

Living Shorelines KEY REFERENCES MARYLAND 2024



Using the Key References Guide

This reference guide is intended as a companion to the CBLP-Shorelines Certificate Program. It provides a collection of resources including guidance documents, manuals, websites, digital tools, videos, and regulations used to develop and deliver the course.

This course also utilizes a companion webpage <u>https://certified.cblpro.org/maryland-cblp-shorelines-workshop-materials/</u> that includes the required key references, course materials, video links, and assignments.

Other optional resources that practitioners may find useful are also included. Many of the linked resources are not under the control of CBLP and may change or become unavailable. This guide was developed for Maryland and includes state and local laws, regulations, and permitting information that may not apply to practitioners in other states. Consult your state's regulatory authorities for regions outside of Maryland.

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Introduction

Within the Chesapeake Bay Region, living shorelines are considered a shoreline best management practice eligible for nitrogen, phosphorus, and sediment total maximum daily load reductions to meet the Chesapeake Bay Watershed Restoration goals.

The Maryland Department of Natural Resources defines a Living Shoreline as erosion control measures that incorporate a suite of techniques and materials such as fiber coir logs, sills and groins combined with sand, natural materials and marsh plantings. These techniques can be used to create, protect, restore and enhance natural shoreline habitat, with the goal of minimizing coastal erosion while maintaining coastal processes.

The Maryland Living Shorelines Protection Act of 2008 identifies a living shoreline as the preferred method of shore protection and requires that improvements to protect a property against erosion consist of nonstructural shoreline stabilization measures that preserve the natural environment. Exceptions to the Living Shorelines Protection Act may be granted through a waiver process if it can be demonstrated that such measures are not feasible.

As implementation of living shorelines increases, the demand for consistently trained, experienced living shoreline professionals and a means to connect those professionals with employers and property owners is also increasing. Recognizing the need for more qualified professionals to fill demand, the Maryland Department of Natural Resources funded the Chesapeake Bay Landscape Professional (CBLP) program to develop a Living Shorelines training program for Maryland. CBLP-Shorelines was initially developed in 2022-23 by the Living Shorelines Collaborative in Virginia with funding from the National Fish and Wildlife Foundation. In Maryland, an advisory committee was convened to guide the development of the CBLP–Shorelines program, including staff from the Maryland Department of Natural Resources, the Maryland Department of the Environment, the Maryland Critical Area Commission, the Virginia Institute of Marine Science, and local experts including practitioners working in Maryland. The goal of the Maryland CBLP-Shorelines effort is to grow a network of skilled practitioners to support living shoreline programs and project implementation, connect clients with trusted service providers, and improve capacity of existing shoreline businesses to implement more living shorelines.

CBLP-Shorelines is designed to provide a hands-on, interactive professional development experience covering topics from site evaluation to designs and permitting, construction, maintenance and monitoring and concluding with a "learn as you do" living shoreline installation led by experienced living shoreline professionals. The focus of all work will be on living shoreline projects that fall under the Maryland State Programmatic General Permits Category A for Living Shorelines / Beach Nourishment. Participants will be exposed to professional best practices and will interact with experienced practitioners, regulators, advisors, and contractors as instructors. Participants will also understand the limitations of their own knowledge and experience and learn when to call an expert or partner with others to ensure the living shorelines they work on are correctly designed, permitted, installed, maintained and monitored according to state and federal regulations and to meet the goals and objectives of the client.

Learning Objectives

CBLP-Shorelines Maryland Learning Objectives

- Understand benefits of living shorelines and the basic ecological and biological processes that underpin healthy, resilient shorelines
- Provide field and classroom introduction to Terminology, Tools and Methodology for living shoreline project site assessments to inform design and suitability of living shorelines
- Introduce and practice performing online desktop analyses including tools and methodology of existing conditions, erosion rates, future predictions with sea level rise, and other digital data available for use
- Participate in a guided field evaluation of potential living shoreline sites using checklist. Introduce tools used in site assessment
- Become familiar with interpreting site assessment data to inform living shoreline feasibility, design, and construction
- Understand the permitting scenario and requirements for living shorelines in Maryland
- Be aware of design considerations and requirements relevant to the Critical Area
- Know how to develop a "whole property" design plan which incorporates the buffer, stormwater BMPs, and shoreline restoration
- Be familiar with living shoreline design options including various types of sills and appropriate conditions and materials for each
- Become familiar with planting zones and suitable plants for each zone, including the buffer
- Understand construction sequencing and be familiar with common materials and tools used during construction
- Understand the short- and longer-term maintenance requirements for living shorelines
- Learn about funding resources, incentive programs, and advisory services for living shorelines in Maryland

General Information on Living Shorelines

Resource: Type: Source:	<u>Understanding Living Shorelines</u> Website NOAA	
Resource: Type: Source:	<u>Living Shorelines 101</u> Video Virginia Institute of Marine Science	
Resource: Type: Source:	Guidance for Considering the Use of Living Shorelines Guidance document NOAA	finitence for Can be a d Linke fibroriten art
Resource: Type: Source:	National Map of Living Shoreline Projects Storymap NOAA	Det D
Resource: Type: Source:	<u>Shoreline Management BMPs</u> Guidance Document Chesapeake Stormwater Network	Bit Representation B
Resource: Type : Source:	Sediment Exchange Between the Created Saltmarshes of Livi and Adjacent Submersed Aquatic Vegetation in the Chesaper Journal Article Frontiers in Marine Science 2021	ing Shorelines ake Bay, Vona et al
Resource: Type: Source <i>:</i>	Long-term performance and impacts of living shorelines in mesohaline Chesapeake Bay, Palinkas et al Journal Article Ecological Engineering 2023	• The data (control of the second
Resource: Type: Source:	Effects of Shoreline Alteration and Other Stressors on Submo Vegetation in Subestuaries of Chesapeake Bay and the Mid-A Bays, Patrick et al Journal Article Estuaries and Coasts, 2014	Contract of the stand or and the first of the stand or and the stand or a
1 Living	Sharalines Kay Deferences Mandand	We are a first one of the second seco

4 Living Shorelines Key References: Maryland

Resource: Living on the Edge

Type:VideoSource:Chesapeake Bay Foundation, 1991





Site Evaluation

Resource: Type:	Desktop Analysis Instruction Guide Document	Annue include and a second and
Source:	Chesapeake Bay Landscape Professional Program	
Description:	Collection of tools and step-by-step instructions for completing the	A contract with the second secon
	desktop analysis assignment.	2 ¹ Sector
Resource:	Google Earth	•
Туре:	Digital/Desktop Tool	a mine
Source:	Google	
Description:	Downloadable software with a suite of tools for conducting desktop	
	analysis.	
Resource:	Maryland Shoreline Stabilization Mapper (MSSM)	
Туре:	Digital Tool	Veryland Sandra Saddaata Negar (M2M)
Source:	Virginia institute of Marine Science & Maryland Department of the	
	Environment	
Description :	An interactive mapping tool that displays the recommended shoreline	
	practices from the Shoreline Stabilization Model.	
Resource:	Maryland Coastal Atlas	
Туре:	Digital Tool	
Source:	Maryland Department of Natural Resources	
Description:	An interactive mapping tool used to better understand Maryland's marine	
	resources. Includes shoreline erosion rates and sea level vulnerability.	
Resource:	Nautical Chart Viewer	
Туре:	Digital Tool	
Source:	NOAA	
Description :	Interactive map viewer used in desktop analysis; gives offshore depths,	
	information on navigation channels, and submarine pipelines.	
Resource:	Flood Insurance Studies	
Туре:	Report	FEMA Flood Map Service Center: Search All Products Stagging Once mid-fit has and garvaide - damid-line contained and product Die Jurididid Jurididid - Jurididididi Die Jurididididi - Jurididididi Die Jurididididi - Jurididididi Die Jurididididi - Jurididididi Die
Source:	Federal Emergency Management Agency (FEMA)	1930 - Ender V All State Annual - State - V - State - State - V - State -
Description:	Jurisdiction reports provide storm surge stillwater elevations relative to	entrum reactions that a list by inter given any globane globane any globane globane any globane globan
	NAVD88.	ion Sociation Nucl Tachter for Discheronizieri Jonathe Emission 1754 Main Wah Nachterine
Resource:	Sea Level Rise Viewer	
Туре:	Digital Tool	Alter Martin Anna Martin
Source:	NOAA	
Description:	Interactive map viewer shows the impact of sea level rise and marsh	
	migration based on inputted scenarios.	

Resource:	Sea Level Curves	No bit of bits a bound for bit of particle to bit of a bits of Add Bandle bits An uncerful of Joh Dia bits for Algority (DD) uncer as JC to for each physical scattering uncerpant of JC
Туре:	Digital Tool	Non-construint Non-con
Source:	U.S Army Corp. of Engineers	Les de la constante de la cons
Description:	Select from various models to find sea level rise prediction curves for a	An example of the second
	specific area.	Team Team
Resource:	Sea Level Rise Projections for Maryland 2023	
Туре:	Website & PDF	
Source	University of Maryland Center for Environmental Science	
Description:	UMCES 2023 report that provides an explanation of the research	
	methodology used along with updated projections of sea level rise in	No Land Yuch-Yuchida to Kupikat 201 The State of the Sta
	Maryland.	
Resource:	Tidal Range & Current Conditions	V monoto ucoli tree neg comenti *
Туре:	Digital Tool	Ameri
Source:	NOAA	
Description:	Provides information from NOAA Stations, including wind speed and	
	direction, and water currents.	
Resource:	Chesapeake Bay Environmental Forecast System	MAXIM MAXIMUM MAXIMUM MAX MAXIMUM MAX
Туре:	Website	
Source:	Virginia Institute of Marine Science	sex-records Table 1 - (Techtore: (1971) CBEPS
Description:	Environmental forecasts, including salinity, temperature, and acidification,	Balance of Heart III Compared Age Environment Forward System Environment Forward System Environment III International Interpretation and production and interpretation and interpretation and interpretation approximation and an and and an and and
	that can assist in evaluating a site for marsh plant and oyster suitability.	
Resource:	Site Assessment Tools	
Туре:	PowerPoint	Living Shoreline Design Training Organized By C. Sicry Hardware, Jr. Danie William
Source:	Virginia Institute of Marine Science	Pre-Workshop Learning Determining Site-Specific Parameters for Living Shoreline Design Presented by Center for Costal Presented by
Description:	Presentation of tools for completing a desktop analysis and site evaluation.	Down Miljam RESARCE MANGAN MI
	The presentation references VA specific websites, but the material	Vigiting Cooldy Zone
	presented regarding desktop analysis and site evaluation is very good.	
Resource:	NOAA Shoreline Website	NOAA Shorolno Webates we we we see some some some some some some some
Туре:	Website/Digital Tools	Contraction Data Contraction Contredifferent Contrediferent Contraction Contraction
Source:	NOAA	SNORELINE ADVILATIONS
Description:	Collection of tools for shoreline change analysis and boundary	Control C
	determination.	Apprendict honory Top Sevences
Resource:	Digital Shoreline Analysis System	DOUTRA COAST Q May 1 for them to de
Type:	Digital Tool (ArcGIS extension download)	Digital Shoreline Analysis System
Source:	NOAA	
Description:	Requires ArcGIS 10.4-10.6; computes rate of shoreline change	Overview The solution strength of a strength distribution of angle solution of a distribution symposized in a sciCD to solver an order for an official size angle solution of a tradyor shall be includyor and a memory in a strength of and angle solution before, solver and an other strength.
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Resource:	National Data Buoy Center	National Data Buoy Center
Туре:	Digital Tool	
Source:	NOAA	
Description:	Provides current and historical data including storm surge, wave	
	frequency and magnitude.	
Resource:	Storm Events Database	
Туре:	Website	
Source:	NOAA	Monome Tax Source (area: Tax Source (ar
Description:	Historical record of storm and significant weather phenomena data	More Staring M
	from January 1950 to October 2022.	Non-Year Tanana Bartan Santa S



Source: Virginia Institute of Marine Science Center for Coastal Resource Management

Design & Construction

Resource:	Designing for Sea Level Rise Case History	
Туре:	Video	DESIGNANCE FOR SEA LEVEL RISE CASE HISTORY ACCOUNT UND TRACET HAVE REACTED AS A LANDAU
Source:	Tim Stromberg, Stromberg, Garrigan & Associates	
Description:	Details regulatory factors and design decisions in re-developing the	
	Ryan Resilience Lab's living shoreline site design to adapt to sea	
	level rise.	
Resource:	Shore Erosion Control Guidelines for Waterfront Property Owners	SHORE EROSION CONTROL
Туре:	Guidance Document	CUIDELINES for WaterFront Property Owners 2 st Edition
Source:	https://dnr.maryland.gov/ccs/Publication/Shoreerostext.pdf	and the second se
Description:	A guidance document for understanding shore erosion and managing	" Second
	shore erosion by designing and installing a marsh (living shoreline)	King and the second sec
Resource:	Living Shoreline Engineering Guidelines (2022 Update)	G strong
Туре:	Guidance Document	Using Observations Engineering Coststations 2002 Updates
Source:	Stevens Institute of Technology	
Description:	Updated engineering guidelines for living shorelines	Constant Constant Constant Constant Constant
Resource:	Living Shoreline Sea-Level Resiliency	
Туре:	Report	Licing Shareline Sea Loved Resiltency Performance and Malarite Performance and Malarite
Source:	Virginia Institute of Marine Science	Year 2 Summary Report
Description:	Evaluation of sand, rock, and plant-based living shorelines to	- CELINGE - CELING
	determine resilience to sea level rise, informs resilient design	bar 1927
	methods.	
Resource:	Living Shoreline Design Alternatives	MMS наменология эксан истор (
Туре:	Website	Centre for Constal Resources Management
Source:	Virginia Institute of Marine Science	
Description:	Overview of three categories of design approaches to living	test instantiation Provide the second seco
	shorelines: non-structural, sills & breakwaters, and shellfish reefs	Suppose Insurant of splot and monitorial states in any low of splot and states an

Plants

Resource: Type: Source: Description:	Planting Considerations for Living Shorelines Video Florida Sea Grant Information for installing marsh vegetation.**Note: this video contains information on planting both marshes and mangroves, however, mangroves are not relevant to Maryland.	
Resource: Type: Source: Description:	Field Guide to Virginia Salt and Brackish Marsh Plants Guidance Document Virginia Institute of Marine Science Printable, illustrated field guide that includes color photographs for identification, marsh planting zone, plant height, and bloom period	Field Guide to Virginia Salt and Brackish Marsh Plants
Resource: Type: Source: Description:	Plants for Freshwater MarshWebsiteVirginia Institute of Marine ScienceLists common plants found in Virginia's tidal freshwater marshes andincludes color photos and descriptions.	
Resource: Type: Source: Description:	Maryland Invasive Plant Species List PDF Maryland Department of Agriculture Current list of invasive species identified by the Maryland Department of Agriculture as posing a threat to Maryland's forests, marshes, wetlands, and waterways.	Figure 1 Figure 1 1
Resource: Type: Source: Description:	Submerged Aquatic Vegetation Website Maryland Department of Natural Resources Information regarding SAV in Maryland, including the importance of SAV, Identification, Coverage, Permits and Regulations.	
Resource: Type: Source: Description:	Submerged Aquatic Vegetation Identification GuidePDFMaryland Department of Natural ResourcesIdentification guide with species listed alphabetically by common name.Color photos of each plant. Dichotomous key included.	Boy Cross Identification Key March Analysis and an and March Analysis and an and March Analysis and Analysis and Analysis

Resource: Type: Source: Description: Resource:	Submerged Aquatic Vegetation Pocket Guide PDF Chesapeake Bay Trust A good pocket guide for SAV identification. Plants of Maryland's Salt Marshes PDF	
Type: Source: Description: Marshes.	PDF Maryland Native Pant Society A brief overview of common plants that can be found in Maryland Salt	
Resource: Type: Source: Description:	Delaware Wetland Plant Field Guide PDF Delaware Department of Natural Resources and Environmental Control Downloadable field guide with color photos, includes native and some non- native plants. Note: Species listed as native for Delaware may not also be native to Maryland	The Delaware Wetland Plant Field Guille
Resource: Type: Source: Description:	Wetland Plant Catalog PDF Environmental Concern Wholesale plant catalog, includes plant size, water & salinity tolerance, and notes	
Resource: Type: Source: Description:	Wetland Species List Website Wetland Plants Inc Searchable plant list with growing conditions	
Resource: Type: Source: Description:	Herbaceous Tidal Wetland Communities of Maryland's Eastern Shore PDF Maryland Department of Natural Resources Describes 14 different tidal wetland communities within the herbaceous tidal wetlands of Maryland's Eastern Shore. Includes reference sites for each community.	Encode State
Resource: Type: Source: Description:	Common Marsh Plants of the United States and Canada PDF United States Geological Survey Identification guide with good illustrations. Plants group by growth characteristics.	COMMON MARSH FLANTS OF THE UNETED BLAND CAMARA OF THE UNETED BLAND CAMARA Device the Unit of the Unit

	Ranting for Using Shorelines, from MC Using Shareline Prolining for Marine Construction Anglesionals, North Carolina Constal Federation and Sealinest North Carolina, Spring 2015
Resource: Planting Guidance	Choose Appropriate Vegetation Choose Appropriate Vegetation Geographic Locifors are identicated to the state of the state
Type: PDF	Plants: use only hat they, where plans with statistical database provides and the statistical database
Source: North Carolina Coastal Federation	Indexes the initial initial and initial initia initial initial initial initial initial initial initial
Description : Information on plants, planting techniques, tools, and timing.	bit is defined as an explored and a set of the set o



Depiction contrasting living shorelines. Courtesy of Frank McShane in collaboration with Partnership for the Delaware Estuary Inc.

Permitting

Resource:	Maryland Living Shoreline Protection Act	
Туре:	PDF	CLAPTER 594 CHAPTER 594 discus NRI 475 AS NT conversion
Source:	Maryland Department of Natural Resources	POR the particular distribution and an approximation particular to include methylence search of hospital and particular with the association areas interplanes, meaning the Dispersions of the Dispersion and the original and the Dispersion of the Dispersion and the Dispersion of the Application is united as a second particular to the the Application and the Application and the Application of the Application and the Applicatio
Description:	2008 Maryland law which specifically requires shoreline property owners	And a set of the Mental of Set Applement (Mental Set Applement) (Men
	to utilize living shorelines as the preferred method to prevent erosion,	c) sharing any trace strain Biochemistica Changeland and Biochemistica and a strain strain and a strain strain and a strain s
	unless they can prove that these methods won't work on their property.	MERSION, and a second processing processing of the procession o
Resource:	Annotated Code of Maryland's Living Shorelines Regulations	Even on a later section some til nor effektiveren er en
Туре:	PDF	Annual Hand Yorking Annual Hand Yorking Annual Yorking
Source:	Maryland Department of the Environment	S. The Spectra data for solution and photod activation, statistication, de Statisticatistication, de Statisticatistication, de Statisticatist
Description:	Maryland tidal wetland regulations for living shorelines (2013)	Angeleration A
Resource:	Maryland State Programmatic General Permit - 6	Reduction Segments Concellutes
Туре:	PDF	t 5. Knop Cognetifications
Source:	U.S. Army Corp. of Engineers	MARYLAND STATE PROCRAMMATIC GENERAL PREMIT-4 (MDSFGF4)
Description:	U.S. Army Corp. of Engineers regulations regarding activities in	
	jurisdictional waters of Maryland (Living Shorelines, page 57)	
Resource:	Joint Permit Application for the Alteration of any Tidal Wetland and /	Big of the second access and the second access and the second access and the second access and the second access
	or Tidal Waters in Maryland	
Туре:	PDF	International Control of Control
Source:	Maryland Department of the Environment	A Parket Research
Description:	Downloadable, fillable permit application	$\label{eq:second} \begin{array}{c} \label{eq:second} \mbox{Transmitter} Tr$
Resource:	Instruction Booklet for the Joint Permit Application for the Alteration	
	of any Tidal Wetland and / or Tidal Waters in Maryland	INSTRUCTION BOOKLET
Туре:	PDF	Borthe Alteration of any Tolk Welland and/or Tidal Waters in Maryland
Source:	Maryland Department of the Environment	Star 1 1 1 March
Description:	Line by line instructions for the Joint Permit Application including sample	Manjara Apartment of the Enclosured
	activity guidelines and drawings.	Frances Provinces Pr
Bosourco:	Tidal Wotland Pormits, Liconsos and Cortifications	
Type:		
source.	Maryland Department of the Environment	RDBBD.
Description		sub-relations baseling de Welscheide and Wessenage Andreader Fragmen at al al Marin Millande, basele Laura I, y de basel d'Arbeit, febrie Sterier, des pays nam 2019 a manuel. The pays of the community of physics
Description:	Vebsite portal with links to all of the forms required as part of a Joint Permit Application. Includes Living Shoreline Waiver form, Buffer Notification Form, and Buffer Management Plans.	

Resource:	Critical Area Commission Shore Erosion Control	Loter sauch sees
Туре:	Website	Department o
Source:	Maryland Department of Natural Resources	Mile He Av Bulle He Hereiter Bermader Hereiter
Description:	Links to Buffer Notification Form, Buffer Management Plan Checklist, and the Critical Area Information Sheet and Mitigation Calculator	Break Source Control Set Source Control Set Source Control Set Source August Control August Control August Control Con
Resource:	Critical Area Commission	en andere andere
Туре:	Website	Department of
Source:	Maryland Department of Natural Resources	ana persona Mere dan Ana An Min Andrewson
Description:	Information about the Critical Area Commission with links to fact	Restricted (Receptor)
	sheets and publications.	
Resource:	The Green Book for the Buffer	,
Туре:	PDF	
Source:	Maryland Department of Natural Resources	
Description:	An overview of Maryland's Critical Area Program with information	
	about the Critical Area Buffer regulations and creating a Buffer	
	Management Plan. Includes a section on buffer maintenance.	
Resource:	Critical Area Buffer Resources Guide	
Туре:	PDF	
Source:	Maryland Department of Natural Resources	
Description:	A step by step guide to the MD Critical Area buffer regulations and	
	creating a Buffer Management Plan. Includes many clarification slides	
	and sample Buffer Management Plans,	
Resource:	3.18 Tidal Wetland Licenses and Permits	

3.18 Tidal Wetland Licenses and Permits
PDF
Maryland Department of the Environment
A document that explains what triggers the need for a permit, why a
permit is required, what laws that apply to the permitting process.

Resource:	Supplemental Living Shoreline Checklist
Туре:	PDF
Source:	Maryland Department of the Environment
Description:	Checklists that outline additional information that may be required
	based on the project or project site.









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Ту Sc De



Type:

Source:

Description:

Resource:	General Permit Flowchart	Average of the law to react (a second s
Туре:	PDF	
Source:	Chesapeake Bay Landscape Professional Program	
Description:	A flowchart outlining the review processes associated with Maryland	
	permitting for living shorelines.	
Resource:	Corps of Engineers MD Permit Process Flowchart	
Туре:	PDF	
Source:	Chesapeake Bay Landscape Professional Program	
Description:	A flowchart outlining the review processes associated with the Corps of	
	Engineers in Maryland	
Resource:	Wetlands and Waterways Protection Program Directory	
Туре:	Website	Wetlands and Waterways Protection Program Directory
Source:	Maryland Department of the Environment	dec/decade Autoritation Auto
Description:	Provides contact information for MDE staff, including county regulators.	Non-Section Designation and section (Section Section (Section Section (Section Section (Section Section (Section Section Secti
Basauraa	National ESA Critical Habitat Mannar	
Type:		Find A Species Fishing & Section Protecting Merice Uts Environment: Regions Researces & Services Adore Ut
Type.		National ESA Critical Habitat Mapper Al evalute special data of calcul abilitat proposed and designeted by NGA-Ritheries under the Endergrend Species Act.
Source:	Interactive menning to identify critical babitat and endengaged energies	Negeliadas 2 Geolotadas 2 Vegelianos Versitos Versitos
Description.	interactive mapping to identify chical habitat and endangered species	The Statistical Society Control Linking C
Resource:	Essential Fish Habitat Mapper	Scatth BOLAL Federates Q
Туре:	Website/Digital Tool	eroners Essential Fish Habitat Mapper
Source:	NOAA	net on wapen as measure own on reverging opport in transfer insystems, we prove new papering measure, including they management gives, and the ability to download CD data.
Description:	Mapping tool to identify geographic information on managed fish	Mag Toorral Too one-of-a hind tool allows stars to doctown where managed fish species spaws, gives or him in a docen busine met allow doct and allows and a species and allow doct and allows that the species of doctometer and allows that allower that the species of doctometer and allower and al
	species and habitat areas of particular concern	In opporte does not not been and the second
Resource:	USFWS Information for Planning and Consultation	ELECTRONOM Participants of Consultation
Туре:	Website/Digital Tool	IPaC is a project planning tool that streamlines the USFWS environmental review process
Source:	NOAA	
Description:	Project planning tool, videos and FAQ for the environmental review	Integrate the environmental review process into your project design
	process	Q ddy, ond anly derify 1998 magnitroscense, or a generic invancement or for proper
Resource:	Section 7 Consultations in the Greater Atlantic Region	
Туре:	Website	Back Constitutions in the Greater Atlantic Region
Source:	NOAA	sectors and the charagenet specers and and the the procedures the federal incorporation to conserve federally loted species and designates constributions.
Description:	Information on federal agency consultations relating to the	Versional Version Vers
	Endangered Species Act	 1 se kontré Schapendou 1 segurit Sket

Resource:	Marine Contractors Licensing Board		
Туре:	Website	Department of th	e Enderson () en la carda da se la carda
Source:	Maryland Department of the Environment	Marco Francisco Antonio Marco Francisco Marco Marco Marco Marco Marco Decembro del Alternativo	The Production Control Concerns to Concerns up and other the Control Concerns the Control Concerns the Concer
Description:	Information about obtaining a Marine Contractors License and renewal	Hell Handra de Laboration Rec. Mel para en el Altonomy America internation de la confessione de la confession de la confession de la confession de la confession de la confession	An example of the second secon
	requirements	Frequelly Mand Settings	white an advancement is a service and an area that in Appl. When a service and a white have a service and and a service at a service and and a service and a service and a service and a service a service and and a service at a service and and a service and a service and a service and service a service and a service at a service and and a service and and a service and a service and service a service and a service at a service and and the an advance and a service and a service and service and a service and a service and a service and and the an advance and a service and a service and service and a service and a service and a service and and the an advance and a service and a service and service and a service and a service and a service and and the an advance and a service and a service and service and a service and a service and a service and and the an advance and a service and a service and service and a service and a service and a service and a service and and a service a
Resource:	Marine Contractors License Application		60
Resource: Type:	Marine Contractors License Application Website	Department of D	tanonat Parise Contractors Ucontag Baard
Resource: Type: Source:	Marine Contractors License Application Website Maryland Department of the Environment		Research
Resource: Type: Source: Description:	Marine Contractors License Application Website Maryland Department of the Environment Information regarding licensing categories, application form,		Comment Comme



All tidal wetlands which are subject to regular or periodic tidal actions and support aquatic growth (i.e., wetland vegetation) occurring landward of the MHWL are considered private tidal wetlands. Private tidal wetlands are privately-owned but are still regulated by MDE. State and private tidal wetlands are regulated similarly; however they require different types of authorizations for proposed impacts. Additionally, nontidal wetlands that may exist landward of the MHHWL that are regularly or periodically influenced by tidal waters can by definition be classified as significant plant or wildlife value and any impacts would need to be authorized by a nontidal wetlands permit.

Maintenance & Monitoring

Resource:	Maintaining Your Shoreline Stabilization Practice	
Type: Source: Description:	Guidance Document Maryland Department of Environment Provides information on maintaining different types of shoreline stabilization projects including non-structural (e.g., beach nourishment, slope grading and terracing, marsh creation) and structural (e.g., revetment, bulkheads, jetties and groins).	<image/> <image/> <image/> <image/> <image/> <text><text><text><text><text><text><text><text><text></text></text></text></text></text></text></text></text></text>
Resource:	Neighborhood Wetland Stewardship: Project Management Manual	Neighborhood Wetland Stewardship: Project Managenet Manual
Type:	Guidance Document	
Description:	Provides information on available resources, project planning, site plan development, permitting, material acquisition, volunteer recruitment, and monitoring.	Ladiyette Wetlandt Partnership
Resource:	Six Steps to Create Your Living Shoreline	Living Shoreline Checklist
Туре:	Website/PDF	Control for Lucy of the Lucs Control for Lucy of the Lucs Control for Lucy of the Lucs Control for Lucs Control fo
Source: Description:	Chesapeake Bay Foundation List breaking down steps for a homeowner to design, permit, install, and maintain a living shoreline	Second
Resource:	Living Shoreline Maintenance and Troubleshooting	
Туре:	Website	
Source:	Delaware Living Shoreline Committee	and all the second
Description: living shoreline	Provides a list of common problems that could occur after installation of and solutions to those problems.	Image: Section of the section of t

Resource:	Fillable Marsh Maintenance Report Form
Туре:	PDF
Source:	Maryland Department of the Environment
Description:	The annual Marsh Monitoring Report as a fillable PDF document.



Funding

Resource:	Living Shorelines Funding & Incentives	
Type:	Websile Mendend Department of the Environment	Department of the Exercisence of Exe
Description	A hyperlinked list of direct funding opportunities or incentive programs	Acad National Stream Stre Stream Stream Stre
Description.	available to property owners in Maryland	Arean
Resource:	Anne Arundel County Marsh Grasses Program	to to a to sense three
Туре:	Website	The second secon
Source:	Anne Arundel County Government	
Description:	Information and application link for Anne Arundel County residents to	Now We want the second
	receive appropriate emergent marsh grasses.	no orașene Sinte - Abret
Resource:	MDNR Shoreline Erosion Loan Program	
Туре:	Website	Department of Natural Resources
Source:	Maryland Department of Natural Resources	esteure Shoreline Erosion Loan Program merie State and the state of t
Description :	Information about the MDDNR Shoreline Erosion Loan Program with a link	41 Junit Americanistica 12 Junit and antidation sequence 42 Junit Americanistica 12 Junit and antidation sequence 42 Junit Americanistica 12 Junit and antidation sequence 42 Junit Americanistica 12 Junit Americanistica 43 Junit Americanistica 12 Junit Americanistica 44 Junit Americanistica 12 Junit Americanistica 45 Junit Americanistica 12 Junit Americanistica 45 Junit Americanistica 12 Junit Americanistica
	to the loan application portal.	Administra
Resource:	MDNR Grants Gateway	,
Туре:	Website	Department of Natural Resources
Source:	Maryland Department of Natural Resources	Marcing Applies/Literal Million and Intermediate American Amer
Description:	A single point of entry through the Grants Gateway for organizations	Name (BM) major of communication participants and an explore the sector participant and an explore the sector participant and and any sector participants and and any sector participants and any sector partipants any sector participants and any sector participants and an
	seeking technical and financial assistance.	Instanti Linka nati sakali na fulsi pikang nati pikang na sakali na fulsi pikang nati pikang na sakali na fulsi pikang na sakali pikang na sakali pikang na sakali pikang
Resource:	Watershed Assistance Grant Program	
Туре:	Website	
Source:	Chesapeake Bay Trust	Watershed Assistance Grant Program
Description:	Access portal for the Watershed Assistance Grant Program which	The second
	provides approved applicants support for watershed restoration project	An engine service devices a service scalar is a classe of the engine service devices of the
	designs and permitting.	
Resource:	Resiliency through Restoration Initiative	
Туре:	Website	Annual Contraction of Contractions
Source:	Maryland Department of Natural Resources	Initiative Initiative advantage advantag
Description:	Information regarding financial assistance through the Grants	No Carefordinaren (Norte) No Carefordinaren (Norte) OS Saturbian Saturbian
	Gateway to fund nature-based solutions (Outcome 3).	Examples desse: Nations Nations Defenses who Defenses

Resource:	Nature Based Solutions Funding Database	Nature-based Solutions Funding Database
Туре:	Website	
Source:	National Wildlife Federation	Garge (* 3.) species of species (* 3.) species (* 3.) species (* 3.) Galactic
Description:	The Nation Wildlife Federation's interactive database of programs for	PRODUCTS Concerns from the second sec
	communities interested in federal funding and/or technical assistance.	

Resources for Homeowners & Clients

Resource:	Living Shoreline Outreach Implementation Plan	LIVING
Туре:	PDF	SHORELINE
Source:	Chesapeake Bay Program	Checopeake Bay Program
Description:	Bay-wide resource that includes talking points and strategies for	
	discussing living shorelines.	۶.
Resource:	Living Shorelines: Better for Property Owners and the Environment	Researcher: Encycline Stangen
Туре:	PDF	weightening selphening beversense Chevanates Berger Chevanates Ber
Source:	Virginia Institute of Marine Science	2,51610976 And 2010 A Barry State Services And 2010 Barry State Se
Description:	Brochure that provides information on living shorelines and	Frankrige execution execution and an execution and an execution because because
	benefits to property owners.	and the state of t
Resource:	Baysmart – A Citizen's Guide to Maryland's Critical Area Program	Bay Smart
Туре:	PDF	Chains announ
Source:	Maryland Department of Natural Resources	
Description:	A comprehensive overview of the MD Critical Area program.	A CONTRA T GUILT IN ANTICANT CONTRACT ANTA PAGENA
Resource:	Natural & Structural Measures for Shoreline Stabilization	SACE SACE
Туре:	PDF	Natural and Distribution
Source:	SAGE	Stablazion e
Description:	Brochure providing an overview of various shoreline stabilization methods.	
Resource:	Tidal Wetland Restoration	LYNNHAVEN RIVER Tidal Wetland Restoration Tidal Wetland Restoration
Туре:	PDF	
Source:	Lynnhaven River NOW	A set of the set of th
Description:	Brochure for homeowners with information on tidal wetlands and living shorelines.	
Resource:	Waterfront Homeowners Fight Erosion with Living Shorelines	
Туре:	Video	
Source:	Chesapeake Bay Foundation	
Description:	Testimonial video from homeowners throughout Hampton Roads.	
Resource:	Living Shoreline Success on the Eastern Branch of the	
	Elizabeth River	
Туре:	Video	
Source:	Elizabeth River Project / Wetlands Watch	
Description:	Testimonial video from a Norfolk homeowner	

20 Living Shorelines Key References: Maryland

Resource:	Living Shoreline Poster	LIVING SHORELINES ® ® • • •
Туре:	PDF	
Source:	New York Sea Grant	
Description:	Visual overview of a residential property, showing a whole-property approach to maximizing ecological and runoff reduction benefits.	
Resource:	Living Shorelines for the Chesapeake Bay Watershed	
Source:	Chesapeake Bay Foundation	
Description:	12-page brochure for homeowners explaining the benefits of living shorelines.	
Resource:	Living Shorelines	
Resource: Type:	<u>Living Shorelines</u> Website	Digantiment of Natural Resources
Resource: Type: Source:	<u>Living Shorelines</u> Website Maryland Department of Natural Resources	Comparison C
Resource: Type: Source: Description:	Living Shorelines Website Maryland Department of Natural Resources General informational website with links to request technical assistance, Living Shorelines laws, funding options, and frequently asked questions.	Image: State of the state o
Resource: Type: Source: Description:	Living Shorelines Website Maryland Department of Natural Resources General informational website with links to request technical assistance, Living Shorelines laws, funding options, and frequently asked questions.	Image: Section of the section of t
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Resource: Type: Source: Description: Resource: Type:	Living Shorelines Website Maryland Department of Natural Resources General informational website with links to request technical assistance, Living Shorelines laws, funding options, and frequently asked questions. Living Shorelines Academy Website	
Resource: Type: Source: Description: Resource: Type: Source:	Living Shorelines Website Maryland Department of Natural Resources General informational website with links to request technical assistance, Living Shorelines laws, funding options, and frequently asked questions. Living Shorelines Academy Website Restore America's Estuaries & North Carolina Coastal Federation	<complex-block></complex-block>

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