Final Report

Environmental Education in Virginia

November 21, 2012

Prepared By:
Virginia Department of Environmental Quality
629 East Main Street
Richmond, Virginia 23219
(804) 698-4442

Grant Year 2011

NOAA Grant #NA10NOS4190122
Task 4

Virginia Coastal Zone
MANAGEMENT PROGRAM

*This project was funded by the Virginia Coastal Zone Management Program at the Department of Environmental Quality through Grant **#NA**10NOS4190122**o**f the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended.*

Contents

Product #1 3
Title: Community Education Leadership Program 3
Product #2 4
Title: Community Education Training/Workshops 4
Product #3 5
Title: Building Capacity for Delivery of Environmental Education 5
Appendices 8

Product #1

Title: Community Education Leadership Program

***Percent of total project budget:* 40 %**

This grant supported the implementation of the Commonwealth's Environmental Education Leadership Program (EELP) and the development of a Watershed Profile. The Virginia Office of Environmental Education's (VOEE) Community Educator, David Ruble, coordinated the implementation of the Environmental Educators Leadership Program (EELP) including the Coastal Community Educator profile developed last year. The new Watershed Educator Profile recommends educator content knowledge and skills for educators wishing to be recognized as environmental educators and/or leaders in the field.

This program develops and enhances the professional skills and abilities of Virginia educators for the protection of the environment; it can serve as a roadmap for developing skills needed to teach about the environment.

Once enrolled in the Environmental Educators Leadership Program, participants receive:

- Professional training opportunities and access to state sponsored resources and events
- Tools for self-assessment
- Resources for developing professional learning communities

Content modules for each leadership profile are framed to focus on (1) an overview of the resource issue; (2) who should be concerned about this issue; and (3) list of best available science related to this resource issue. Communication to the EELP network and distribution of new materials includes nearly 100 leaders. New leaders are recruited from participants in the annual conference, through Virginia Naturally partners and through the networks of Regional EE providers through the CZM region--the Hampton Roads Association for Environmental Education, Eastern Shore Environmental Education Council, Three Rivers Environmental Educators, and NoVA Outside. These networks reach more than 5,000 non-formal educators and teachers across the CZM region.

This year's EE Leaders Summit focused specifically on enhancing educators' general awareness of Virginia issues and the science, policy and laws behind protection and management of natural resources. In specific, thirty-four educators received a broad overview of Virginia's natural resources and more in-depth study of Virginia's unique natural history features related to watershed geography and topography.

Note: On July 1st, 2012 this program, as part of the Virginia Office of Environmental Education was moved to the Virginia Department of Conservation and Recreation.

	Trained Environmental Education Professionals			
	2009	**2010**	**2011**	**2012**
1) Enrolled in DEQ Leadership Program	26	28	88	108
2) Highly Qualified Water Educators	10	10	10	28
3) EE Team Leaders	18	20	15	7
4) VRUEC agency educators	25	28	32	36
	79	86	145	179

***Deliverables/Product Format*:**

The Educator Profiles, Instructions and Application can be viewed online at http://www.deq.virginia.gov/ConnectWithDEQ/EnvironmentalInformation/EnvironmentalEducatorsLeadershipProgram.aspx.

Product #2

Title: Community Education Training/Workshops

Percent of total project budget: 30 %

The Virginia Office of Environmental Education conducted nine workshops to support the Environmental Educators Leadership Program this year.

The EE Leaders Summit included an overview of current environmental issues including uranium mining, wetlands 404 assumption and confined animal feeding operation.

This year's environmental education conference included two plenary speakers and thiry concurrent session presentations and field trips that delivered aquatic science content, new teaching resources and hands-on activities, and opportunities to expand professional networks. Nearly 150 educators attend this conference.

To reach a wider audience of educators in a coordinated manner, an online workshop request form for Projects WET, WILD, Underground, Wonders of Wetlands, Science and Civics, and Your BackYard Classrooms was developed in conjunction with the Departments of Game and Inland Fisheries, Forestry and Conservation and Recreation.

Deliverables/Product Format:

Educational workshops and calendar is posted online at:

http://www.deq.virginia.gov/ConnectWithDEQ/EnvironmentalInformation/VirginiaNaturally/ProfessionalDevelopment.aspx

Below is a list of workshops conducted by the Virginia Office of Environmental Education:

11/8/2011	Finding Your Diamonds in the Rough: Exploring Coastal GEMS	Training	8
11/19/2011	How Magnetic is your Litter/STEM	Training	5
12/6/2011	VASWCD Annual Meeting - Education Track	Training	13
1/10/2012	Hanover County Earth Day Planning	Technical Assistance	13
1/18/2012	Project WET workshop - Holiday Lake 4H	Training	26
2/2/2012	Facilitator Training at Bear Creek Lake S.P.	Training	34
2/13/2012	Aquatics training for Henrico County Envirothon	Training	26
2/14/2012	Hanover County Earth Day Planning	Technical Assistance	15

2/22/2012	Opportunities for Blue & Green Infrastructure Planning	Technical Assistance	8
3/7/2012	Accessing and Utilizing the Outreach Calendar	Training	10
3/8/2012	Accessing and Utilizing the Outreach Calendar	Training	5
3/12/2012	Livable Neighborhoods WSC Team Leader Training @ Lake of the Woods	Training	11
3/15/2012	Livable Neighborhoods WSC Team Leader Training @ Lake of the Woods	Training	10
3/19/2012	Henrico County Envirothon	Technical Assistance	15
3/22/2012	Water Stewardship Campaign - City of Richmond planning	Technical Assistance	2
3/23/2012	Meeting nutrient reduction loads through public education @ Crater PDC	Outreach	15
3/27/2012	Getting Families Outdoors	Training	17
3/29/2012	Establishing a Native Plants Social Marketing Campaign	Training	16
4/2/2012	Water Stewardship Campaign - Henricopolis SWCD planning	Technical Assistance	4
4/3/2012	Training Committee Meeting	Technical Assistance	7
4/4/2012	Water outreach demonstrations for WQMA all-staff meeting	Technical Assistance	15
4/17/2012	MWEE Hanover-Caroline Schools at Poor Farm Park, Ashland	Outreach	250
4/21/2012	Earth Day Booth at Mt. Olympus Farm - Caroline County	Outreach	50
4/21/2012	Earth Day at John Tyler Community College	Outreach	400
4/25/2012	Asthma Awareness at Virginia Union University	Outreach	50
4/29/2012	Workshop for Girl Scout Leaders	Training	10
4/30/2012	Field investigations at Midlothian High School	Outreach	64
5/2/2012	Litter Activites with Youth at Powhite Park (5 adults/12 kids) - Volunteer for VMN	Outreach	17
10/24/2012	Environmental Issues Update	Training	30
			1146

Product #3

Title: Building Capacity for Delivery of Environmental Education

Percent of total project budget: 30 %

This grant supported the staff time of the VOEE Director, Ann Regn and Community Educator, David Ruble in implementing the Commonwealth's master plan for environmental education, including: a) implementing and evaluating a rigorous professional development program b) providing support for regional environmental education teams, and c) working with state Department of Education to address environmental literacy within K-12 education.

In 2010, an update to the state's master plan for Environmental Education – "A Business Plan for Environmental Education in the Commonwealth of Virginia" was completed. New environmental literacy goals for community education were augmented with recommendations from the North American Association for Environmental Education and the Mid-Atlantic Environmental Education Leaders Roundtable. (Note: The K-12 section of the plan was not revised due lack of federal guidelines for such.). In 2011 Ann spent a significant amount of time

was working with the Virginia Department of Education and sister agencies in the Virginia Resource-Use Education Council (VRUEC) to develop a regional environmental literacy strategy for state and federal agencies. The strategy plan includes mutually agreed upon goals, specific outcomes and strategies for federal and state agencies for teachers, students and schools. In 2012 Ann worked with VRUEC to develop specific objectives and funding priorities for Virginia. In 2012 the membership of the Virginia Resource Use Education Council which historically represents all federal and state natural resource and education agencies in Virginia, was expanded to include regional EE teams and more statewide non-profit education agencies. With the challenge of implementing an unfunded strategy, the Council formed a Policy subcommittee to develop a white paper on funding EE priorities and work to engage and Sustain support for EE.

As co-chair of the Chesapeake Bay Program's Education Workgroup, Ann helped plan the biennial Bay summit where the implementation strategy was shared with 96 education and policy leaders. The Environmental Literacy Summit provided federal, state, and regional partners with a forum for policy-level discussions and strategic planning to support efforts to ensure that elementary and secondary students in the region graduate with the knowledge and skills to make informed environmental decisions.

Other important avenues to build capacity for delivery of high quality education is VOEE's work with the annual Coastal Partners Workshop and through regional education networks, such as the Hampton Roads Alliance for Environmental Education.

The VOEE Director and Community Education Coordinator worked with community environmental education leaders in the 5 regional EE teams in the coastal zone to advance environmental education in their region by offering and promoting professional development opportunities (see Product #2). VOEE staff also recruited participants from the teams for the "Coastal Community Education Leadership Program" and Coastal EE Leaders Summit (see Appendix I). The annual environmental education conference, held in conjunction this year with the Mid-Atlantic Marine Education Association attracted 150 educators (Appendix J and K).

The VOEE staff continued to direct the direction and growth of the Virginia Naturally partnership. The network of private and public organizations was updated bringing the total to 929 organizations. Significant additions and changes were made to the Virginia Naturally web site to help partners teach about the environment and to share or leverage resources. A new map to help educators, citizens and students locate partners was completed. Bi-monthly newsletters were sent via email to more than 1,000 individuals including directors of "gateway organizations" such as the Virginia Science Education Leadership Association and Virginia Manufacturer's Association Outreach Committee.

The VOEE Director continued to review education projects, recommend criteria for funding for the Chesapeake Bay Restoration Fund, the Virginia Environmental Endowment, the Foundation for Virginia's Natural Resources, and NOAA's Chesapeake Bay Office.

Deliverable/Product Format:

10/12/2011	NAAEE - Environmental Justice & Sustainable	18
10/14/2011	NAAEE Capacity workshop	30
10/15/2011	A pathway to self-certification / session at NAAEE	5
11/19/2011	VAST conference workshop and Virginia Naturally display	40
12/5/2011	VRUEC winter membership meeting	34
3/9/2012	Review of Green Ribbon School Applications	20
4/3/2012	Training Committee Meeting	7
5/30/2012	VRUEC annual meeting and recognition program	58
		212

Appendix I. Virginia EE Leaders Summit Agenda

Appendix 2. 2012 Virginia EE Conference

Appendix 3. Mid-Atlantic States Regional Environmental Literacy Strategy

Appendices

1.

EE Leaders Summit Agenda

Hemlock Haven
Hungry Mother State Park

Wednesday, October 24, 2012

10 a.m. – Noon SWEET Team Program
Leveraging Local Support for
Regional Delivery of Environmental Education
Christine Hannen, Holston River SWCD
Lisa Harris, Daniel Boone SWCD
Denise Peterson, Appalachian Sustainable Development

Noon – 1 p.m. Bag Lunch at Pavilion (pack your own)
1 p.m. – 1:30 p.m. Welcome & Introductions
1:30 p.m. – 4:30 p.m. Current and Innovative Trends in Environmental Issues
A Hot Topic: Uranium Mining and Milling in Virginia
Ann Regn, Department of Environmental Quality
Angela Neilan, Department of Environmental Quality

More than a Breeze: Exploring Virginia's Wind Resources
Remy Pangle, Virginia Center for Wind Energy

Assign-a-Highway: An Alternate Path to Beautification
Frank Kilgore, Attorney

Exploring Virginia's Business Plan for Environmental Education
Barbara Young, Department of Education
Bill Portlock, Chesapeake Bay Foundation
Tamra Willis, Mary Baldwin College

4 p.m. – 9 p.m. Conference Registration Opens at Ferrell Hall
5:30 p.m. – 6:30 pm. Ticketed Dinner at Hungry Mother Restaurant
7:00 p.m. – Evening Networking Social at Ferrell Hall

2. Annual EE conference

Wednesday
October 24, 2012

4:00 – 9:00 p.m.	Conference Registration opens at Ferrell Hall
5:30 – 6:30 p.m.	Ticketed Dinner at Hungry Mother Restaurant
7:00 p.m. – Evening	Networking Social at Ferrell Hall

Thursday
October 25, 2012

7:00 – 8:30 a.m.	Breakfast at Hungry Mother Restaurant
8:00 – 9:00 a.m.	Conference Registration opens at Ferrell Hall
9:00 – 10:00 a.m.	Welcome & Green Ribbon Schools Speaker at Ferrell Hall Susan Gottfried, Executive Director Evergreen Community Charter School *Green Ribbon Schools – A National Network and Movement*
10:15 – 11:15 a.m.	Concurrent Sessions I
11:30 a.m. – 1:00 p.m.	Lunch at Ferrell Hall
1:00 – 1:50 p.m.	Concurrent Sessions II
2:00 – 2:50 p.m.	Concurrent Sessions III
3:00 – 3:50 p.m.	Concurrent Sessions IV
4:00 – 4:50 p.m.	Concurrent Sessions V
5:00 – 6:00 p.m.	Break
6:00 – 7:30 p.m.	Dinner and Natural Heritage Speaker at Ferrell Hall Tom Smith, Natural Heritage Director Virginia Department of Conservation and Recreation *Preserving Virginia's Biological Heritage for Future Generations*
8:00 – 9:00 p.m.	Jim Lloyd and Guest at Campfire Pavilion Appalachian Mountain Music and Oral Heritage

Friday
October 26, 2012

7:00 – 8:30 a.m.	Breakfast at Hungry Mother Restaurant
9:00 a.m. – Noon	Field Trips and Mini-workshops

DCR Virginia Naturally

Appendix 3

Status of Environmental Education in Virginia

February 2012

Compiled by the Virginia Office of Environmental Education

Summary:

In 2000 the Commonwealth established "Virginia Naturally," as the state's official environmental education (EE) initiative.

Virginia Naturally (VaN) has several essential components that contribute to its robust support and effectiveness:

- a business plan or master plan for environmental literacy adopted in 2004 defines roles and goals and specific, measurable targets
- environmental concepts and priorities are infused into the K-12 academic standards (e.g. watershed and pollution prevention education into science, air pollution prevention into driver education).
- a Mini-grants program for schools and EE providers (>$500,000 over last 8 years has been awarded) for Meaningful Watershed Educational Experiences (MWEE)
- a voluntary, professional development program (self-certification for non-formal educators)
- 10 regional EE teams across the Commonwealth
- Approximately 1,000 partners receive information, training and resources through the electronic network.
- the Virginia Office of Environmental Education (VOEE) at DEQ in 2001 with 3 full-time, 2 part-time staff

**In 2000 Virginia signed the Chesapeake Bay 2000 Agreement, a regional compact that includes several education goals, especially the goal "Beginning with the class of 2005, provide a meaningful Bay or stream outdoor experience for every school student in the watershed before graduation from high school."*

Progress on Virginia Naturally was stalled from 2002-2004 due to limited staff resources at VA Office of EE. An EPA Environmental Education grant in 2005 helped bridge the gap to continue the VaN program. A second grant in 2007 established regional teams and a leadership program for non-formal educators. Two positions were eliminated in 2008, and one program added. Currently the office is comprised of 3 full-time and 2 part-time employees.

Structural Components:

1. *State EE Board*: The Virginia Environmental Education Commission (VEEC) (appointed by Governor Gilmore in 2000 and subsequently reappointed by Governor Warner 2002) identified needs and helped set priorities for Virginia. The needs and priorities are currently outlined in the state plan, *A Business Plan for Environmental Education in Virginia*.
2. S*tate EE office:* In 2001 DEQ bolstered its education program and dedicated resources to Virginia Office of Environmental Education (VOEE). Its purpose is to implement Virginia's plan for EE to facilitate environmental literacy; administer a mini-grants program; assist in the development of local EE programs; evaluate, and promote EE programs and services; coordinate and offer professional development opportunities on a regular basis, such as annual EE conferences.

3. *State-level EE centers/regional offices*: Through an EPA grant, VOEE worked to establish local networks which can assist educators and administrators in the incorporation of EE (starting with a "meaningful outdoor experience") into district and school curricula, resource libraries, and community restoration projects.

4. *State EE Interagency Committee*: The Virginia Resource-Use Education Council (VRUEC) is a committee of more than 25 state and federal agency representatives, including the Department of Education and Virginia colleges and universities. The primary purpose is to collaborate and leverage resources for teacher training. It serves as the advisory committee for VaN. A subcommittee of VRUEC serves as the Chesapeake Bay workgroup.

5. Computerized networking system for EE materials and services: The Virginia Naturally web site and its searchable database, provides access to EE resources, events and funding opportunities. Hits to these pages average about 10,000 per month and 1,200 downloads/month.

Environmental Education (EE) Program:

6. *State EE master plan*: The 2004 plan could be updated to account for the progress made, the current budget situation and new priorities. Annually, the VRUEC creates an action plan and reports on the status of the plan to the Secretaries of Natural Resources, Education, and Agriculture & Economic Development.

7. *State Requirement for K-12 Environmental Education Instruction*: Virginia's academic standards, the Standards of Learning for Science, are reviewed every seven years. They provide the legal requirements that school districts and K-12 teachers incorporate EE into their existing curriculum. New standards in Science (6th grade, Life Science, Earth Science and Biology) have added rigorous watershed concepts such as water quality monitoring; and Chesapeake Bay ecology to the content knowledge student should know.

8. *Coordinated teacher in-service training in EE:* A wide variety of professional programs such as Projects WET, WILD, Learning Tree, WOW!, Project Underground, Save Our Streams and Globe are offered by state agencies and coordinated by the Virginia Resource-Use Education Council. Most of these programs rely on grant funds and volunteer instructors to implement these programs. The capacity to deliver these programs to school divisions in Virginia varies tremendously depending upon the volunteer resource base. Currently there is a high need to train more local instructors in WET, WILD, WOW and YBC. With budget reductions, state staff and materials have been reduced. Demand continues to grow, however.

9. *Training in EE for those providing EE professional development to classroom teacher*s and *non-formal educators*: Virginia's environmental education conference has provided training on an annual basis. Since turnover in non-formal programs is high, there is a constant need to offer training to non-formal educators and resource managers about EE in general, as well as specific topics such as MWEE a meaningful outdoor experience and how to infuse the experience into the curriculum and meet state academic standards. DEQ has developed a professional self-certification program, Environmental Education Leadership program to encourage professional development of natural resource educators who can help deliver high quality EE.

10. *Training in EE for university faculty (teacher educators)*: The business plan recommends several specific items including bringing educators into the Virginia Naturally (EE) network. No work has been done in this area by VOEE but leadership in two regional teams is provided by colleges and other local networks include college staff.

11. *State EE curriculum guide and other state publication providing direction to the development of an EE program at the school district level*: Four on-line resources currently exist: *VA Natural Resources Education Guide*, *Science Implementation Guidelines*, the *Criteria for Exemplary EE in Schools*, *and the Definition of Meaningful Watershed Educational Educations*. Essential skills are found within the science, geography, and social studies state Standards of Learning and the implementation/curriculum guides. These documents provide information to non-formal community educators, resource professionals, classroom teachers and university faculty. Professional development or training helps disseminates these materials.

12. *EE correlations to state content standards*: These exist for major state supported programs, such as Projects WET, WILD, and Learning Tree as well as for individual programs offered by nonformal EE providers.

13. *EE model or resource schools*: Sixty-five Virginia Naturally Exemplary Schools have been recognized. Two Chesapeake Bay/Oyster Restoration model schools were developed through Mary Baldwin College.

Funding Components:

Funding components are the most challenging aspect to delivering EE in Virginia. Most projects and programs are funded through partnerships and a creative mix of private and public funding. In addition to general revenue, several state sources exist:

14. *Fees, Fines, Taxes and/or Lottery:* A sales tax on fast food, soft drinks and beer provides funds to local litter prevention and recycling programs, many of whom offer education and outreach programs. The competitive portion of this program, which funded education projects, was eliminated in 2009. The Chesapeake Bay license plate provides modest funds to schools and nonprofits for Bay education and restoration projects ($80- 100,000 per year approximately to 30-40 applicants).

15. *Public/Private Grants and Donations*: The Virginia Environmental Endowment provides grants of $5,000 for Environmental Education projects (primarily to schools) throughout the Commonwealth for over 30 years. They have consistently supported statewide projects such as the EE directory, the annual EE conference, and recently the Classroom mini-grants program ($45,000 for three years) for meaningful watershed education. The Virginia Manufacturers' Association, Honeywell, Smithfield Foods, Inc. and International Paper have made major contributions to specific education projects such as teacher information kits. Substantial funding comes from federal NOAA BWET to support meaningful watershed educational experiences. Last year nearly $1 million was awarded.

16. *EE Grants*: Mini-grants programs of $500 - $2,500 for Classroom and Partners was established with private and federal funding. More than $550,000 for 650 projects has been distributed since 2002.

17. *EE Trust Fund*: The Foundation for Virginia's Natural Resources was established to accept and distribute more private donations.

18. *General Revenue:* Dedicated funding from the legislature varies year to year. In addition to funding for the VOEE through the Department of Environmental Quality, the legislature allocated $80,000 to the Chesapeake Bay Foundation in 2011 for "On-the-Water" education. Other state and local agencies provide EE programs, such as Project WILD, Learning Tree, Your Backyard Classrooms based on the agency's funding base.

Appendix 4. Virginia Environmental Literacy Strategy

Virginia
Elementary & Secondary Environmental Literacy
Goals, Outcomes, and Strategies

GOAL 1: Every student in the region graduates with the knowledge and skills to make informed environmental decisions.

Mid-Atlantic Regional Roundtable Recommendations:

- Instruction for students should be place-based and include local issues investigations.
- Multi-disciplined and integrated instruction should be delivered through use of technology and other innovative avenues.
- Public and private partners should work together to identify funding to support these outdoor activities.
- Students should have easy access to current, age-appropriate information provided by Federal and state agencies, for example a calendar of environmental activities and opportunities.
- Students should receive information and opportunities related to careers in natural resources and environmental fields from their guidance counselors, teachers, and by other appropriate means.
- School divisions should engage with community partners to develop out-of-class, afterschool and summer programs related to the environment.
- Students input and feedback should be considered to shape future programming and experiences.

Outcome 1.1: States engage students at every grade level in outdoor activities designed to increase environmental literacy.

1.1 - Strategies:

1. Affiliates will encourage site visits that include guides who are knowledgeable and can present factual information on environmental challenges (e.g., visits to landfills, impaired streams, wastewater treatment plants); and environmental successes (e.g., visits to wildlife refuges, National Forests, local land conservation efforts).
2. Affiliates will help identify local opportunities to support outdoor learning and ensure this information is readily available to school divisions, schools, and educators.
3. Affiliates will support investigation of local, regional and global issues as appropriate and the development of place-based sites.

Outcome 1.2: Students participate in interdisciplinary learning about the key relationships between dynamic earth, energy, and human systems, including STEM content knowledge and thinking skills.

1.2 - Strategies:

1. Affiliates will stimulate discussion at K-12 levels in reading/technology/social studies/civics/ (integration).
2. Affiliates will facilitate service-learning/stewardship projects for increased student involvement in their communities.
3. Affiliates will encourage global connections through use of technology (skype, webchat, twitter, email "friends") to discuss issues.

Outcome 1.3: Students have information about career opportunities and requisite skills for environment-based jobs, and the opportunity to participate in programs that prepare them for a future in these careers.

1.3 – Strategies

1. Affiliates will identify vocational opportunities, internships, green jobs corps and summer camps.
2. Affiliates will identify local volunteer, mentoring and job shadowing opportunities within the students' communities.
3. Affiliates will provide more natural resource and environmental information to guidance counselors and more participation in career days.

Outcome 1.4: Students have the opportunity to pursue enrichment programs and experiences that support in depth understanding of environmental issues and solutions.

1.4 - Strategies:

1. Affiliates will contribute to a calendar of youth activities to do (at home, school, neighborhood, etc).
2. Affiliates will encourage multi-year, school-based investigations of environmental issues (e.g.; weather station management; energy, water, & waste tracking; stormwater runoff pollution monitoring).
3. Affiliates will identify technical and financial support for student-lead applications to address environmental challenges (e.g. student-driven recycling programs, energy & water conservation, non-point source stormwater pollution mitigation, public education campaigns).

GOAL 2: All educators in the region responsible for instruction about or in the environment have access to sustained professional development opportunities, tools, and resources that support their efforts to provide students with high-quality environmental education (EE).

Mid-Atlantic Regional Roundtable Recommendations:

- Education programs delivered to schools should meet state and Federal guidelines for best practices and be provided by educators trained in state and Federal standards.
- SEA funding for professional development should be aligned with environmental literacy plans and be fully utilized.
- EE professional development should be synchronized and aligned with SEA priorities (e.g.; STEM, Project Based Learning, 21st Century) and with Federal programs (e.g.; Green Ribbon Schools).
- High-quality professional development and best practices for teaching related to EE should be defined in each jurisdiction and adopted by state boards of education.
- Opportunities for teachers to participate in professional development focused on state priorities in the area of EE should be consistently available.
- Programs designed to increase appreciation of the importance and value of EE by school and school division administrators should be provided.
- All pre-service teachers should be provided with training in EE across the curriculum, so every teacher enters their field with a foundation in EL.
- SEAs should require professional development in the area of EE to receive teacher licensure and/or certification in elementary education, science and other appropriate fields.
- SEAs should support their affiliates programs and work with them to support non-formal EE providers who are working with schools.
- The Mid-Atlantic Environmental Education Affiliates and the Chesapeake Bay Education Workgroup should cooperate and contribute to an EE clearinghouse for educators with state-specific resources and data.

Outcome 2.1: Educators have access to high-quality curriculum-based lesson plans, resources and information on trainings that focus on environmental issues for all grade levels and subjects.

2.1 – Strategies:

1. Affiliates will encourage members to align curriculum and lesson plans with the Federal and state academic and EL standards.
2. Affiliates will work with state education agencies to disseminate materials and professional development opportunities.
3. Affiliates will encourage members to contribute to a searchable clearinghouse of EE resources.

Outcome 2.2: Teachers have sustained professional development related to EE content, outdoor learning strategies, and pedagogy to promote EL in their students.

2.2 – Strategies:

1. Affiliates will work with SEAs to ensure current research informs professional development and certification programs.
2. Affiliates will support the development of the definition of high-quality educator professional development in the area of EE.
3. Affiliates will coordinate with state and Federal partners to assess needs for professional development for teacher recertification in science and other appropriate fields.
4. Affiliates will work with states and Federal partners to provide resources for professional development in EE (e.g.; instructors, current information, locations, etc).
5. Affiliates will link natural resource managers and science experts with education community to ensure current, reliable content information is made available to educators.
6. Affiliates will identify organizations and natural resource personnel who can provide technical assistance to school divisions.
7. Affiliates will provide professional development related to the generation, use and application of environmental data.
8. Affiliates will encourage and support the work of colleges and universities to provide teachers with training in content, outdoor learning strategies, and pedagogy related to the environment.
9. Affiliates will encourage SEAs to include professional development in the area of EE as a requirement to receive teacher licensure and/or certification in elementary education, science and other appropriate fields.

Outcome 2.3: Pre-service teachers enter the workforce with knowledge and experience in interdisciplinary EE content, outdoor learning strategies and pedagogy.

2.3 - Strategies:

1. Affiliates will encourage and support the work of colleges and universities to provide pre-service science with training in content, outdoor learning strategies, and pedagogy related to the environment.
2. Affiliates will involve pre-service teachers in professional development opportunities related to Environmental Education (EE).

Outcome 2.4: Informal environmental educators in the Mid-Atlantic region understand and can communicate current scientific findings and have knowledge of research-based EE best practices.

2.4 - Strategies:

1. Affiliates will provide targeted professional development opportunities for informal environmental educators, including staff from museums, aquaria, and outdoor schools.

2. Affiliates will work to increase collaboration and communication between formal and informal environmental educators to support classroom learning related to the environment.
3. Affiliates will encourage the development or adoption of state level EE certification for informal educators aligned with the criteria defined by the North American Association for Environmental Education.
4. Affiliates will work to identify environmental educators to work with natural resource personnel on authentic research experiences.

Outcome 2.5: Federal, state and local natural resource personnel are actively engaged in EE and outreach and have adequate training in instructional techniques and the needs of educational audiences.

1. Affiliates will identify scientists and other personnel engaged in environmental professions to contribute to a strong network of Subject Matter Experts (SMEs) available to answer resource questions.
2. Affiliates will provide federal school programs with information about standards of learning, EL priorities, and other relevant information to ensure proper alignment with state learning objectives and Administrative priorities.
3. Affiliates will ensure the availability of information and training about effective outreach techniques to educational audiences for all professionals who participate in environmental outreach.

GOAL 3: Every school in the region maintains its buildings, grounds, and operations to support positive environmental and human health outcomes.

Mid-Atlantic Regional Roundtable Recommendations:

- State Education Agencies (SEAs) should encourage schools to be models of best management practices for environmental sustainability and adopt parameters for healthy schools.
- Schools should be connected to local, state, regional and national private and non-profit organizations that support environmental sustainability and environmental literacy (e.g.; Green Building Alliance, LEED, and Chesapeake Bay Landscaping Network).
- Designs for new schools should include best practices related to land use, energy conservation and pollution prevention (e.g.; green roofs, pervious surfaces, passive & active solar energy use, natural lighting, green materials, and use of recyclable materials).
- Existing schools should be reviewed for modification and incorporation of best management practices for sustainable land use, energy conservation and pollution prevention (ibid).
- Environmentally literate professionals, experts, and volunteers should be included in projects related to curriculum writing, curriculum alignment and integration, text-book

adoptions, standards revision, and professional development and all aspects of EL planning and delivery.

Outcome 3.1: School buildings, grounds, and operations are models of environmental sustainability, making continual progress towards net zero environmental impacts of carbon emissions, solid and hazardous waste disposal, non-point source air and water pollution, and other local, state, regional and Federal pollution priorities.

3.1 - Strategies:

1. Affiliates will identify local and state-wide organizations that mitigate the negative, non-sustainable, impacts of school facilities and invite those groups to be partners in establishing best management practices and public education campaigns for EL.
2. Affiliates will support best management practices that encourage student responsibility for the environment and promote EL (e.g.; schoolyard habitats, outdoor learning areas, improved grounds maintenance).

Outcome 3.2: All schools' environment, indoor and outdoor, provide a net positive effect on the health of students, staff, and surrounding community

3.2 - Strategies:

1. Affiliates will help identify local partners and stakeholders for better resource management and programs that will support the development of integrated school environmental health.
2. Affiliates will include green school concepts in their annual professional development events and conferences (e.g.; human health, facility management, nutrition, and outdoor play).

GOAL 4: The education community in the Mid-Atlantic region functions in a unified manner and coordinates with key national, regional, and state programs and other Citizen Stewardship activities to represent the full suite of information and opportunities available for K-12 audiences.

Mid-Atlantic Regional Roundtable Recommendations:

- Communications forums should be created and maintained to share ideas among Federal, state, affiliate, university, and other partners across the region.
- The Chesapeake Bay Education Workgroup should identify and disseminate best practices and pedagogy for EL.
- Federal, state, and affiliate partners should work together to determine EL evaluation metrics for the Mid Atlantic region.
- Research in the field of EE should inform Federal and state funding priorities, grant guidance and professional development.

- Federal and state grant support should be targeted to programs that reflect best practices in EE.
- Federal and state agency funding should support funding for multi-year programs.
- State education agencies should include EE professionals in the planning, development and implementation EL plans.
- Both formal (pre-service, pre-K, K-12) and non-formal educators are included in the definition of education community to ensure collaboration to meet these outcomes.

Outcome 4.1: States in the mid-Atlantic establish and implement a robust plan for ensuring that all students graduate environmentally literate.

4.1 - Strategy:

1. Affiliates will work with partners to determine regional environmental literacy evaluation metrics, including sharing local examples of successful metrics and successful impacts on learning.

Outcome 4.2: Education programs are developed and refined using the best available research on the effectiveness of environmental education, and support continued research in this field.

4.2 - Strategy:

1. Affiliates will encourage the liaison between researchers and ongoing projects to ensure actual case studies are used in evaluation research.

Outcome 4.3: Federal, state, and nongovernmental organizations with K-12 programs actively communicate to increase collaboration related to environmental literacy planning and implementation.

4.3 - Strategies:

1. Affiliates will meet annually to coordinate and share activities.
2. Affiliates will act as hub to facilitate the engagement of non-formal environmental education providers.
3. Affiliates will participate in a communications forum to share ideas specific to affiliates across the Mid-Atlantic region.
4. Affiliate will collaborate with community partners not traditionally engaged in environmental education, but whose programs address previously unexplored but issue oriented aspects of environmental education.