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Karen Duhring
Virginia Institute of Marine Science

Julie Bradshaw
Virginia Institute of Marine Science

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Development of a Coastal Resources Certificate Program for Marine Contractors & Consultants

Karen A. Duhring & Julie G. Bradshaw



October 2013

College of William & Mary
Creative Adaptation Fund - Project Report



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Virginia Institute of Marine Science – Center for Coastal Resources Management

October 2013

**College of William & Mary
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Abstract

The Center for Coastal Resources Management at VIMS has been engaged with continuing education and training for a mixed audience over the past 35 years. Marine contractors and consultants play an important role in the evolving field of tidal shoreline management. This Creative Adaptation Fund project investigated the unique training needs of this private sector audience and attempted to define the best format and delivery for a Coastal Resources Certificate Program. It was determined that training needs for shoreline professionals can be met with a multi-day short course that includes both classroom and field settings. This private sector audience expressed a willingness to pay for training that is comparable to estimated course tuition. Supplemental funds may still be necessary to support all program costs. The proposed pilot course has not been held yet because essential course content and revisions to the training manual are still underway. We are also pursuing a broader public-private partnership that supports and endorses the course and its contents to enhance the credibility and popularity of the certificate program.

Background

The College's Virginia Institute of Marine Science (VIMS) has an ongoing role as the Commonwealth's advisor on marine science matters. This advisory mission is exemplified by the guidance long provided by the VIMS Center for Coastal Resources Management (CCRM) for the sustainable management of tidal shorelines. Outreach education, an important component of this state-mandated role, has only been modestly funded by state and federal grants. Funding for the advisory program in general has become ever more difficult to obtain.

Traditionally, CCRM outreach education programs have been directed primarily toward state and local governments with limited budgets and provided essentially free of charge, with support from the Virginia Coastal Zone Management program and other funding partners. Additional stakeholder groups are invited to participate, which results in a mixed audience of government regulators, non-governmental organizations, and private sector marine contractors and consultants. Typically no formal continuing education credits are granted, no examinations are required, and there is no formal record or recognition of who attended the outreach education programs.

One of the current focus areas for CCRM outreach education and training are tidal shoreline best management practices. “Living shoreline” practices that incorporate bio-engineering and living resources as project components are now the preferred alternatives for tidal shoreline stabilization in the Commonwealth (Code of VA § 28.2-104.1). Even though outreach efforts for this subject have been ongoing since 2006 and public demand is growing, many contractors and consultants still do not have the experience or qualifications needed to accomplish environmentally preferred techniques.

Shoreline property owners often seek qualified marine contractors and consultants to design, obtain permits for, and build shoreline projects such as piers, erosion control projects, navigation improvements, and other water-dependent development. Case study reviews indicate that many property owners seek advice from marine contractors and consultants first, with plans for shoreline stabilization developed privately between the two parties prior to initiating the permit process (Mason & Tombleson, 2013). This means that property owners have a vested interest and sometimes financial commitment prior to environmental permit reviews by regulatory agencies. It has proven to be difficult to re-direct privately negotiated projects to more environmentally friendly methods after they have entered the regulatory process (CCRM, 2012).

In order to increase the number of private businesses with living shoreline expertise and to help satisfy a growing public demand for living shoreline projects, special training programs were organized by VIMS solely for shoreline professionals (Hardaway et al 2010). These previous training efforts in 2005 and 2010 were limited in scope because they depended on grant funding. After these events it became apparent that one full day was not sufficient to cover all of the necessary material and provide meaningful classroom and field practicums. Subsequent grant proposals to expand and continue this training have not been successful.

The College of William & Mary’s Creative Adaptation Fund provided inspiration and support for CCRM to further investigate how an effective Coastal Resources Certificate Program could be structured for marine contractors and consultants (shoreline professionals). We wanted to determine if existing VIMS training and outreach materials designed for shoreline professionals actually meet their training needs. Rather than provide training almost free of charge to private businesses, this project focused on a fee-based program to determine if a financially self-sustaining education program could be developed. In addition to potentially providing a source of revenue, this would improve the education program for better-informed contractors and consultants trained in the environmentally-preferred approaches to dealing with shoreline erosion, coastal storms, and water access.

Training Needs Assessment

The first project phase was to evaluate the current training needs and preferred delivery options for this particular target audience using several sources. The materials reviewed included: 1) previous VIMS training and outreach programs for shoreline professionals; 2) workshop evaluation surveys with requests for future training topics; 3) professional continuing education requirements for this industry; and 4) similar model courses and training programs for landscape and shoreline professionals. An on-line survey was also conducted to solicit input directly from practicing shoreline professionals in the Tidewater Virginia region.

Previous VIMS training & outreach programs for shoreline professionals have included large workshops with living shorelines as the theme, small 1-day classes, and both static and interactive on-line courses. A multi-day course with field exercises has also been proposed but not funded.

2005	Special forum for marine construction community
2006	Living Shorelines Summit (shore professionals = 18%)
2008	Living Shorelines Education Course for Project Designers & Contractors – static on-line course
2008	Living Shorelines theme workshop & on-line survey
2010	Living Shorelines Design Manual & Courses (2) – small classroom settings
2010	Living Shorelines web site updates & user feedback
2011	Living Shoreline Training & Education Forum for Marine Contractors (proposal)
2013	Shoreline Best Management Practices – interactive on-line course

Model courses & training programs for landscape and shoreline professionals have been established in other states. The format, content, and tuition of these courses were reviewed and compared to the existing VIMS program to determine how the proposed certificate course should be structured (Appendix A).

- Certified Natural Shoreline Professionals course, *Michigan State University Extension*
- Improving Shoreline Habitat and Buffer Functions, *MD Critical Area Commission & MD Coastal Training Program*
- Environmental Landscape Management Certificate, *Anne Arundel Community College MD*
- Forest Conservation Qualified Professional Training, *Carroll Community College, Westminster, MD*
- Principles of Successful Sustainable Landscapes: Specification, Installation, and Maintenance, *University of Texas*
- Native Plant Gardening Certificate Program, *University of Texas*

Training needs survey - Training needs assessments usually include direct solicitation of opinions and ideas from the target training group. For this project, an on-line survey instrument was developed with cooperation from the Coastal Training Coordinator at the Chesapeake Bay National Estuarine Research Reserve (CBNERRVA). This project's survey was declared exempt from formal review by the College's Protection of Human Subjects Committee (PHSC) (Appendix B).

The survey questions included how a shoreline professional certificate course should be structured, what are the most important topics, and what type of venue or delivery mechanism is preferred to receive training. A list of potential survey participants was then generated by cross-referencing CCRM mailing lists and public permit records. A survey invitation was distributed via e-mail to 256 individuals representing at least 137 named private companies who are known to be involved with tidal shoreline or marine related construction in Tidewater Virginia. Participants were given 10 business days to complete the survey. Survey responses were received and tallied from 46 individuals (20%).

One of the first considerations is whether these professionals are even interested in more training. While a majority expressed interest in future training opportunities, they do not appear to be losing job opportunities due to lack of skills and experience. For the few who have turned down job offers because they were not trained for a particular kind of shoreline work, the main reason given was a lack of experience with the design and construction of living shorelines.

Some previous assumptions about how training should be formatted were validated by the survey responses. The preferred duration for training is 1 to 3 separate days in a year regardless of format. This supports the VIMS assumption that more than 1 day is necessary to cover all relevant material, plus this is how the model courses are structured. The desired topics for content cover a wide range of material as expected from basic shoreline ecology to design/build instructions, to monitoring and maintenance protocols. Living shorelines was one of the top three topics respondents would like covered in future training sessions.

Shoreline management is very site-specific. There was a strong preference for real world case studies and field experiences, rather than emphasizing theoretical situations which was the focus of some previous outreach content. This training need was also expressed repeatedly in other workshop and class evaluation surveys. Instruction from experienced peer practitioners is another element supported by the survey responses.

A semi-formal certificate element was also validated by the survey responses. A large majority of the respondents (82%) think a certified program or a course certificate that provides official recognition of participation is either very important or somewhat important. This was also an expected result based on previous surveys and the model courses. The typical requirement to earn a certificate is for the course to include an examination or some other demonstration the material covered has been adequately learned and can be successfully applied. There has long been a public demand for lists of qualified contractors, but no agency or institution has been willing or able to produce and maintain a list of those professionals. Private sector companies and individuals may benefit if their names are included on a list of qualified shoreline professionals made widely available to potential customers.

Unexpected survey results included a desire for instructors from state and federal regulatory staff, who have traditionally not been involved with outreach education and training. Apparently there is a need for information and clarification about the regulations and permit process, which indicates that future courses should not be limited to technical design and construction lessons. Another surprising result is the apparent preference for a traditional classroom and field trip setting, rather than modern on-line formats. While self-paced on-line instruction is acceptable to just over half the respondents, there appears to be less interest in interactive on-line courses, webinars, and hands-on computer training.

Willingness to pay for training

These private sector professionals reported what type of training they have participated in the past and how much those training sessions cost. They were also asked how much they are willing to pay for future training sessions. Most of them had completed some type of previous training, and almost all of this training was low- or no-cost training offered by VIMS or local governments. For other training, the costs paid were mostly over \$100 but less than \$300 per session. Only three respondents indicated they paid more than \$300 for past training.

The model courses for shoreline professionals in other states have variable tuitions, but on average the charge is about \$80-\$100 per day of classroom and field instruction. It is unclear whether this pricing is acceptable and the classes fill up easily, or if the tuition is a deterrent. This project's survey also inquired about willingness to pay for future training to compare to these established tuition rates. Half of the respondents were unwilling to pay more than \$100, with another third (38.6%) willing to pay over \$100 but less than \$300 for each session.

Project Outcome

The combined results from the training needs assessment indicate the existing VIMS training program is on the right track, but not completely sufficient to satisfy the needs of shoreline professionals. The suggested improvements to the VIMS training program include:

- The course timeframe needs to be more than one day to cover all relevant material and allow for field experiences
- Small class size with training opportunities at multiple regional locations
- Field site visits to real project locations, in addition to classroom learning
- Updated catalog of real life case studies for each region, less emphasis on theoretical examples and on-line tools
- More than one type of instructor
- Update reference manual
- Broader support network to endorse certificate holders

The new proposed certificate program for marine contractors and consultants now includes the following elements:

Course Title: Coastal Resources Certificate Program for Marine Contractors & Consultants

Locations: Regional venues within Tidewater VA, i.e. Eastern Shore, Southside-East (VA Beach-Norfolk-Chesapeake); Southside-West, Peninsula, Middle Peninsula, Northern Neck, Northern Virginia, Richmond Metro

Cost: To Be Determined

Days 1 & 2 – Classroom Instruction Full day curriculum with Academic, Regulatory & Peer Instructors

1. **Shoreline ecosystem** – shoreline evolution; ecosystem services; roles for living shoreline projects in shore protection, water quality, habitat restoration
2. **Site evaluation process** – how to collect data for upland land use, riparian buffer, tidal shoreline, shallow waters; tidal benchmarks & tide stations; field evaluation, shoreline and tidal marsh inventories, other GIS tools
3. **Choosing alternatives** – how to apply collected data to choose alternative(s); how to determine scale and location of bioengineered components, i.e. riparian buffer, bank grading, planted tidal marsh, beach nourishment, stone sills
4. **Design standards** – performance related design considerations based on expected wave climate, growing conditions, and regulatory expectations; real case studies used as examples (regional)
5. **Plants & planting** – native plants for riparian buffers and tidal marshes; how to estimate quantities; living shoreline landscape designs (integrated riparian buffers & tidal marshes)
6. **Permit process** – local, state, and federal permit process; new laws, policies, and regulatory expectations; permit process challenges & potential improvements

Day 3 – Field Practicum

On day three of the training, students will visit living shoreline case study projects in the field and participate in a group project design exercise. The number of sites visited will vary by regional location, but will include 1 or 2 finished projects with the property owners and/or their contractor present to share their experiences. Another shoreline location will be selected for the class to work through the shoreline evaluation and project design process.

Working as teams or individuals, the class will decide which living shoreline erosion protection alternative is most suitable and will prepare proposed project designs. The groups will then review and discuss each other's designs. No actual project construction will be conducted, unless there is a coincidental opportunity for the class to participate in a local living shoreline project construction, planting, or maintenance activity.

Completion Requirements & Credits

This is a non-credit course intended to provide continuing education training and transfer of knowledge related to the practice and regulation of shoreline management. Students will retain all course materials for future reference, including a course manual designed for field use. To receive a certificate of completion, participation in all classroom and field sessions and a passing grade on a final exam will be required. The final examination will require students to demonstrate an understanding and ability to design and construct shoreline practices that incorporate living habitat elements.

Holding a certificate from this program will identify businesses and employees as having successfully completed training in the use of green landscaping techniques and bioengineered erosion control for the protection of Virginia's tidal shorelines. Certificate holders will be included on an official web-based list of Qualified Shoreline Professionals, plus this list will be made available to other regulatory and non-governmental organizations to post on their web sites.

Shoreline professionals may already be certified as competent in one or more other areas of expertise and these certifications may require continuing education credits (CEU) to be earned annually. This course will provide training that helps gain additional experience and possibly CEU credits to demonstrate competency to practice as a certified professional in these other fields. The process of requesting CEU credits from various professional organizations will be completed once the proposed Coastal Resources course content and number of lecture hours is finalized. These professional affiliations include:

- Certified Professional Soil Scientists - VA Dept of Professional Regulation
- Certified Wetland Professionals - VA Dept of Professional Regulation
- Certified Geologists - VA Dept of Professional Regulation
- Virginia Certified Horticulturist – VA Nursery & Landscape Association
- Virginia Association of Floodplain Managers
- American Institute of Certified Planners AICP
- Professional Engineers
- Land Surveyors
- Landscape Architects

Summary - Course Implementation Plan

This Creative Adaptation Fund project resulted in a training needs assessment and proposed course outline for the development of a Coastal Resources Certificate Program for Marine Contractors and Consultants. Although executing a pilot course was also proposed, development of the course content and reference manual updates are still underway. This is partially due to the fact that major living shoreline policies and programs that directly affect marine contractors and consultants were recently revised or re-directed. In August 2013, the US Army Corps of Engineers announced changes to Regional Permit 19 (13-RP-19) to specifically include living shoreline projects, which will help streamline the federal permit review process.

A parallel effort is underway at the state level to develop a General Permit for living shorelines, and this was a major impetus for developing this certificate program. This effort was recently put on hold due to an opinion by the Commonwealth's Attorney General related to local government authority. Since the regulatory process is an important training topic for shoreline professionals, the Permit Process section of the course needed to be re-directed to cover current permit guidance & review processes at the local, state, and federal levels. If a state-level General Permit for living shorelines is eventually authorized, then this section will need to be revised accordingly.

The related publication updates for the VIMS Living Shorelines Design Manual are also still under development. In addition to a revised Permit Process section, the training manual needs new sections for plants & planting in both wetland and riparian buffer habitats, bank grading, plus a catalog of regional case studies and grant-funded demonstration projects. The catalog of public demonstration projects has not been updated since 2010 and several new projects are now complete and accessible for classroom and field training opportunities. A review of innovative techniques is also underway for the design standards section, such as oyster reef sills, oyster-concrete products, floating wetlands, and submerged wave attenuation devices.

The needs assessment and model courses suggest that the program instructors should not be limited to academic institutions like the College and VIMS. Regulatory staff and experienced peer practitioners were also identified as desirable instructors, although these parties have not traditionally performed this role. The 2011 VIMS living shoreline design course proposal included peer instructors because direct experiences are a valuable addition to the program. Sharing the instructor role with others potentially moves this training program away from opportunities to generate revenues solely for the College. The course will have more credibility if the number of CEU credits to be earned from various professional organizations is pre-determined. This process is also still pending.

In fact, the project findings suggest that a broader network of supporting organizations might make the course investment more attractive to potential students. These partners can help leverage existing resources being applied to similar certification programs. They can facilitate logistics for regional venues, provide access to demonstration sites, make local contractor connections, and they might have qualified instructors to help meet the demand for multiple regional training sessions.

CCRM is also engaged with new initiatives that this course program should be consistent and perhaps affiliated with, such as the Chesapeake Bay Sustainable Landscape Certification Program and the Virginia Native Plant Marketing Partnership (multiple organizations). Joining forces with these additional partners will help integrate contract and job opportunities between landscape and marine contractor companies that can work together to design, build, and maintain living shoreline projects.

If future training sessions are 2 – 3 days, the tuition needed for a fee-based program may exceed the majority's willingness to pay and supplemental funding may be necessary. With so few responses in the 2013 project survey, however, we hesitate to conclude that these findings are representative of the entire community of shoreline professionals. If there is a shortfall, then we plan to pursue supplemental funding through grants, industry sponsors, and other potential funding partners.

Altogether, while shoreline professionals are willing to pay much of the expected tuition, there is no strong indication that a financially self-sustaining education program is feasible at this time. We will continue to work on executing the course as proposed and will further evaluate how to balance the professionals' willingness to pay with the actual costs of planning and administering a certificate program for marine contractors and consultants.

Acknowledgments

The authors would like to thank Dr. Michael R. Halleran, College of William & Mary Provost, for a Creative Adaptation Fund award to investigate improvements to one of our education programs; Sandra Erdle, Coastal Training Coordinator with the Chesapeake Bay National Estuarine Research Reserve for her assistance with the on-line survey; & Jane Herbert with the Michigan Natural Shoreline Partnership for providing information about their Certified Natural Shoreline Professional Training and Certification Program.

Appendices

A - Model Course Summary

B - Survey results & PHSC exemption

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Development of a Certificate Course for Marine Contractors & Consultants

Appendix A – Model Course Summary

Model Course	Topics Covered	Duration	Cost	Take Home Materials
<p>Certified Natural Shoreline Professionals course</p> <p><i>Michigan State University Extension</i></p>	<p>Benefits of natural shorelines</p> <p>Problems with shoreline development</p> <p>Native plants, native plant communities, and the natural shoreline</p> <p>Plants and planting stock</p> <p>Understanding laws & permits</p> <p>Assessing erosion on shoreline properties</p> <p>Materials & techniques for creating a natural shoreline</p> <p>Designing natural shoreline landscapes</p> <p>Monitoring & maintaining the natural shoreline & accompanying upland landscapes</p> <p>Natural shoreline case studies</p> <p>Hands-on field practicum to construct a natural shoreline landscape</p>	<p>3 classroom days</p> <p>1 exam/field day (seasonal, not with class sessions)</p>	<p>\$ 375</p> <p>\$93.75/day</p>	<p>Reference manual</p>
<p>Improving Shoreline Habitat and Buffer Functions</p> <p><i>MD Critical Area Commission & Maryland Coastal Training Program</i></p>	<p>Review of Buffer Regulations & Recent Changes</p> <p>Field Discussion of Functioning Buffers</p> <p>Identifying & Addressing Invasive Species</p> <p>Using the New “Green Book for the Buffer”</p> <p>Living Shorelines: Designing for the Site incl. integrating LS design with Buffer Mgmt Plans</p>	<p>5 hrs</p> <p>Combination of lectures & field observation</p>	<p>Free</p>	<p>Green Book for the Buffer</p> <p>5 AICP CM credits</p>

Model Course	Topics Covered	Duration	Cost	Materials
<p>Environmental Landscape Management Certificate</p> <p><i>Anne Arundel Community College MD</i></p>	<p>ENV 508 - Smart Landscape Design for the Environment</p> <p>ENV 512 - Rain Garden and Environmental Site Design</p> <p>ENV 513 - Sustainable Landscape Maintenance</p> <p>HOR 329 - Woody Plants for Landscape Installation</p> <p>ENV 579 - Soil Management</p>	<p>1 day</p> <p>5 sessions 3 hrs each 1 session all day = 2 days</p> <p>1 day</p> <p>(Assume 6 days total)</p>	<p>\$705</p> <p>\$116/day</p>	
<p>Forest Conservation Qualified Professional Training</p> <p><i>Carroll Community College Westminster, MD</i></p>	<p>2 required elements of the MD Forest Conservation Act: Forest Stand Delineation & Forest Conservation Plan</p> <p>How to collect data in the field (FSD) & how to apply data collected to development of FCP</p> <p>Forestry</p> <p>Ecology</p> <p>Land use</p> <p>Site design concepts, LID, conservation subdivision design, mitigation techniques</p>	<p>4 days + 4 half days = 6 days total</p>	<p>\$ 523</p> <p>\$87/day</p>	<p>Reference materials</p>

Model Course	Topics Covered	Duration	Cost	Materials
<p>Principles of Successful Sustainable Landscapes: Specification, Installation, and Maintenance</p> <p><i>University of Texas</i></p>	<p>The goal of this series is to help train contractors and design professionals for efficient and successful specification, installation, and maintenance of projects that have sustainable features.</p> <p>Soils for Sustainable Landscapes</p> <p>Site prep & installation</p> <p>Maintenance for sustainable landscapes</p> <p>Master planning & stakeholder engagement</p>	<p>4 x 1-hr webinar</p>	<p>\$300 for half day equivalent</p> <p>webinar series, not classroom</p>	
<p>Native Plant Gardening Certificate Program</p> <p><i>University of Texas</i></p>	<p>Landscape Design</p> <p>Plants I</p> <p>Plants II</p> <p>Installation</p> <p>Maintenance</p> <p>Integrated Pest Management</p>	<p>6 x ½ day sessions</p>	<p>\$243</p> <p>\$81/day</p> <p>Class limit 35</p>	

Development of a Certificate Course for Marine Contractors & Consultants

Appendix B – On-line Survey

College of William & Mary Protection of Human Subjects Committee (PHSC)

Formal Review Exemption

According to 45 CFR 46, of the Code of Federal Regulations, the U.S. Department of Health and Human Services has mandated that research which involves human subjects must be approved by an Institutional Review Board (IRB) to ensure the safety and the appropriate use of humans as subjects in research studies. All protocols involving human subjects must be submitted to the Protection of Human Subjects Committee (PHSC) at the College of William and Mary for exemption or approval. This includes surveys such as the training needs assessment for this course. This project's protocol was submitted on August 7, 2013 using the required on-line forms.

An exemption from formal review by the PHSC was received on August 22, 2013.

"This is to notify you on behalf of the Protection of Human Subjects Committee (PHSC) that protocol PHSC-2013-08-07-8870-jegrad titled **Virginia Shoreline Consultants and Contractors Training Needs Assessment** has been EXEMPTED from formal review because it falls under the following category(ies) defined by DHHS Federal Regulations: 45CFR46.101.b.5.

Work on this protocol may begin on 2013-08-22 and must be discontinued on 2014-08-22.





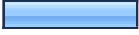



Should there be any changes to this protocol, please submit these changes to the committee for determination of continuing exemption using the Protocol and Compliance Management application (<https://compliance.wm.edu>).

Please add the following statement to the footer of all consent forms, cover letters, etc.:












THIS PROJECT WAS FOUND TO COMPLY WITH APPROPRIATE ETHICAL STANDARDS AND WAS EXEMPTED FROM THE NEED FOR FORMAL REVIEW BY THE COLLEGE OF WILLIAM AND MARY PROTECTION OF HUMAN SUBJECTS COMMITTEE (Phone 757-221-3966) ON 2013-08-22 AND EXPIRES ON 2014-08-22.

You are required to notify Dr. Ray McCoy, Chair of the PHSC, at 757-221-2783 (rwmcco@wm.edu) if any issues arise with participants during this study."






1. In the past 5 years, what types of training or workshops have you or your employees attended that relate to tidal shorelines (check all that apply)?

		Response Percent	Response Count
No previous training		21.7%	10
VIMS workshops (large mixed audience, e.g. annual tidal wetlands workshop, habitat restoration workshop)		65.2%	30
VIMS small class (e.g. living shoreline design)		28.3%	13
VIMS on-line course		4.3%	2
Local government sponsored training		19.6%	9
Privately sponsored training		13.0%	6
College credit course(s)		4.3%	2
Other (please specify)		8.7%	4
		answered question	46
		skipped question	0






2. What shoreline topics were covered in previous trainings that you or your employees attended (check all that apply)?

		Response Percent	Response Count
No previous training		21.7%	10
Laws, regulations and permits		47.8%	22
Tidal benchmarks and surveying		19.6%	9
Construction cost estimating		6.5%	3
Mandatory business licensing or certification training		2.2%	1
Wetland delineation / wetland plant identification		34.8%	16
Living shoreline site suitability, design, or construction		60.9%	28
Beach and dune restoration		19.6%	9
Chesapeake Bay Preservation Act		30.4%	14
GIS tools and maps		26.1%	12
Other (please specify)		2.2%	1
		answered question	46
		skipped question	0

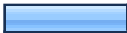

3. How do you usually learn about upcoming training opportunities sponsored by VIMS?

		Response Percent	Response Count
Direct emails		75.6%	34
Emails forwarded by a colleague		6.7%	3
Emails forwarded by a supervisor		0.0%	0
Telephone call / word of mouth		4.4%	2
Print media (newsletter, newspaper, etc.)		6.7%	3
Other (please specify)		6.7%	3
answered question			45
skipped question			1

4. Approximately how much did previous shoreline training sessions cost?

		Response Percent	Response Count
Only attended free training		18.4%	7
Less than \$100		50.0%	19
Over \$100 but less than \$300		23.7%	9
Over \$300 but less than \$500		2.6%	1
More than \$500		5.3%	2
answered question			38
skipped question			8




5. Have you ever turned down potential clients or job opportunities because you were not trained for a specific type of shoreline work?

		Response Percent	Response Count
Yes		18.2%	8
No		81.8%	36
answered question			44
skipped question			2

6. If you answered "Yes" to the above question, briefly describe what type of shoreline work was turned down and why.

	Response Count
	7
answered question	7
skipped question	39
















7. How likely are you to participate in future shoreline training sessions?

		Response Percent	Response Count
Highly likely		40.0%	18
Maybe, depending upon time, cost, location and subject material		55.6%	25
Not likely		4.4%	2
answered question			45
skipped question			1




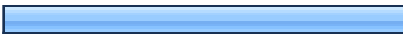








8. If your answer to the previous question was "Not likely," please provide a reason for the choice (e.g. no time, course fees, not interested, etc.).

	Response Count
	1
answered question	1
skipped question	45









9. What general topics do you think should be covered in future training sessions for shoreline professionals (check all that apply)?

		Response Percent	Response Count
Tidal benchmarks and surveying		47.8%	22
Wind-wave predictions		45.7%	21
Construction cost estimating		32.6%	15
How to connect with new shoreline customers		32.6%	15
Erosion control alternatives analysis		84.8%	39
Living shorelines		84.8%	39
Beach and dune restoration		54.3%	25
Submerged aquatic vegetation (SAV)		54.3%	25
Fish species identification and habitat requirements		19.6%	9
Wetland delineation / wetland plant identification		56.5%	26
How to design wetland mitigation areas		65.2%	30
Laws, regulations and permits (Chesapeake Bay Preservation Act, Tidal Wetlands, Beach/dune and Subaqueous Lands Acts)		78.3%	36
How to prepare complete permit applications and permit drawings		26.1%	12
How to use GIS tools and maps		34.8%	16
Climate change and sea level rise		43.5%	20
Other (please specify)		0.0%	0
answered question			46

10. Which topics SPECIFIC TO LIVING SHORELINES should be covered in future training sessions for shoreline professionals (check all that apply)?

		Response Percent	Response Count
Living shorelines case studies		57.8%	26
How to determine site suitability		75.6%	34
Marsh sills		57.8%	26
Offshore breakwater systems		60.0%	27
How to design and plant tidal marshes		71.1%	32
Sediment grain size analysis		46.7%	21
Beach nourishment and dune restoration		66.7%	30
Riparian buffer landscape designs and installation		68.9%	31
Monitoring and maintenance		48.9%	22
How to qualify for new living shorelines General Permit (under development by VMRC)		77.8%	35
Other regulatory and permit issues (local, state, federal)		57.8%	26
Other (please specify)		6.7%	3
		answered question	45
		skipped question	1

11. What delivery format(s) would you prefer for future training sessions (select all formats in which you're interested)?

		Response Percent	Response Count
On-line course(s), self-paced without instructor		51.2%	22
On-line course(s) with instructors		25.6%	11
On-line webinars with instructors (real time, interactive web-based seminar)		37.2%	16
Hands-on computer training		4.7%	2
Small classroom setting, limited class size		67.4%	29
Large workshop setting		37.2%	16
Field setting		74.4%	32
Other (please specify)		2.3%	1
		answered question	43
		skipped question	3





12. How much time (in a year) are you willing to dedicate for future on-line training sessions (self-paced or with an instructor)?

		Response Percent	Response Count
Less than 4 hours total		9.3%	4
4 - 8 hours		25.6%	11
1 - 3 separate days		37.2%	16
1 - 3 consecutive days		7.0%	3
More than 3 separate days		11.6%	5
More than 3 consecutive days		9.3%	4
answered question			43
skipped question			3



13. How much time (in a year) are you willing to dedicate for future classroom, workshop, or field training sessions?

		Response Percent	Response Count
Less than 4 hours total		0.0%	0
4 - 8 hours		13.6%	6
1 - 3 separate days		43.2%	19
1 - 3 consecutive days		25.0%	11
More than 3 separate days		13.6%	6
More than 3 consecutive days		4.5%	2
answered question			44
skipped question			2




14. For classroom and workshop type training, what day(s) of the week would be most suitable for you?

		Response Percent	Response Count
Monday through Friday only		75.0%	33
Saturday only		4.5%	2
No preference for day of the week		15.9%	7
Other (please specify)		4.5%	2
answered question			44
skipped question			2




15. For on-line training, do you have a high-speed broadband internet connection?

		Response Percent	Response Count
Yes		90.9%	40
No		9.1%	4
answered question			44
skipped question			2

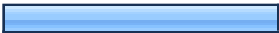

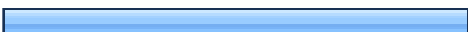




16. For classroom and workshop type training, how far are you willing to travel?

		Response Percent	Response Count
Prefer local venue with minimal travel distance (within 30 miles)		29.5%	13
Regional venue acceptable (e.g. Eastern Shore, Southside, Peninsula, Middle Peninsula, Northern Neck, Northern Virginia, Metro Richmond)		43.2%	19
Any venue in Tidewater Virginia is acceptable		27.3%	12
Other (please specify)		0.0%	0
		answered question	44
		skipped question	2






17. How important is a certified program or a course certificate that provides official recognition of your participation?

		Response Percent	Response Count
Very important		39.1%	18
Somewhat important		43.5%	20
Not at all important		17.4%	8
		answered question	46
		skipped question	0







18. Who would be the preferred instructor(s) for future shoreline training (select all that apply)?

		Response Percent	Response Count
Local government staff		41.3%	19
Virginia Marine Resources Commission (VMRC) staff		82.6%	38
US Army Corps of Engineers (USACOE) regulatory staff		69.6%	32
Academic experts (e.g. VIMS, ODU, CNU, Community Colleges, etc.)		67.4%	31
Peer instructors (other marine professionals, consultants and/or contractors)		50.0%	23
Non-governmental organizations (e.g. Chesapeake Bay Foundation, Lynnhaven River Now, Elizabeth River Project, James River Association, Friends of the Rappahannock, etc.)		34.8%	16
Other (please specify)		4.3%	2
		answered question	46
		skipped question	0





19. Approximately how much are you willing to pay for future training sessions to help offset the costs for instruction?

		Response Percent	Response Count
Will only attend free training		2.3%	1
Less than \$100		50.0%	22
Over \$100 but less than \$300		38.6%	17
Over \$300 but less than \$500		6.8%	3
Above \$500		2.3%	1
answered question			44
skipped question			2






20. How would you characterize your organizational affiliation?

		Response Percent	Response Count
Marine construction		26.1%	12
Permit agent		13.0%	6
Civil engineering		19.6%	9
Landscape design		8.7%	4
Environmental consulting		28.3%	13
Other (please specify)		4.3%	2
answered question			46
skipped question			0










21. What type of professional services do you provide?

		Response Percent	Response Count
Design and/or permit application coordination only		47.8%	22
Construction only		4.3%	2
Both design and construction services are provided		50.0%	23
Other (please specify)		2.2%	1
		answered question	46
		skipped question	0

22. How long have you performed shoreline work in Tidewater Virginia (e.g. erosion & flood protection structures, dredging, water access, etc.)?

		Response Percent	Response Count
My company does not perform any tidal shoreline work		6.7%	3
Less than 1 year		6.7%	3
1 - 5 years		15.6%	7
6 - 10 years		11.1%	5
More than 10 years		60.0%	27
		answered question	45
		skipped question	1

23. What type of shoreline projects are you involved with (check all that apply)?

		Response Percent	Response Count
Erosion control structures (e.g. revetments, bulkheads, living shorelines)		77.3%	34
Private piers, boat lifts, and/or boat ramps		65.9%	29
Commercial and industrial piers / wharfs		54.5%	24
Public access improvements		52.3%	23
Dredging for private or commercial interests		54.5%	24
Transportation infrastructure		25.0%	11
Utility crossings		29.5%	13
Residential or commercial waterfront development		68.2%	30
Other (please specify)		4.5%	2
		answered question	44
		skipped question	2

24. Please share any other comments or suggestions for future trainings for shoreline professionals.

	Response Count
	9
answered question	9
skipped question	37

**25. If you do not want to remain anonymous, feel free to provide your contact information.
Name, company, mailing address, Email address, telephone number.**

	Response Count
	10
answered question	10
skipped question	36

Q1. In the past 5 years, what types of training or workshops have you or your employees attended that relate to tidal shorelines (check all that apply)?

1	landscape/nursery continuing education classes	Sep 9, 2013 1:09 PM
2	no recent training, not covered by "no previous training" in the last 5 years	Aug 29, 2013 7:24 PM
3	VAWP presentations	Aug 29, 2013 7:46 AM
4	On-line research	Aug 29, 2013 6:38 AM

Q2. What shoreline topics were covered in previous trainings that you or your employees attended (check all that apply)?

1	General permitting issues for living shorelines	Aug 29, 2013 7:46 AM
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Q3. How do you usually learn about upcoming training opportunities sponsored by VIMS?

1	VNLA, VSLD - upcoming events and classes	Sep 9, 2013 1:09 PM
2	Accomack County	Aug 29, 2013 1:59 PM
3	Never hear about them	Aug 29, 2013 6:35 AM

Q6. If you answered "Yes" to the above question, briefly describe what type of shoreline work was turned down and why.

1	engineered shoreline restoration - riprap bulkheads	Sep 9, 2013 1:09 PM
2	Permitting/design for residential dredging and living shoreline	Sep 9, 2013 12:22 PM
3	Living shoreline and tidal ditch work; lack of project experience	Aug 31, 2013 12:00 PM
4	major beach replenishment	Aug 29, 2013 1:59 PM
5	Living shorelines and breakwaters	Aug 29, 2013 11:15 AM
6	Roesgen Stream Engineering	Aug 29, 2013 10:48 AM
7	Construction of large structures like breakwaters. No equipment available either.	Aug 29, 2013 6:38 AM

Q8. If your answer to the previous question was "Not likely," please provide a reason for the choice (e.g. no time, course fees, not interested, etc.).

1	As a contractor, if I'm being honest, I feel that I know and understand the shorelines and how to protect them better than the people at VIMS. No disrespect to these fine people, but they've never built the different types of shoreline protections and don't follow up with their customers and hear what's really happening.	Aug 29, 2013 6:35 AM
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Q10. Which topics SPECIFIC TO LIVING SHORELINES should be covered in future training sessions for shoreline professionals (check all that apply)?

1	Holistic approach to living shoreline design	Sep 10, 2013 2:11 PM
2	E&S for shoreline work	Aug 31, 2013 12:00 PM
3	None, living shorelines are unproven and I would never recommend them to my customers as an alternative to rip rap	Aug 29, 2013 6:35 AM

Q11. What delivery format(s) would you prefer for future training sessions (select all formats in which you're interested)?

1	VIMS should not be the instructors	Aug 30, 2013 3:56 AM
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Q14. For classroom and workshop type training, what day(s) of the week would be most suitable for you?

1	Monday - Thursday	Sep 11, 2013 5:20 AM
2	Monday and/or Tuesday	Aug 29, 2013 7:45 AM

Q18. Who would be the preferred instructor(s) for future shoreline training (select all that apply)?

1	Experienced contractors	Aug 29, 2013 12:12 PM
2	practitioners with real experience willing to share actual design knowledge not just theory	Aug 29, 2013 6:17 AM

Q20. How would you characterize your organizational affiliation?

- | | | |
|---|--|-----------------------|
| 1 | multi check'g should be available here #'s1,2,5 & 6 applicable | Sep 9, 2013 7:44 AM |
| 2 | Permit agent, consultant, and contractor | Aug 29, 2013 12:12 PM |

Q21. What type of professional services do you provide?

- | | | |
|---|--|----------------------|
| 1 | Design, JPAs, Monitoring, Wetland Instructor | Sep 10, 2013 2:11 PM |
|---|--|----------------------|

Q23. What type of shoreline projects are you involved with (check all that apply)?

- | | | |
|---|----------------------|-----------------------|
| 1 | CPBA buffer projects | Sep 9, 2013 7:44 AM |
| 2 | Delineation | Aug 31, 2013 12:00 PM |

Q24. Please share any other comments or suggestions for future trainings for shoreline professionals.

1	The general public (customers) need to become more familiar with living shorelines as an alternative to shoreline hardening techniques. How can we, as an industry, disperse this information more widely?	Sep 10, 2013 6:38 AM
2	Field training is worth hours of webinar training. Need to be there on the ground to understand the dynamics involved and how the plant life supports the waterways	Sep 4, 2013 6:55 PM
3	It would be a great pleasure to have all the agencies work closer together with private industry and have common ground. Some Counties (Northampton) have their own agenda and cause extended delays in the application process.	Aug 31, 2013 2:32 PM
4	Round up the best in the business of shoreline modification. Let them teach the course. Va. cannot afford VIMS.	Aug 30, 2013 3:56 AM
5	Lessons learned presentations are great teaching tools	Aug 29, 2013 12:12 PM
6	VIMS Training is the best! I would like to see more on Case Studies, especially the experimental monitoring results for revetments, other than stone. Stone has gotten so expensive, many private owners cannot afford to do the work. I have had experience with WADs and now Hex Boxes, but don't know what other technologies are out there that work.	Aug 29, 2013 9:00 AM
7	VAWP and VIMS meetings have been helpful on various topics.	Aug 29, 2013 7:46 AM
8	Keeping up to date on new regulations and laws that would impact shoreline restoration both commercial and private sector. Newly considered forms of shoreline protection, ie. concrete buffers, etc.	Aug 29, 2013 7:45 AM
9	would gladly attend upper level more specialized training which addresses all aspects of coastal restoration/protection (living shoreline/dune/marsh). Including how to design and work with rock structures such as groins/bulkheads/tombolos/sills/pocket beaches etc.	Aug 29, 2013 6:17 AM