

Town of Oxford



Preserving our past
for the future, by
planning in the
present...

CHERYL LEWIS
TOWN ADMINISTRATOR
November 20, 2019



Designated as
one of two
official points
of entry in
1694 by the
King & Queen

One of Maryland's
Oldest Port Towns
Established as a place
of trade in 1683

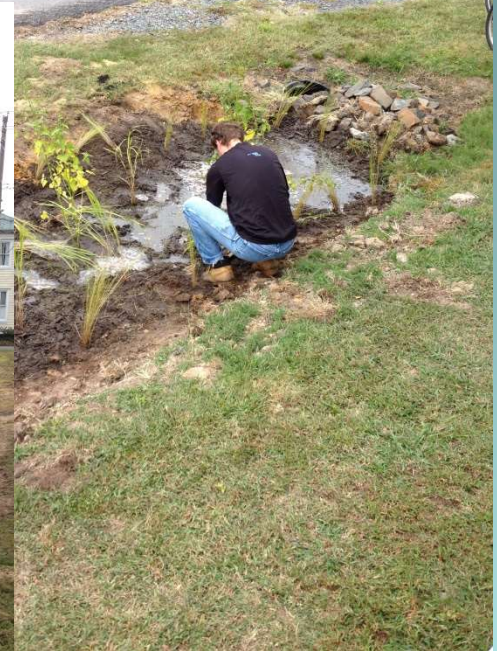




Tidal and Storm



Better drainage started with manageable projects using staff and volunteers.

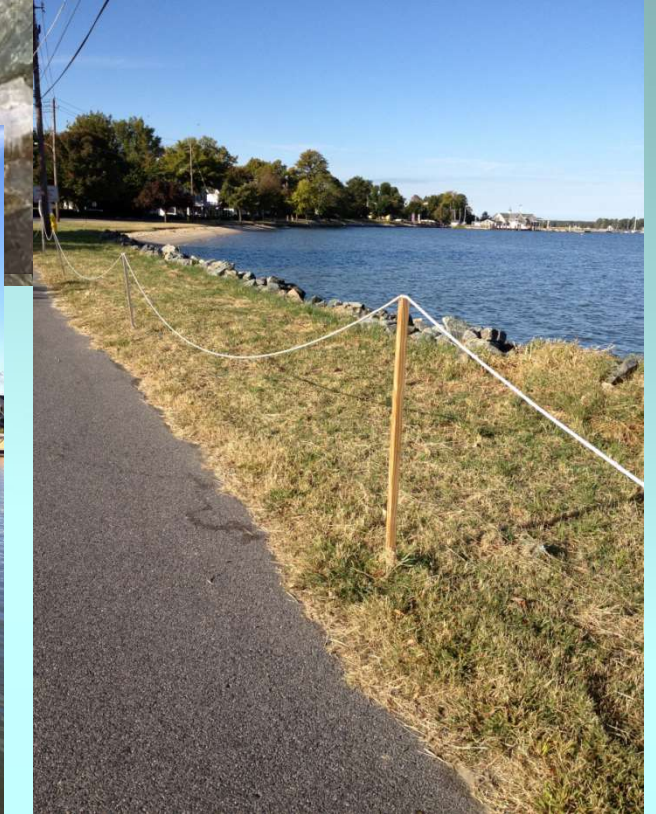


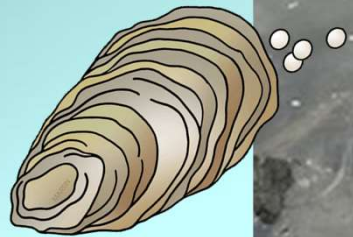
Which evolved into larger grant funded projects...

And private ingenuity ...



These projects are maintained and studied from year to year







Questions and Actions:

- As a town planner, working with your town council, discuss and include items such as road closures, economic burden, business closures and related impacts.
- Where does flooding occur during heavy rain events? How do businesses and homeowners respond?
- Where does flooding occur during high tide events? How do businesses and homeowners respond?
- What are the town's short-term and long-term goals and priorities? Take note if there is a historical structure of particular importance threatened by coastal concerns, or if improving buffers or increasing goals for the town.
- In terms of the town's Critical Area program, are there specific parts that are difficult to implement? Are there specific elements of the program that are particularly well and the community likes?
- What barriers are there to investing in coastal resilience? What kind of might there be in meeting regulations?
- Review Oxford's Case Study as an example.

Case Study: Oxford's Anecdotal Assessment for Coastal Resiliency

Road closures due to flooding from both storm events and high tide events are frequent issues in the Town of Oxford. Transportation is a concern because the Causeway, the main roadway into and out of town, floods during and after such events. Businesses and homeowners must also deal with flooding on their properties and in their buildings. One method the Town has developed to let drivers know how deep the floodwater is and if it's safe to drive through are "high-water markers" which are wooden posts painted in different shades of blue; residents familiar with the area know to avoid driving through a specific location if the water level has reached a particular blue shade.

A main priority for the community is maintaining its historic character and green infrastructure. Thus, they have a lot coverage limit of forty percent across the entire town, even in their Intensely Developed Areas that would typically have no lot coverage limit. This has made it difficult to encourage the use of pervious pavers, which could help with their flooding issues, as they are typically more expensive than usual materials but still contribute to the lot coverage limit.

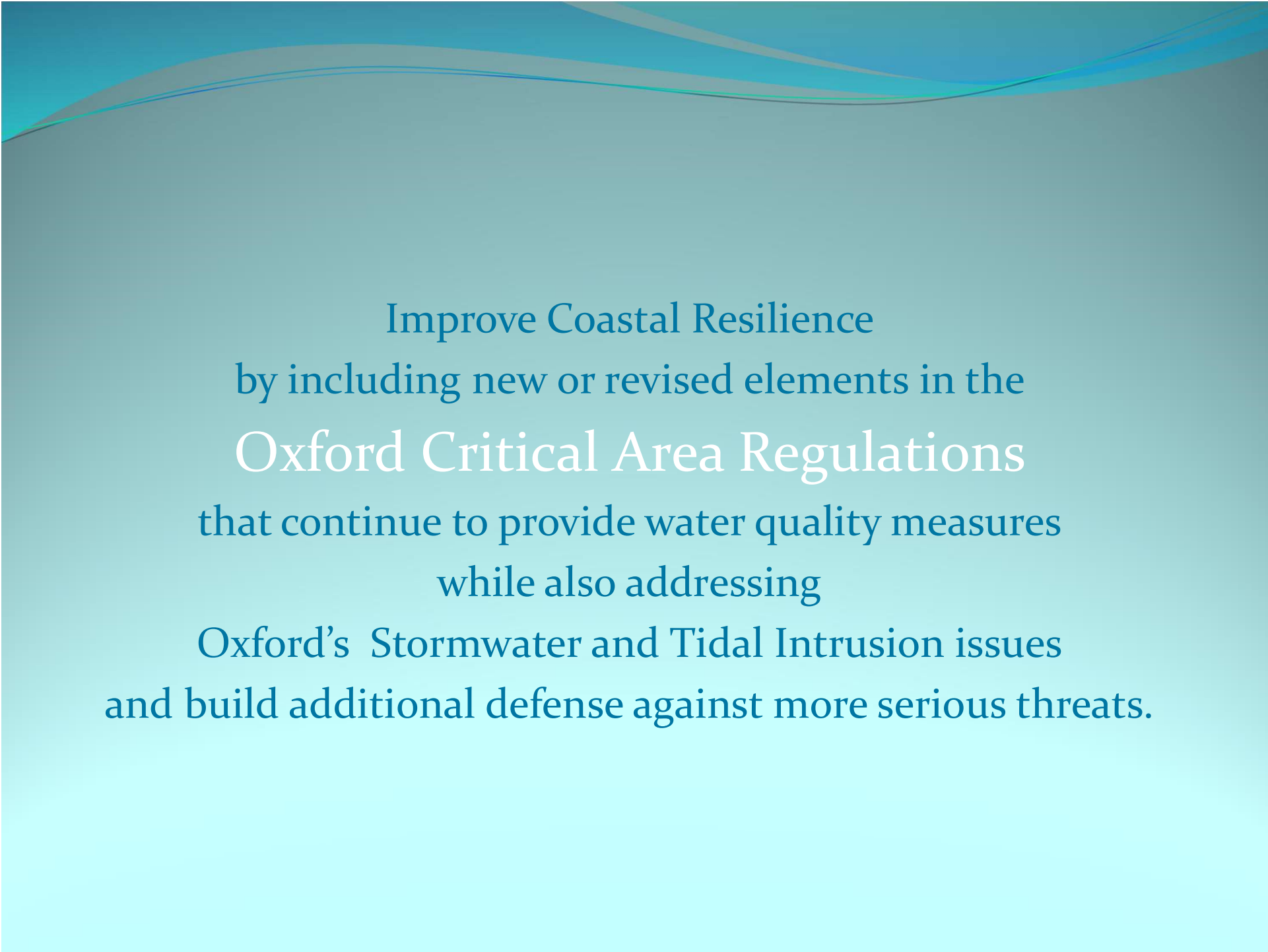
From our preliminary meeting with officials from the Town of Oxford, we confirmed that most development in the Town of Oxford is redevelopment, with only one new house

Critical Area Coastal Resilience Planning Guide



March 2016

Critical Area Commission for the Chesapeake and Atlantic Coastal Bays



Improve Coastal Resilience
by including new or revised elements in the
Oxford Critical Area Regulations
that continue to provide water quality measures
while also addressing
Oxford's Stormwater and Tidal Intrusion issues
and build additional defense against more serious threats.

Residential Stormwater Options

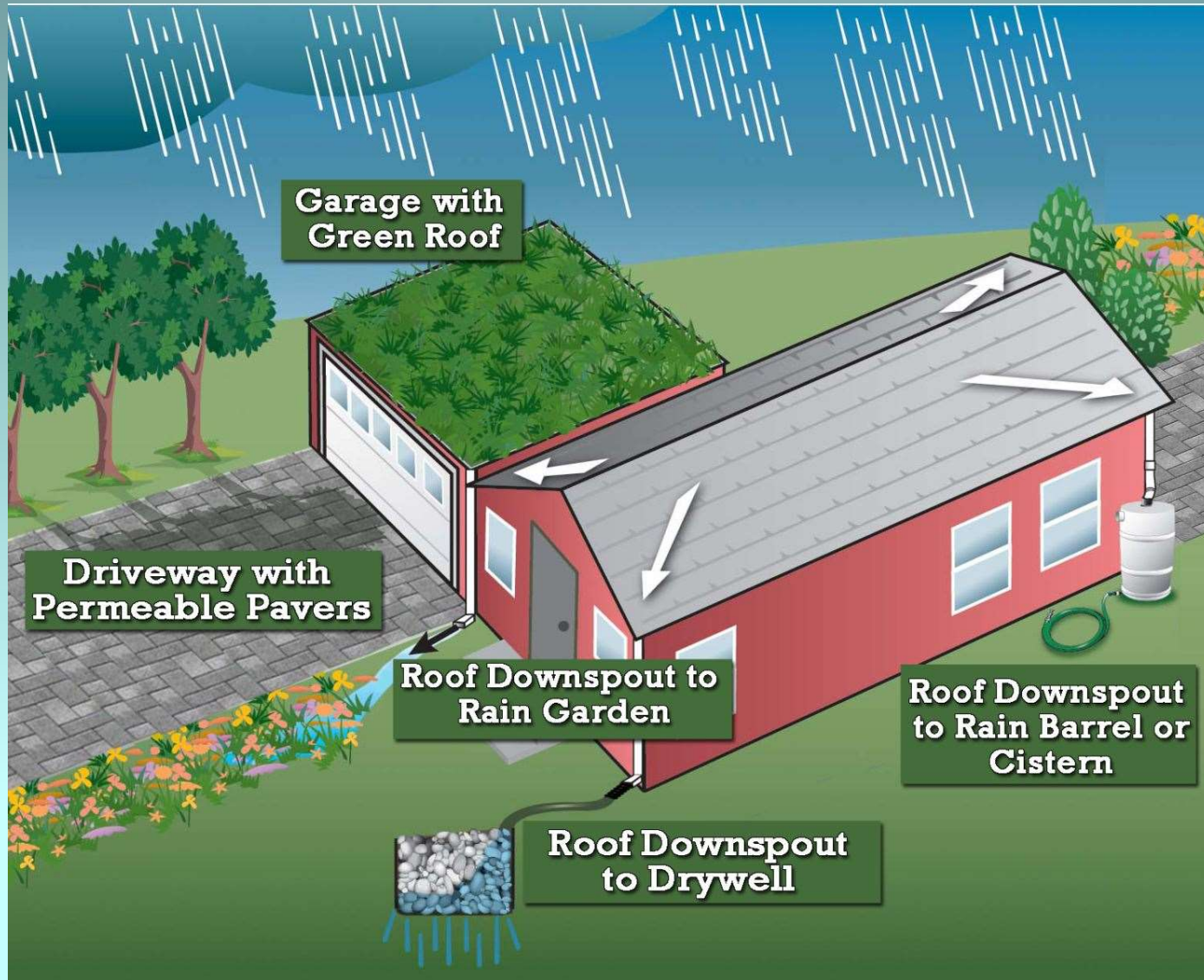


Image credit Montgomery County / Critical Area Coastal Resiliency Planning Guide / Critical Area Staff

Development and redevelopment activities which create a permanent disturbance **of 5,000 square feet or less** shall include stormwater management practices in accordance with the following table and subsection (a) below. Development and redevelopment activities which create a temporary disturbance are exempt from this requirement.

Permanent disturbance threshold	250 - 500 sf SA	501 - 1000 sf SA	1001 - 2000 sf SA	2001 - 3000 sf SA	3001 - 4000 sf SA	4001 - 4999 5000 sf SA
Rain garden* minimum size requirements	50 sf, 0.5 ft pd, 1.0 ft md	75 sf, 0.5 ft pd, 1.0 ft md	total of 150 sf, 0.5 ft pd, 1.0 ft md	total of 250 sf, 0.5 ft pd, 1.0 ft md	total of 350 sf, 0.5 ft pd, 1.0 ft md	total of 450 sf, 0.5 ft pd, 1.0 ft md
Bioswale* minimum size requirements	50 sf, 0.5 ft pd, 1.0 ft md	75 sf, 0.5 ft pd, 1.0 ft md	total of 150 sf, 0.5 ft pd, 1.0 ft md	total of 250 sf, 0.5 ft pd, 1.0 ft md	total of 350 sf, 0.5 ft pd, 1.0 ft md	total of 450 sf, 0.5 ft pd, 1.0 ft md

* One hundred square feet of permanent disturbance may be offset with a standard rain barrel that holds a minimum capacity of 50 gallons.



Credit: Critical Area Coastal Resiliency Planning Guide / Critical Area Staff

Permanent disturbance. A material, enduring change in the topography, landscape, or structure that occurs as part of a development or redevelopment activity. Permanent disturbance includes:

Clearing of a tree, forest, or developed woodland, other than clearing activities in undertaken in connection with a temporary disturbance activity as defined in this Section. (applies to trees 35' or more in height)

a. Individual trees cleared shall be replaced in the Critical Area on the following basis:

Diameter at breast height (DBH) of removed tree	Planting Requirement
Less than ten inches	One tree
Between ten and sixteen inches	Two trees
Greater than sixteen inches	Three trees

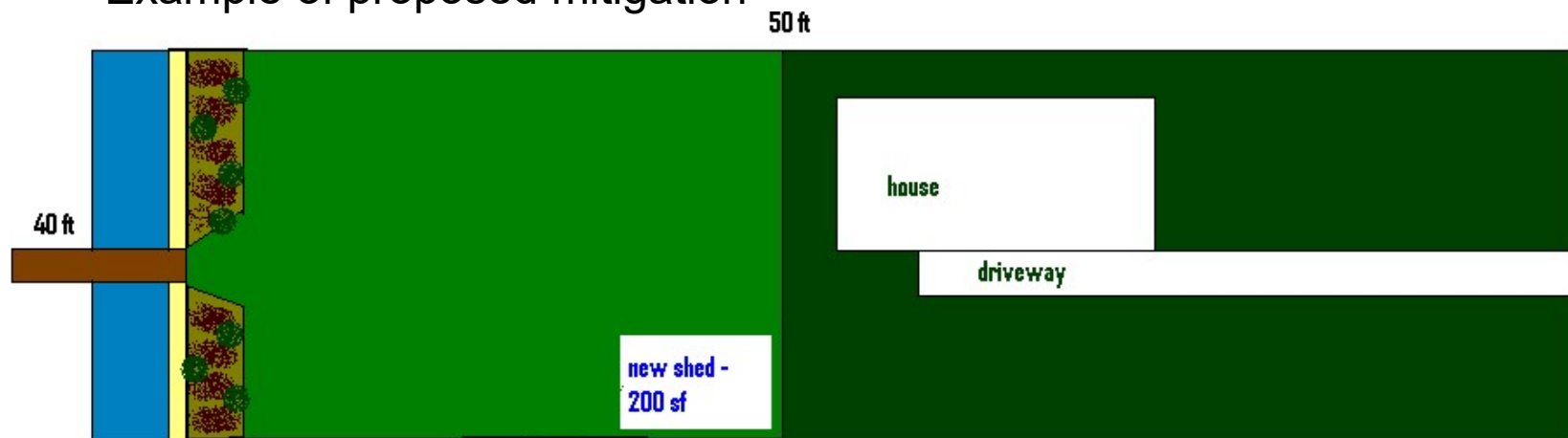
b. Replacement trees shall be native species measuring at least five feet tall with a minimum caliper of two inches.

Resilient Buffer Management Areas

Example of current mitigation



Example of proposed mitigation





Mitigation for development or redevelopment in the in the **BMA** approved under the provisions of this subsection shall be implemented as follows:

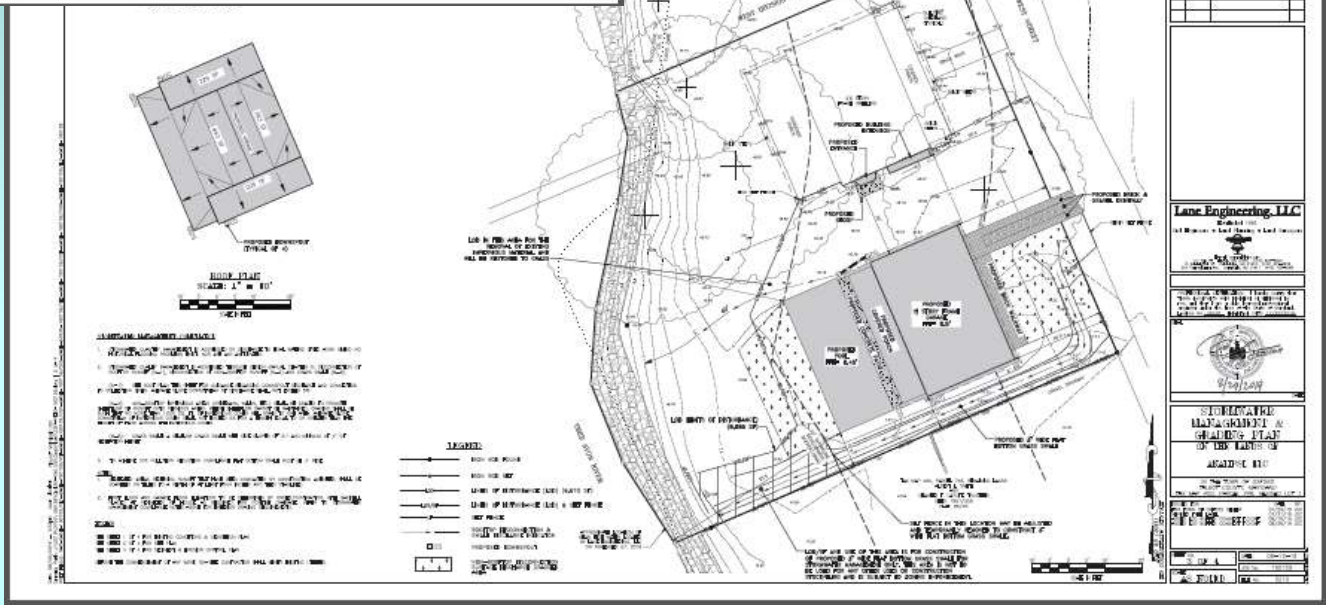
a. ~~_____ Natural forest vegetation of an area twice the extent of the footprint of the development activity within the 100-foot Buffer shall be planted on site in the Buffer or at another location approved by the Planning Commission.~~

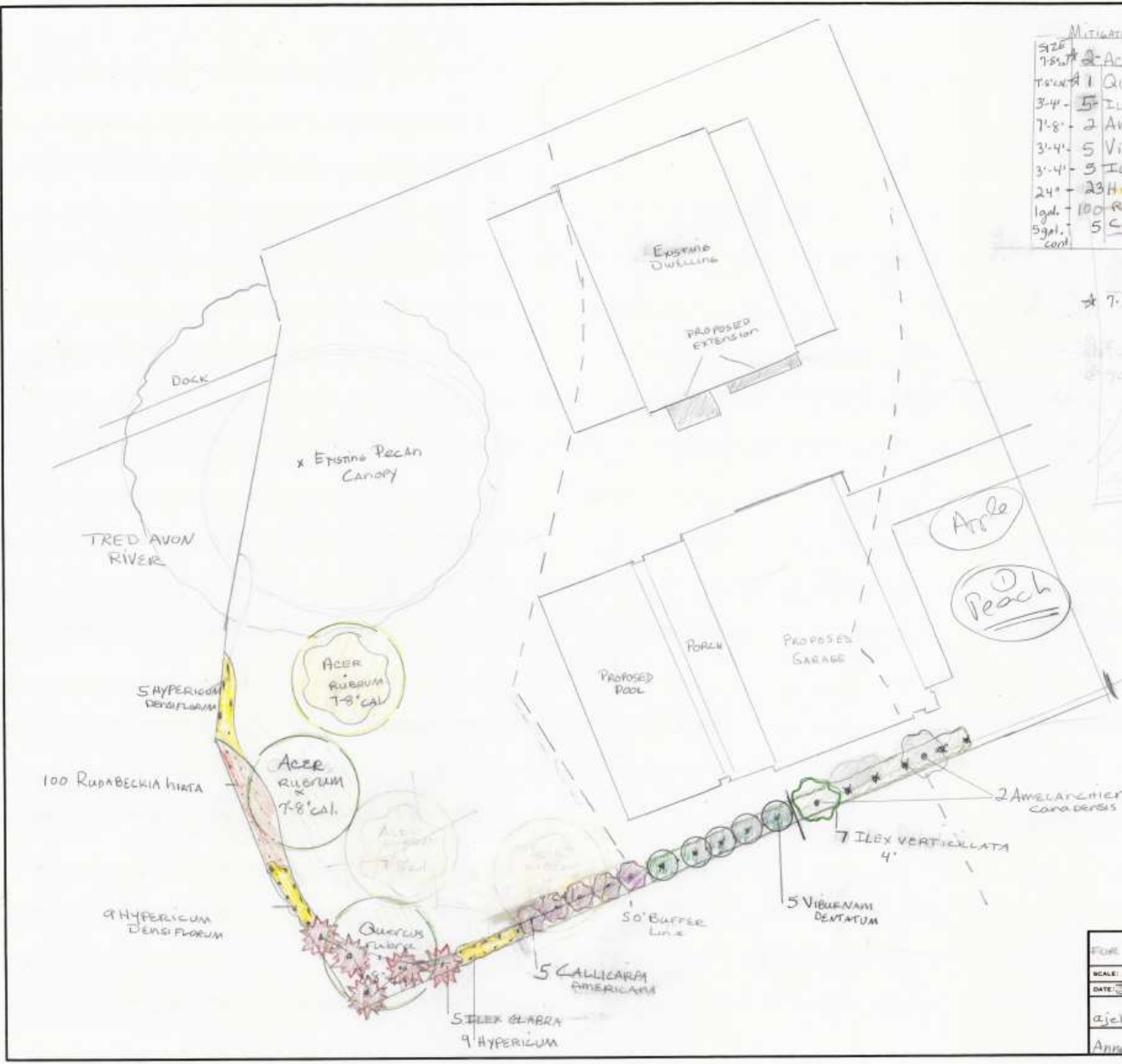
Native vegetation consisting of **approved grasses and shrubs** (Oxford Buffer Management Areas Approved Species) of an area twice the area of the permanent disturbance within the 100-foot Buffer shall be planted in the following order of priority according to 9.b below:

- Grasses shall be planted in the first five feet landward of the edge of the shoreline until fully established.
- Shrubs shall be included within the first five-foot strip at the rate of two small shrubs or one large shrub per ten feet of shoreline.
- Grasses and shrubs or trees shall be planted adjacent to the five-foot planting strip and within the first twenty-five feet landward of the shoreline until fully established.

Credit: Critical Area Coastal Resiliency Planning Guide / Critical Area Staff

Maryland ESD Calculations and 10% Phosphorus Removal		Last Update:	12/3/2013
Project Name:	Analipsi, LLC - 200 West Street		
Date:	12-Aug-15		
	data input cells		
	calculation cells		
Step 1: Complete ESD Implementation Checklist			
Check all of the following ESD Practices That Were Implemented at Site		Yes - No - N/A	
Environmental Mapping Was Conducted at Site Prior to Layout	YES		
Nature Areas Were Conserved (e.g., forests, wetlands, steep slopes, floodplains)	YES		
Stream, Wetland and Shoreline Buffers Were Reserved	YES		
Disturbance of Permeable Soils Was Minimized	YES		
Natural Flow Paths Were Maintained Across the Site	YES		
Building Layout Was Fingerprinted to Reduce Clearing and Grading at Site	YES		
Site Grading Promoted Sheetflow From Impervious Areas to Pervious Ones	YES		
Site Design Was Evaluated to Reduce Creation of Needless Impervious Cover	YES		
Site Design Was Evaluated to Maximize Disconnection of Impervious Cover	YES		
Site Design Was Evaluated to Identify Potential Hotspot Generating Area for Stormwater Treatment	YES		
Erosion and Sediment Control Practices and Post Construction Stormwater Management Practices Were Integrated into a Comprehensive Plan	YES		
Tree Planting/Use at the Site to Convert Turf Areas into Forest	N/A		
Step 2: Calculate Site Imperviousness and Water Quality Volume, WQv (for redevelopment)		Step 3: Calculate Phosphorous Removal Requirement, RR for Critical Area Sites	
Site Area, A (acres)	0.153	Development Category (for 10%)	Redevelopment
Existing Impervious Surface Area (acres)	0.025	New Development	
Proposed Impervious Surface Area (acres)	0.356	Average Annual Predevelopment Load, L_{pre} (lbs P/yr)	0.08
Rainfall Depth, P (in)	3.0	Redevelopment	
Existing Imperviousness, I_{ex}	16.5%	Predevelopment Runoff Coefficient, $R_{v,pre}$	0.30
Proposed Imperviousness, I_{prop}	38.6%	Phosphorous Mean Concentration, C (mg/L)	0.3
Water Quality Calculation for Redevelopment Only		Average Annual Predevelopment Load, L_{pre} (lbs P/yr)	0.07
Required Treatment Area (acres)	0.00	Post-Development Runoff Coefficient, $R_{v,post}$	0.38
Runoff Coefficient, R_v	0.95	Average Annual Post-Development Load, L_{post} (lbs P/yr)	0.14
Water Quality Volume, WQv (cf)	8	Removal Requirement, RR (lbs P/yr)	0.08
Step 4: Calculate Environmental Site Design (ESD) Rainfall Target, P_E			
Development Category (for ESD)	New Development		





Mitigation Plantings - NEEDED 2064 SF

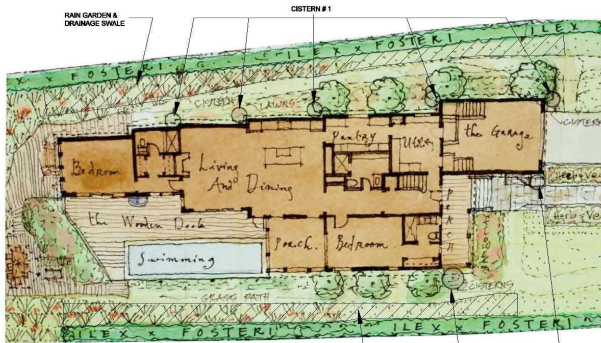
9-25	2	ACER RUBRUM - 7-8' cal. - 200 plus = 400
7-8' cal.	1	QUERCUS RUBRA - 7-8' cal. - 200 plus = 200
3-4'	5	ILEX GLABRA - 4' @ 50 pts = 250 pts.
7-8'	2	AMELANCHIER CANADENSIS @ 75 pts = 150
3-4'	5	VIBURNUM DENTATUM @ 50 = 250
3-4'	5	ILEX VERTICILLATA @ 50 = 250
24'	23	HYPERICUM DENSIFLORUM @ 25 = 575
1 gal.	100	RUBUS ILLINOENSIS @ 2 = 200
5 gal.	5	CALLISARPA AMERICANA @ 50 = 250
-cont.		

TOTAL POINTS = 2,525 SF
CREAT

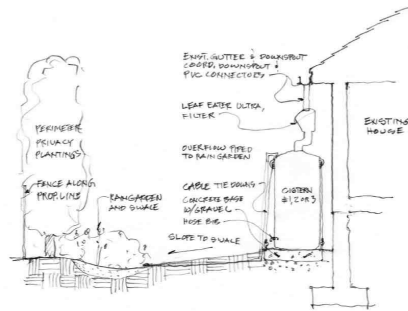
* 7-8' cal. trees will be installed with a 100" TREE SPACE



BUFFER MANAGEMENT PLAN		
FOR ANALYSIS - LLC - OXFORD MA 01875		
SCALE: 1"=10'	APPROVED BY:	DRAWN BY: MARGARET
DATE: JUNE 2011		REVISED:
GARDEN DESIGN OF EASTON		
djenich@goeaston.net - vhw@se2008.com		
Anne Jellie / Virginia Sampson		DRAWING NUMBER: 1



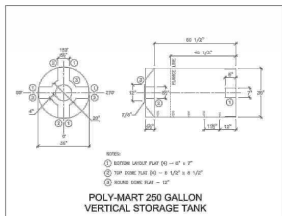
CISTERN LAYOUT PLAN AROUND THE HOUSE



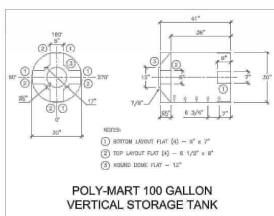
SITE SECTION AT CISTERN & SWALE

RAINWATER HARVESTING SCOPE OF WORK

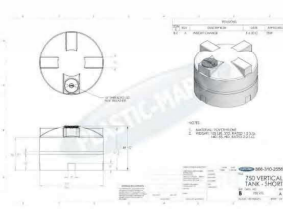
1. THE PROPOSED CISTERNS LAYOUT & SPECIFICATIONS WILL IMPROVE STORMWATER MANAGEMENT ON THE PROPERTY & REDUCE THE USE OF DOMESTIC WATER FOR IRRIGATION.
2. PROPOSED CISTERNS ARE DARK GREEN, POLYETHYLENE W/ 4" INLET, CLEANOUT & 3/4" WELD FITTING FOR HOSE SPIGOT.
3. ALL CISTERNS TO BE SECURED WITH WIRE CABLE TIE-DOWNS TO REINFORCED CONCRETE SLABS ON COMPACTED GRAVEL FILL.
4. EXISTING DOWNSPOUTS TO CONNECT WITH 4" PVC CONNECTORS TO 'LEAF EATER ULTRA' DOWNSPOUT FILTER, SEE SPECS.
5. OVERFLOW HARD PIPING TO RUN TO PERIMETER RAIN GARDENS & DRAINAGE SWALES AT EDGE OF PRIVACY PLANTINGS.
6. CISTERNS HAVE HOSE BIBS FOR GRAVITY FED WATERING OF ADJACENT FLOWER BEDS & PRIVACY PLANTINGS.



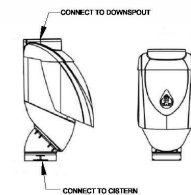
CISTERN #1



CISTERN #2

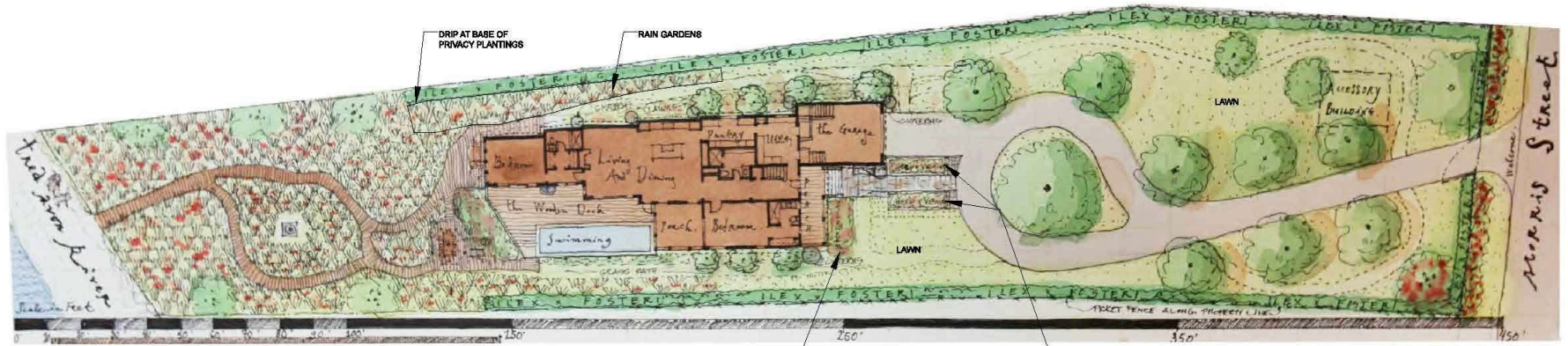
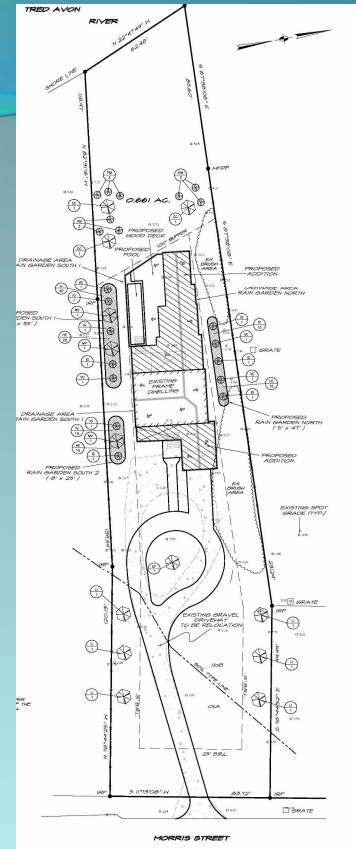


CISTERN #3



RAIN HARVEST LEAF EATER ULTRA

RAINWATER HARVESTING & CISTERN PLAN



GENERAL NOTES ON IRRIGATION :

PLANTING BED

RAISED KITCHEN GARDEN



In the R-1, R-2 and R-3 Districts, lot coverage installed on residential lots for driveways, patios and walkways using permeable surfaces may be calculated at 75% of the total area covered, provided the following conditions are met:

- a. Permeable surfaces are installed by an Interlocking Concrete Paving Institute (ICPI) or other similarly recognized organization certified installer;**
- b. Permeable surfaces include porous asphalt, pervious concrete, concrete or brick pervious pavers and open-celled pavers; and**
- c. Property owner signs agreement stating that they have read and understood associated maintenance requirements.**

The provisions of this subsection do not apply to the Buffer Management Area.





Thank you!

Cheryl Lewis, Town Administrator
Oxford, Maryland
oxfordclerk@goeaston.net

