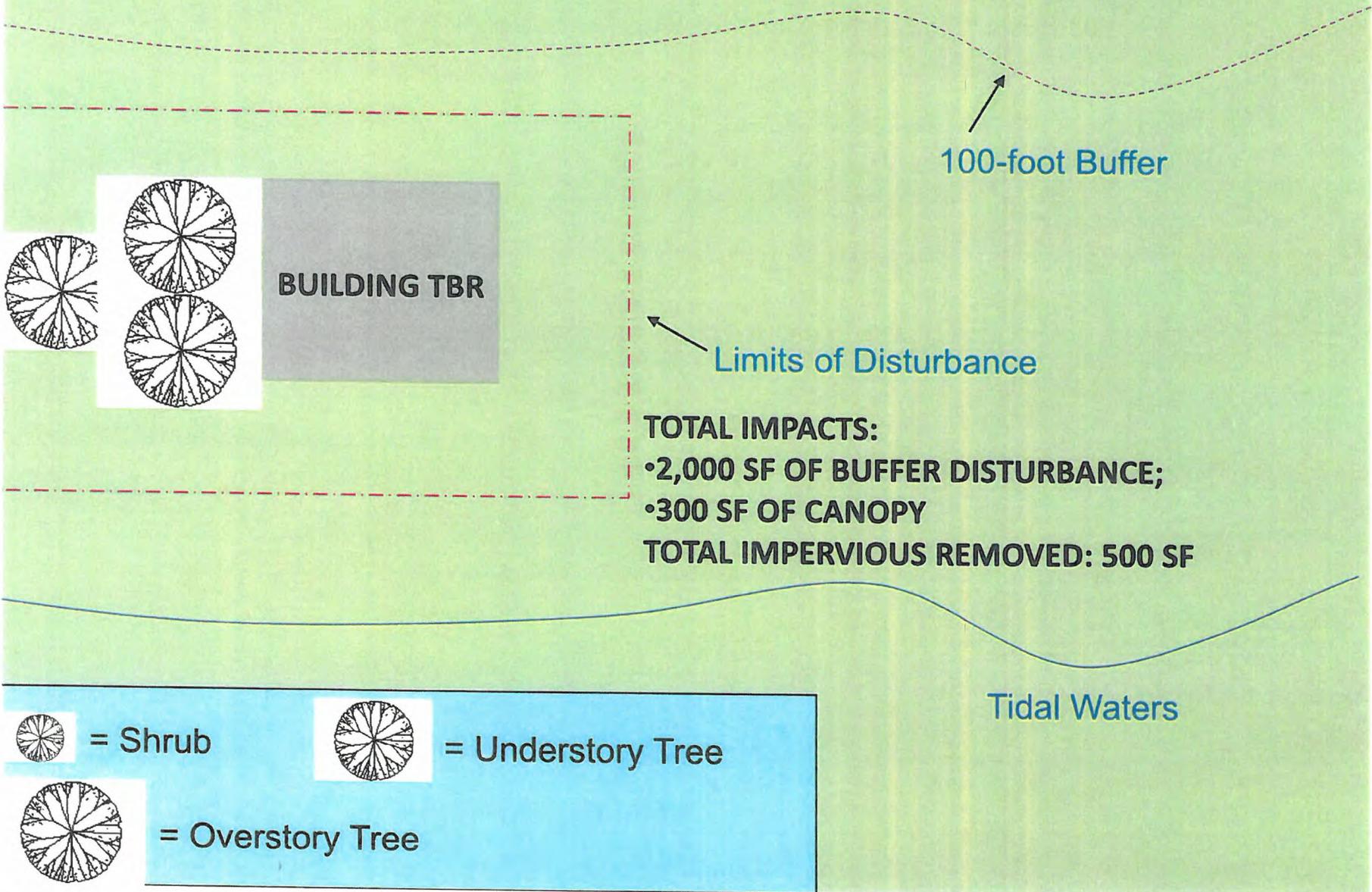
Impacts to the Critical Area Buffer



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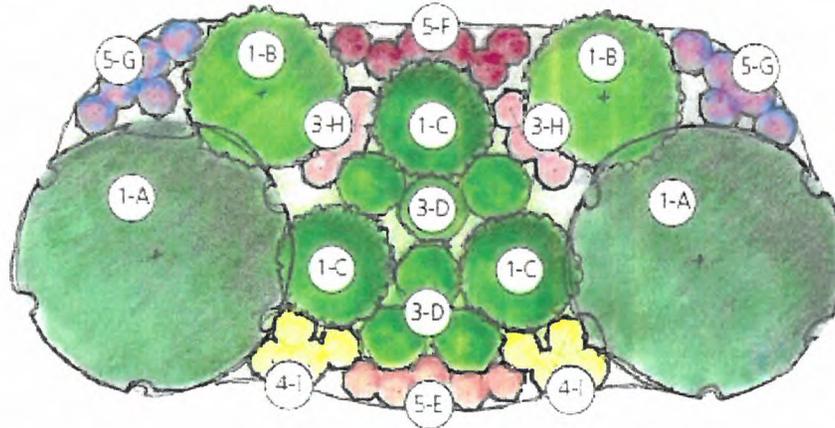


Impacts to the Critical Area Buffer

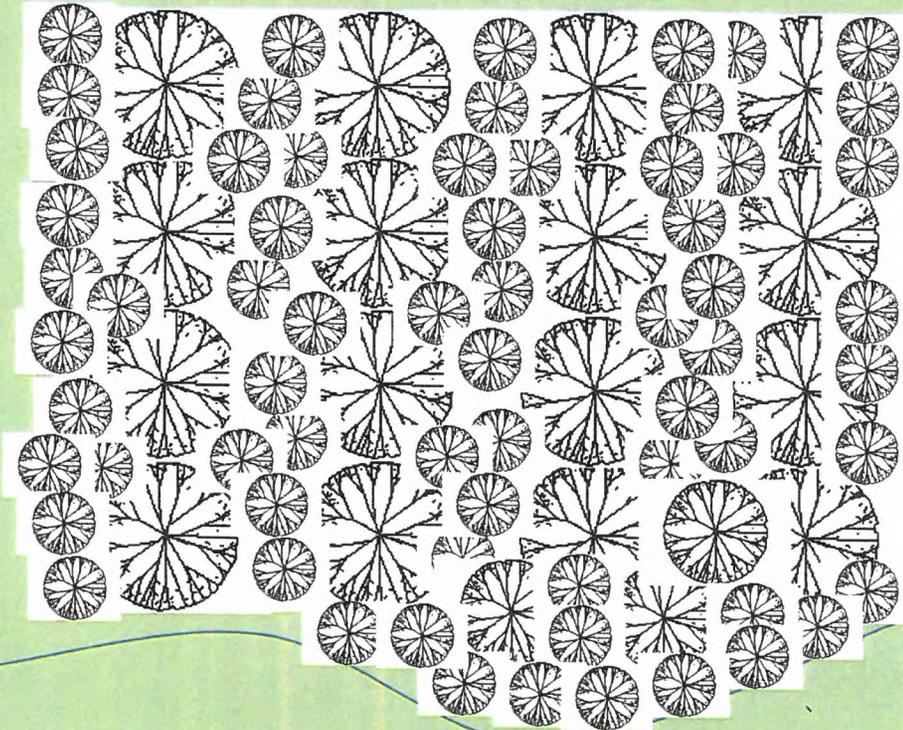
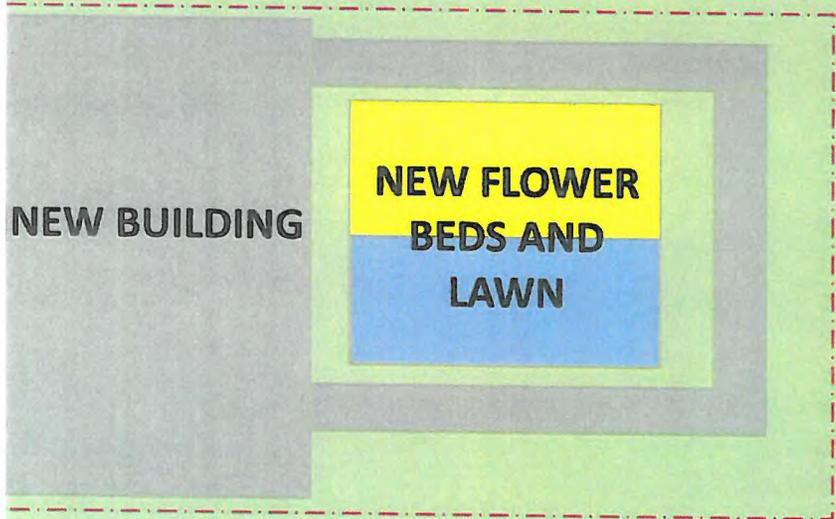


Credit Calculation

- 3:1 ratio for disturbance
 - = 2,000 sf x 3 = 6,000 sf
- 1:1 for canopy removed
 - = 300 sf
- Total Buffer mitigation requirement
 - = 6,000 sf + 300 sf = 6,300 sf
- Deduct lot coverage removed from Buffer
 - = 6,300 sf – 500 sf = 5,800 sf



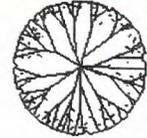
Mitigation in the Critical Area Buffer



Tidal Waters

 = Shrub

 = Understory Tree

 = Overstory Tree

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Credit Calculation – Onsite in the Buffer

Planting Type	Number of Each	Credits for Each	Total Credits
Canopy Cluster	16	300	4800
Understory Cluster	3	350	1050
Total			5850

Buffer Mitigation – Other Options

- Onsite and adjacent to the Buffer
- Onsite elsewhere in the Critical Area
- Offsite in the Buffer



Lessons Learned and Planning For the Future

- Early coordination
- Avoid mitigation sites that will be impacted for future projects
 - ROW plantings
- Running out of space
- Mitigation banking for State Agencies