



## 2014-2015 School Nominee Presentation Form

### ELIGIBILITY CERTIFICATIONS

#### School and District's Certifications

The signatures of the school principal and district superintendent (or equivalents) on the next page certify that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of their knowledge. *In no case is a private school required to make any certification with regard to the public school district in which it is located.*

1. The school has some configuration that includes grades Pre-K-12.
2. The school has been evaluated and selected from among schools within the Nominating Authority's jurisdiction, based on high achievement in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental education.
3. Neither the nominated public school nor its public school district is refusing the U.S. Department of Education Office of Civil Rights (OCR) access to information necessary to investigate a civil rights complaint or to conduct a district wide compliance review.
4. OCR has not issued a violation letter of findings to the public school district concluding that the nominated public school or the public school district as a whole has violated one or more of the civil rights statutes. A violation letter of findings will not be considered outstanding if OCR has accepted a corrective action plan to remedy the violation.
5. The U.S. Department of Justice does not have a pending suit alleging that the public school or the public school district as a whole has violated one or more of the civil rights statutes or the Constitution's equal protection clause.
6. There are no findings of violations of the Individuals with Disabilities Education Act in a U.S. Department of Education monitoring report that apply to the public school or public school district in question; or if there are such findings, the state or public school district has corrected, or agreed to correct, the findings.
7. The school meets all applicable federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

### U.S. Department of Education Green Ribbon Schools 2014-2015

Charter  Title I  Magnet  Private  Independent

Name of Head of School: Mr. Dan Frank

(Specify: Ms., Miss, Mrs., Dr., Mr., etc.) (As it should appear in the official records)

Official School Name: The Steward School

(As it should appear on an award)

Official School Name Mailing Address: 11600 Gayton Road; Richmond, VA 23238

(If address is P.O. Box, also include street address.)

County: Henrico State School Code Number \*: N/A

Telephone: 804 740 3394 Fax: 804 740 1464

Web site/URL: <http://www.stewardschool.org/> E-mail: [cary.jamieson@stewardschool.org](mailto:cary.jamieson@stewardschool.org) or [shane.diller@stewardschool.org](mailto:shane.diller@stewardschool.org)

\*Private Schools: If the information requested is not applicable, write N/A in the space

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.

Date: 01/29/2015

(Head of School's Signature)

Name of Board's Chief Officer: Mrs. Maria Jones

(Specify: Ms., Miss, Mrs., Dr., Mr., etc.) (As it should appear in official records)



District Name: Henrico County – Virginia Association of Independent Schools

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.

Maeva Best Jones Date: 01/29/2015  
(Board's Chief Officer's Signature)

### Nominating Authority's Certifications

The signature by the Nominating Authority on this page certifies that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of the Authority's knowledge.

1. The school has some configuration that includes grades Pre-K-12.
2. The school is one of those overseen by the Nominating Authority which is highest achieving in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental and sustainability education.
3. The school meets all applicable federal civil rights and federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

Name of Nominating Agency: Virginia Department of Education

Name of Nominating Authority: Dr. Steven R. Staples

(Specify: Ms., Miss, Mrs., Dr., Mr., Other)

I have reviewed the information in this application and certify to the best of my knowledge that the school meets the provisions above.

SR Staples 1/29/16 Date:  
(Nominating Authority's Signature)

### SUMMARY AND DOCUMENTATION OF NOMINEE'S ACHIEVEMENTS

Provide a coherent "snapshot" that describes how your school is representative of your jurisdiction's highest achieving green school efforts. Summarize your strengths and accomplishments in all three Pillars and nine Elements. Then, include documentation and concrete examples for work in every Pillar and Element.

### SUBMISSION

The nomination package, including the signed certifications and documentation of evaluation in the three Pillars should be converted to a PDF file and emailed to [green.ribbon.schools@ed.gov](mailto:green.ribbon.schools@ed.gov) according to the instructions in the Nominee Submission Procedure.

OMB Control Number: 1860-0509

Expiration Date: February 28, 2015

### Public Burden Statement

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this information collection is 1860-0509. Public reporting burden for this collection of information is estimated to average 37 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The obligation to respond to this collection is required to obtain or retain benefit P.L. 107-110, Sec. 501, Innovative Programs and Parental Choice Provisions. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the U.S. Department of Education, 400 Maryland Ave., SW, Washington, DC 20202-4536 or email [ICDocketMgr@ed.gov](mailto:ICDocketMgr@ed.gov) and reference the OMB Control Number 1860-0509. Note: Please do not return the completed ED-Green Ribbon Schools application to this address.

## Summary Narrative / Abstract

**Include below a concise summary of how your school is making progress in its efforts to meet the three goals (pillars) of the USED Green Ribbon Schools Program. In the last sentences of this abstract, please provide a summary of any monetary savings that have been realized because of your school's "green" efficiencies.**

Steward School's mission is to prepare our students for college and life, in a community defined by robust academics, inspiration, engagement and care. Our education philosophy is focused on applying a liberal arts perspective to real-world systems based thinking and problem solving. In order for this to be most effective, learning not only requires the active involvement of students and teachers, but also of parents, families, local professionals, and mentors from the broader community. Our students are encouraged to understand World issues through the knowledge of the Natural and Built Environment, Health and Wellness, and Energy and Resources. These areas of context studied together give students an opportunity to view themselves and the applied topics from the perspective of a World systems approach. As we apply real world challenges to the curriculum we are also focused on developing the skills sets for our students to become problem solvers, innovators and leaders in solving environmental and resource issues. Our character values in raising the next generations of Stewards not only involves teaching empathy but empowers students to find their passion for a cause greater than oneself and an understanding that our community is a World community made up of all living things that is dependent on each other. The future will be stronger if we can help develop young minds that not only have the understanding of the World but also have the skills to make those ideas become real solutions. The process and support of how we deliver and support this curriculum is still evolving but with success. We have support from our entire community and with this support, combined with the freedom of an independent school, we are fearlessly trying new curriculum and inspiring each other with new approaches, community resources and experts to help join us in this comprehensive new approach to learning. Our students and faculty are being stretched and pushed but they are having so much fun. We draw upon our faculty's expertise and pair this with outside industry experts to help support the highest level of knowledge and application to our lessons. Our curriculum is fluid and often being driven by student's interests and real world project opportunities with our partners. We are encouraging and creating opportunities for student-to-student mentorship across divisions. We have teams that work with all divisions and closely review curriculum maps and meet with faculty to brainstorm new opportunities and cross-curricular focuses into lesson plans. Professional development is offered throughout the year and is customized based on faculty interests and school wide curriculum focuses. Particular attention is being put on systems approach and applying technology and nature observation to engineering design as applied to Bio-Mimicry. Teachers have a robust summer grant fund that can be used to attend outside professional development all over the country. Internally we have regular professional development throughout the year and add opportunities as we bring in national speakers and educators. Professional development and how this relates to the STEM/STEAM curriculum is an ongoing and we have branched out to working with industry professionals that are leaders for inspiration and feedback of content and approaches. This is guiding the way to a broader focus on sustainability, reducing environmental impact, and improving the health and wellness of our entire school community. Our visiting innovators program has offered a wealth of knowledge and opened the door to teachers incorporating these lessons in cross-curricular activities in wellness, sustainability, and the environment. ESTEM education, watershed experiences, ecology, bio mimicry, K-12 leadership and character development training, safety, yoga and healthy body image as well as nutrition and hydration. We offer a series of community educational events and have reached over a thousand people in the community. Representing companies such as Nike, Ford Motor company, The Green Kitchen, Edible Education, Flora of Virginia, Seventh Generation and the School of Sustainability for the Chinese Language Institute, we have also brought in authors on ecology and nature exploration such as Doug Tallamy, Richard Louv and Kelly Johnson, to inspire our students and teachers. This produced a wealth of lessons and synergy between teachers and the community last year in building sustainability and ecology knowledge. This year we have had Catherine Steiner-Adair, and Paul Andersen at the Steward School to discuss technology and the balance we must strike in our lives with wellness. We have partnered with the community to help improve education and outreach in the three pillar areas. The VCU Rice Center, Greater Virginia Green Building Council, James River Association, Blue Bird Society of Virginia, "Wings, Worms and Wonder", Henricoplisis, and VA Tech are just a sample of these outside partners. In 2013 The steward school completed the construction of a 6200 square foot facility called the Bryan Innovation Lab. It stands as a living textbook for students to engage in learning world systems in an innovative way. Its design includes native meadows, diverse natural forest, student gardens, retention ponds, rain gardens and filtered storm drains. The

building itself is comprised of green materials and has abundant alternative energy systems such as photovoltaic panels, geothermal wells, radiant heat flooring, rain water cisterns, and hot water solar panels. The goal of the Bryan Innovation Lab is to educate about the natural vs. built environment with biomimicry lessons, design challenges, nature trails, wildlife reserves, and retention ponds. We educate about health and wellness in yoga, self-defense, nutrition, cooking classes, hydration, nutrition, sleep and physiology. We teach about energy reduction by monitoring the energy use of the campus, and have students working on initiatives to reduce use.

The investment the Steward school has made in sustainable initiatives including their long term investment in the Bryan Innovation Lab facility and program support has encouraged a culture change within the school. The support of professional development, visiting innovators, and the expertise and passions of our staff and faculty, along with this investment has acted as a catalyst in spreading awareness in new initiatives in sustainability connections within the classroom. In addition to classroom curriculum, we're seeing an increased interest in community stewardship engagement. A series of clubs, an organic vegetable garden, and parent engaged volunteer clubs have precipitated as a direct result.

The schools green initiative movement has produced a reduction in GHG emissions of 12.4% which saves the school an average of \$2700 per month.

This is an exciting time in education in the World. We are proud to be a part of change and have enthusiastically have shared our experiences with local, national and global educators. We are getting contacted more and more each day with other innovators in education and we hope to create a strong network to help support innovative approaches to exploring World systems thinking and learning.

## CROSSCUTTING QUESTIONS

**1. (CcQ1) Is your school participating in a local, state, or national school program that asks you to benchmark progress in some fashion in any or all of the Goals (Pillars)?** Yes No

Program Names (s) and level(s) achieved

- EcoLogo UltraChemLabs Certified Green Chemical Program(2011), e-water(prototype stage)
- Latino Education Advancement Program,
- Virginia Association of Independent Schools
- Southern Association of Independent Schools

**2. (CcQ2) Has your school, staff or student body received any awards for facilities, health or environment?** Yes

No Award name(s) and year(s) achieved (yyyy) (

- Connect the Dots for Green Schools Challenge, Leadership Award, 2<sup>nd</sup> place, (2012)
- Tricycle Gardens' Golden Trowel award Recognition, (2012)
- VAIS Go Green Virginia Challenge, 1<sup>st</sup> place, (2011, 2012, 2013)
- Governor's Environmental Excellence Award, 3<sup>rd</sup> place, (2014)
- Virginia Naturally School, (2014)
- Field of the Year Award for turf management, (2014)
- National Science Teacher Association Angela Award, student (2014)

## GOAL AREA 1: Reduce Environmental Impact and Costs

### Element 1A: Reduced or Eliminated Greenhouse Gas (GHG) Emissions

**3. (1A1) Can your school demonstrate a reduction in greenhouse gas emissions?**

Yes No Percentage Reduction 12.4% Time period: from 01/2011 to 12/2013

Initial GHG emissions rate (MT eCO<sub>2</sub>/person) 4.05

Final GHG emissions rate (MT eCO<sub>2</sub>/person) 3.55

Offsets: If your school offsets GHG emissions from building energy use, please explain any offsets used. \_\_\_\_\_  
How did you calculate the reduction? Total GHG emissions were calculated by entering utility bills info for electricity and natural gas used into the EPA Clean Energy and Resources calculator

**4. (1A2) Does your school track resource use in EPA ENERGY STAR Portfolio Manager?**  Yes  No

If yes, what is your score? \_\_\_\_\_ If score is above a 75, have you applied for and received ENERGY STAR certification?  
 Yes  No Year: \_\_\_\_\_

**5. (1A3) Has your school reduced its total non-transportation energy use from an initial baseline?**

Yes  No

Current energy usage (kBTU/student/year) 14042

Current energy usage (kBTU/sq. ft./year) 29.9

Percentage reduction: 12.7% Time period (mm/yyyy-mm/yyyy) 01/2011 to 12/2013

How did you document this reduction? Utility bills

**6. (1A4) What percentage of your energy consumption is derived from:**

On-site energy generation (e.g., solar, wind, waste-to-energy) 8648kwh – solar, no data for geothermal or solar hot water.

Other energy saving green technologies include: 13 geothermal wells, solar hot-water with 82% efficiency, radiant floor heating, additional solar panels on maintenance building

**7. (1A5) In what year was your school originally constructed?** 2000

What is the total building area of your school? 310,274 ft<sup>2</sup> Percentage of the building area that meets green building certification 0% Applied money that would have been used for LEED certification into additional green energy resources

**8. (1A6) Has your school added and/or renovated buildings in the past ten years?**  Yes  No

New Construction: Certification  Yes  No Type (e.g., LEED) LEED Level Built under guidelines of Silver LEED Certification, but did not pursue certification submission in order to save funds to be applied elsewhere.

Total new construction area 8,296ft<sup>2</sup> Percentage that meets green building certification \_\_\_\_\_%

**9. (1A7) Has your school implemented the Facility Energy Assessment Matrix within EPA's *Guidelines for Energy Management*?** Yes No

Does your school have an energy- and water-efficient product purchasing and procurement policy in place? Yes No

Has your school/division made any specific efforts to utilize furnishings, furniture, appliances, and building materials that have minimum production/transportation impact on the environment? Yes No Please describe:

We buy our supplies local whenever possible to help reduce the transportation cost and support small and local businesses. We also utilize local artisans whenever possible. The benches in two of our classrooms were crafted by a local artist using the wood being cut while clearing the land for the building.

Please describe any other indicators of the applicant's progress towards elimination of GHG emissions and building impact. Include metrics if available.

Just this year, two new PV solar panels were installed that now run the lights in the maintenance building. We utilize energy efficient bulbs, dimmer switches, and motion detection based lighting to cut down on energy use at all times of the day.

### Element 1B: Improved Water Quality, Efficiency, and Conservation

**10. (1B1) Can you demonstrate a reduction in your school's total water consumption from an initial baseline?**

Average baseline water use (gallons per occupant) 7440.32gallons/occupant/schoolyear

Current water use (gallons per occupant) 6176.7gallons/occupant/schoolyear (normalized)

Percentage reduction in domestic water use 0% on purpose. Fluctuations in rainfall have reduced the ability to track baseline water reduction. 17% water reduction is seen above. This is due to rainfall amounts and efforts to reduce domestic water use across campus have been included in the protocol for all faculty and students.

Percentage reduction in irrigation water use 0%  N/A (If irrigation system not in place.)

Time period measured (mm/yyyy - mm/yyyy) 03/2011 to 02/2014

How did you document this reduction (e.g., ENERGY STAR Portfolio Manager, utility bills, school division reports)?  
Utility Bills

**11. (1B2) What percentage of your school's landscaping is considered water-efficient and/or regionally appropriate?** 41 % Describe the type and location of plantings.

There is a native meadow and retention ponds at the Bryan Innovation Lab that makes up over half of the regionally appropriate landscape. The other half is a LS playground that has native trees and mulch to help reduce run off. The other 59% is mostly sporting fields and turf.

**12. (1B3) Describe any alternate water sources used for irrigation.**

The student gardens rely heavily on rain water collected in two x 2,500gal underground cisterns. These pump water into 5 x 200gal above ground cisterns spaced throughout the garden, which can be utilized instead of the local water supply.

**13. (1B4) Describe any efforts to reduce storm-water run-off and/or reduce impermeable surfaces.**

Rain barrels around campus capture drainage and two retention ponds capture run-off from field irrigation. One of the retention ponds has been engineered with native plant material to increase filtration.

**14. (1B5) The school's drinking water comes from:**

Municipal water source    Well on school property    Other   Briefly describe. \_\_\_\_\_

**Describe how the school's water source is protected from potential contaminants including lead.**

The water in this area is tested for contaminants, including lead, regularly and deemed safe by local officials. Testing of rain water and acidity is done by the 5<sup>th</sup> grade in the Fall semester to look at the differences in our water supply.

**15. (1B6) Describe how the school grounds are devoted to environmentally and ecologically beneficial uses such as providing habitat for wildlife or preventing erosion.**

We have a diverse natural forest surrounding the campus, with bat houses and a blue bird trail, with houses that have been winterized. We also have a best management practices (BMP) retention pond with native grasses and plants surrounding that catch run off and rain gardens in our parking lot. A bird garden in our commons offers habitat and a place for student observation.

**Element 1C: Reduced Waste Production**

**16. (1C1) What percentage of your school's total office/classroom paper content is postconsumer material, fiber from forests certified as responsibly managed, and/or chlorine-free? 0%**

How was this measured and which, if any standard did you use?

**17. (1C2) What percentage of waste is diverted from the landfill or incinerator due to reduction, composting, and/or recycling? Complete all the calculations below.**

A. Monthly garbage service in cubic yards (garbage dumpster size(s) x number of collections per month x percentage full when emptied or collected) 8 yd<sup>3</sup> x 12/month x 33% =31.7yd<sup>3</sup>

B. Monthly recycling volume in cubic yards (recycling dumpster sizes(s) x number of collections per month x percentage full when emptied or collected) 8 yd<sup>3</sup> x 12/month x 20% =19.2yd<sup>3</sup>

C. Monthly compostable materials volume(s) in cubic yards (food scrap/food soiled paper dumpster size(s) x number of collections per month x percentage full when emptied or collected)

3.8yd<sup>3</sup> x 4/mo x 90% =13.68yd<sup>3</sup>

Recycling Rate = (B + C) ÷ (A + B + C) x 100 =51%

Monthly waste generated per person = (A/number of students and staff members) 0.0430 yd<sup>3</sup>/person/month

**18. (1C3) List the types and amounts of hazardous waste generated at your school.**

Flammable liquids Only those within Bio labs and classrooms

Corrosive liquids Only those within Bio labs and classrooms

Toxics Only those within Bio labs and classrooms

Mercury None

Other Hazardous Waste: Spent Oil

How is this measured? It is collected in the appropriate containers and disposed of according to law.

How is hazardous waste disposal tracked? The company that disposes of it tracks the volume produced.

**19. (1C4) Describe other measures taken to reduce solid waste and eliminate hazardous waste.**

The chemistry/biology lab chemicals are disposed of according to Flinn Scientific MSDS sheets and most can be safely poured down the drain. Cooking oil is recycled. We participate in careful monitoring, and cleaning chemicals are only purchased in amounts that will be used so there is no chemical waste from these to be disposed.

**20. (1C5) Which, if any, green custodial standard is used by your school? UltraChemLabs Eco Logo**

What percentage of all cleaning products in use is third-party certified-green? 100%

What specific third-party certified-green cleaning product standard does your school use? UltraChemLabs

**Element 1D: Use of Alternative Transportation**

**21. (1D1) What percentage of students travel to/from school by:**

Walking/biking \_\_\_\_\_%      Carpooling (3+ students in a car) \_\_\_\_\_%      Riding the school bus \_\_\_\_\_%

The school does not use school buses except for transportation to sporting events and field trips. Describe how this information is collected and calculated.

Middle school students are now working on research and development of an idling policy to track the pollution, utilizing Vernier sensor equipment, to reduce pollution around the campus during carpool pickup. This will be a long term project to help integrate this into the culture shift of a school in a region that does not provide public transportation. They will be presenting their findings to the head of school, grounds committee and community. This will help bring awareness and help shape new initiatives in improving student health and wellness.

**22. (1D2) Has your school implemented:**

A well-publicized, no-idling policy that applies to all vehicles (including school buses)?  Yes  No

Designated carpool parking stalls?  Yes  No

Vehicle loading/unloading areas at least 25 feet from buildings air intakes, doors and windows?  Yes  No

Safe Pedestrian Routes to school or Safe Routes to School?  Yes  No If so, describe activities in your Safe Routes program or plan.

The school uses a number matching system so that children can stay inside, under supervision while they wait for their parents to pull up. Our carpool lane runs around the fields and only is close to doors when picking up their child.

**23. (1D3) Describe how your school transportation use is efficient and has reduced its environmental impact.**

The school has a fleet of buses for transporting athletes to “away” sporting events to reduce individual car use. Our maintenance team uses strictly electric carts and one of them is actually solar powered with a panel on the roof.

**24. (1D4) Please describe other accomplishments that have been made in reducing/eliminating negative environmental impact, focusing on innovative or unique practices and partnerships.**

Our maintenance team has been spearheading many green initiatives including: green floor finishes, solar panels on their work building, replacing burnt out bulbs with energy efficient ones, inspecting and sealing the HVAC for leaks, and scheduling the HVAC to operate based on the school schedule. Motion detection light systems are installed in the Bryan Innovation Lab, cutting down on energy and providing good lessons in reducing environmental impact. We also recently have partnered with University of Richmond and VCU to explore green transportation methods under a grant from the Ford Motor Company.

**GOAL AREA 2: Improve the Health and Wellness of Students and Staff**

**Element 2A: An Integrated School Environmental Health Program**

**25. (2A1) Does your school have an integrated pest management plan in effect?** Yes No

What is the volume of your annual pesticide use (gal/student/year)? N/A

Describe efforts to reduce pesticide use and your pesticide-use policies, including the IPM/green certifications your school has earned, routine inspections, pest identification, monitoring, record-keeping, etc.

The school contracts through Permatreat Pest Control and they only use their traditional chemicals outdoors. We're trying to use best practices in staying on the cutting edge in industry through the use of new technologies to reduce pesticide use. Our turf has won the 2014 Field of The Year Award for using best management practices, and our fields are recognized as some of the best maintained in Virginia and our turf management specialist sits on the board of directors of Virginia Turf Grass Council. He sprays five times a year only, at the label recommended rates. We have reduced our nitrogen use to 3.5 lbs. per thousand the past two years. This is down from 6 lbs. per thousand. We take soil samples yearly to monitor our soil nutrients, the average schools are on an every other year soil sampling regimen if they soil sample at all. We plan to fraze mow our Baseball field this spring, further cutting down on our chemical use.

**26. (2A2) Contaminant Controls**

**Mercury:** Has the school identified and properly removed all sources of elemental mercury and prohibits its purchase and use in the school? Yes No Please explain if "No." \_\_\_\_\_

**Carbon Monoxide (CO):** The school does not have any fuel burning combustion appliances. Yes No

If your school has combustion appliances, does your school annually inspect these appliances to ensure no release of carbon monoxide? Yes No By whom? \_\_\_\_\_

Are CO alarms installed that meet national fire code requirements? Yes No

**Radon:** Has your school tested all frequently occupied rooms that are at or below ground level for radon gas and has fixed and retested all rooms with levels that tested at or above 4 pCi/L OR your school was built with radon resistant construction features and tested to confirm levels below 4 pCi/L? Yes No

Please explain if "No." \_\_\_\_\_

**Chromated Copper Arsenate (CCA):** Has your school identified any wood playground or other structures that contain chromate copper arsenate and has eliminated student and staff exposure to these materials?

Yes No Please explain if "No." No structure has any chromate copper arsenate.

**Exhausting Airborne Contaminants:** Has your school installed local exhaust systems for major airborne contaminant sources as appropriate? Yes No This includes:

Dust collection systems Yes No  N/A Chemical storage rooms Yes No  N/A

Fume hoods in science labs Yes No  N/A Copy/printing facilities Yes No  N/A

**Secondhand Tobacco Smoke:** Does your school prohibit smoking on campus and in public school buses?

Yes No

**27. (2A3) Ventilation**

**Describe your school's practices and schedules for inspecting and maintaining the building's ventilation system and all unit ventilators to ensure they are clean and operating properly.**

The HVAC systems are inspected quarterly for any leaks, or reduction in air quality and the filters are changed during this

time. Any defective unit is immediately serviced in order to increase the air quality and reduce the chance of Sick Building Syndrome. There is an annual inspection of the HVAC sealing and upgrades to help reduce energy waste.

**Describe actions your school takes to ensure that all classrooms and other spaces are adequately ventilated with outside air, consistent with state or local codes, or national ventilation standards.**

We emphasize inspection and maintenance of the HVAC system in compliance and beyond with state standards. The state standards for Virginia are above the EPA standards.

**28. (2A4) Asthma Control** Does your school have an asthma management program in place consistent with or similar to the National Asthma Education and Prevention Program's (NAEPP) *Asthma Friendly Schools Guidelines*? Yes No

Describe actions your school takes to prevent exposure to asthma triggers in and around the school.

The campus is maintained as tobacco free, and we use only third party certified green chemicals for cleaning. Any deep cleaning is done by a night cleaning crew to help maintain air quality. As old carpets are wearing out, we are replacing them with low emission carpets and these are shampooed twice a year and vacuumed every night. In addition, we use low emission paints for the walls, and change the air filters in our HVAC system quarterly, as they are inspected. We also have altered our turf management techniques to use half the chemicals used previously. When an application is made to our athletic fields, the full community is alerted via email and the fields are closed off.

**29. (2A5) Indoor Air Quality** Describe other steps your school takes to protect indoor environmental quality such as implementing EPA's *Indoor Air Quality Tools for Schools* and/or conducting other periodic, comprehensive inspections of the school facility to identify environmental health and safety issues and take corrective action.

The maintenance for all facilities is highly proactive and great expense and attention is put into preventative maintenance and upkeep. There is a full annual inspection of the school's infrastructure to ensure that any mold or infrastructure issues are addressed before they develop to the extent of affecting indoor air quality. The rooftops are inspected quarterly in conjunction with the HVAC to address any structural damage. We adhere to the state standards for air quality which are more extensive than the EPA standards. We change the filters in the HVAC system quarterly and the night cleaning crew vacuums every night, thereby reducing allergens. These best management practices have led to a very healthy school system and community.

**30. (2A6) Moisture Control**

Are all structures visually inspected on a regular basis and free of mold, moisture, and water leakage?

Yes No

Is proper indoor relative humidity maintained below 60%? Yes No

Are moisture resistant materials/protective systems installed (e.g., flooring, tub/shower, backing, and piping)? Yes No

Describe the actions your school takes to control moisture from leaks, condensation, and excess humidity and promptly clean up mold or remove moldy materials when it is found.

Every summer, our maintenance crew does a deep clean in classrooms to check for mold and remove hanging furnishings that may harbor mold. Preventative maintenance is the method employed to keep mold, and any structural damage from leaks or condensation in check. Our facilities are still in excellent condition and our facilities management plan has a rigorous action plan for maintaining all buildings and systems.

**31. (2A7) Chemical Management** Does your school have a chemical management program in place? Describe how your school controls and manages chemicals routinely used in the school to minimize student and staff exposure.

The school's comprehensive chemical management plan aligns with what is set forth by *EcoLogo UltraChemLabs Green Chemical Use* guidelines; it includes best management practices and routine cleaning along with training and strict oversight of chemical use. The only staff members to handle harsh chemicals are the maintenance department and cleaning crew. The maintenance department has an entirely separate building with locked bins for any non-green chemicals, however a majority of chemicals used are 100% green. All cleaning chemicals are secured and locked in custodial closets that have posted MSDS sheets for quick reference and chemicals are disposed of according to these protocols. All night cleaning crew receives training on how to use chemicals and careful purchasing and monitoring eliminates any need for disposal or waste.

## Element 2B: Nutrition and Fitness

### 32. (2B1) Has your school submitted an application for:

A) the USDA's HealthierUS School Challenge? Yes No

B) the Governor's Nutrition and Physical Activity Awards Program? Yes No

If "Yes," describe any award level earned, the year(s), and any other pertinent information.

### 33. (2B2) Does your school participate in a "Farm to School" program to use local, fresh food?

Yes No If "Yes," explain.

We are partnered with Relay Foods, a local company that offers local, fresh food directly on campus once a week for pickup. Our main food supplier, Produce Source, offers local buying options which we take advantage of whenever possible. In addition we utilize produce from our gardens.

### 34. (2B3) Does your school have an on-site food garden? Yes No

If "Yes," does the garden supply food for school students in the cafeteria, a cooking or garden class, or to the community?

Yes No If "Yes," please explain.

The gardens supplied school lunches and over 800lbs of vegetables to FeedMore last year. They also served as the source for Edible Education's cooking classes for students in underserved areas. The gardens are maintained with the help of students, and provide education on how plants grow for young students in classroom curriculum, and afterschool clubs, and special summer programming.

### 35. (2B4) What percentage of food purchased by your school is certified as "environmentally preferable?" 30%

Please briefly explain the type of foods purchased and how this is done.

We grow much of our own produce, but we also make efforts to buy locally. Our suppliers, Produce Source and Performance Food Groups, are working to eliminate waste and provide a more sustainable model for transporting and preserving food.

### 36. (2B5) What percentage of students over the past year spent at least 120 minutes of school-supervised physical education per week? 64.5% Describe how this is measured and monitored.

This was measured by defining physical education as being in a classroom setting. Lower school and middle school students must take physical education courses. US students must play a sport, but this was not included in our calculation. Recess was included in this calculation.

### 37. (2B6) What percentage of school-supervised physical education is spent outdoors? 50% Describe how this is measured and monitored.

Outdoor PE is timed to be during the fall and spring months where the temperature is suitable. Class activities are

monitored by a physical education instructor and typically occur for two weeks out of four in a month.

**38. (2B7) What percentage of your school's current student body has participated in EPA's Sunwise Program or an equivalent program regarding UV protection and skin health? 0%** Describe how this is measured and monitored. Lower School teaches sun protection every year to the children, but it is not a formal program from an outside source. It is instead a well-researched program from experienced faculty.

**39. (2B8) Describe the type of outdoor education, exercise, and recreation that is available to your students during and after school.**

The physical education department organizes their units to coincide with the sport seasons. Typically at the beginning and end of the year is when the kids get most time outside during PE and when we typically do physical fitness testing. The middle school students are allowed to play outside during lunch and almost everyone is out there. After school, co-ed games are the norm with girls and boys competing in ultimate frisbee, soccer, football, and more. Alternative sports are offered after school as well such as horseback riding, golf, rock climbing, and swimming for students.

**40. (2B9) Are health measures integrated into school assessments and reported to the community?**

Yes No If "Yes," please describe how this occurs.

As an independent school, our health measures are self-directed by faculty members that are registered nurses, and seasoned athletic directors. Physical fitness testing occurs two to three times a year in the MS and LS classes. The students and faculty also organize/participate in community events such as: Walks for Juvenile Diabetes, Walk to end Alzheimer's, Susan G Komen Race for breast cancer, Turkey Trot, and the 10k healthy school challenge.

**41. (2B10) Does the school use a Coordinated School Health approach or other health-related initiatives to address overall school health issues? Yes No**

**A) Describe the health-related initiatives or approaches used by the school including:**

- partnering with postsecondary institutions, businesses, nonprofit organizations, or community groups to support student health and/or safety
- using a school nurse and/or a school-based health center
- implementing positive school climate programs such as anti-bullying programs, peer counseling, or similar.

We are partnering with passionate individuals and organizations that are committed to bringing health and safety education to our students, faculty and staff. We have a full time registered nurse on staff, comprehensive health and wellness program, physical fitness and sports are a fundamental part of our programming. In addition we are working with individuals that educate our school about self-defense, childhood development, technology and bullying lessons, K-12 leadership and character development training, safety, yoga and healthy body image as well as nutrition and hydration. These partners utilize the school gardens for education and donation to underserved students. The school cafeteria focuses on transforming produce from local vendors into tasty, balanced meals for the students that are rich in diverse foods. A local breadmaker, Evrim Dogu of Sub Rosa bakery in Richmond, has given lessons in the lifecycle of breadmaking and why diverse grains are much better for you.

**B) Describe any other practices regarding a) the school's built and natural environment and b) the fitness and nutrition programs that are employed to promote good nutrition, physical activity, and overall student and staff health.**

a) The AP Environment class uses the native meadows and woodlands to learn about the effects of our built environment and campus on the natural environment's species of plants, insects, animals and water. We cover the

watershed extensively, and look at how our parking lot runoff is channeled into a rain garden, filtering the water. All of this opens discussion about a natural vs built environment.

b) Middle School health curriculum has been revamped to include the study of your body as a system in order to fuel your body and mind.

### **GOAL AREA 3: Provide Effective Environmental and Sustainability Education Incorporating STEM, Civic Skills, and Green Career Pathways**

#### **Element 3A: Interdisciplinary Learning about the Key Relationships among Dynamic Environmental, Energy, and Human Systems**

**42. (3A1) Describe how your school has a specific emphasis on environmental or sustainability literacy.** Our partnerships within the community have brought some powerful and amazing innovators to visit and collaborate with students and staff at The Steward School on sustainability, environmental issues, social entrepreneurship and ecology. Representing companies such as Nike, and Ford, we have also had authors such as Doug Tallamy, and Richard Louv that make up just a handful of the visiting innovators. As a direct result, students started a sustainability club for composting, and growing leaders club for the student gardens. These clubs have also created signage to help spread the message around campus. We have partnered with Sustainable RVA, James River Green Building Council, and the BlueBird Society to bring speakers and professional development for teachers. We have since switched to 100% green chemicals, and opened discussions about idling and electricity usage in each building. And this all trickles down to directly impact the students and increase their literacy for these subjects. The freshmen travel to Polyface farms in the Shenandoah Valley every year, the 6th graders design alternative transportation for Richmond, and the 5th grade tests the soil and water around campus. Teachers and students from all grades have enthusiastically embraced systems thinking and ecology into their lives.

**43. (3A2) Describe how environmental and sustainability concepts are integrated throughout the curriculum.** The seniors and freshmen had to write down their top problems they think the world will face in the coming century for their biomimicry design day. The top problems we saw involved water, food, global warming, shrinking resources, habitat loss, and the third world. Our students are painfully aware and empathetic towards these problems and it was apparent in their designs. All of lower school helps plant and maintain the gardens as part of their cross-curricular lessons in nature. They helped grow cotton and brought a guest speaker to talk about the impact of growing cotton and the process of turning cotton into clothes. It is a great tie in to our visiting innovator for the spring of 2015 that represents Nike's sustainability division and will help make the connection between sustainability, business, and best management practices. The mathematics department has taken to it as well and been using the slopes in our parking lots, grounds, and fields across campus to determine the impact on erosion of the soil and the benefit of rain gardens in preventing this. Lessons in the meadows are given as to why planting native grasses and plants are helpful to not only reduce erosion, but also create a habitat and ecosystem for species that are displaced due to construction. These tie in directly to our education for fourth graders on the watershed and our role in it. The Bryan Lab ambassadors, a MS club, have been researching the cons of idling and ways to reduce energy usage on campus. They will be presenting their research to executive faculty and could not be more excited about having a direct role in the school's future carbon footprint.

**44. (3A3) Describe students' proficiency levels for environmental and sustainability concepts in a) school and division assessments and b) any external measures the school uses.** Students are regularly exposed to environmental concepts in hands on, real world applications to better prepare them for green industry demands and research. Our school has seen a monumental shift towards reducing food waste and solid waste production, and increasing recycling, composting, awareness of sustainability. We use 100% compostable materials in the lunchroom, and excess food is composted. Our composting has increased to over 3.69tons/mo since, more than 200% up from two years ago. We have students researching idling policies, carbon offsets, designing logos for Green Building companies, and comparing energy use across campus, but all in various classroom settings and subjects. Due to

being a private school, we do not adhere to state assessments, and instead align ourselves with industry standards. We have a student who has won the Angela Award from the NSTA due to her efforts in the classroom and outside of it. These external practices are a direct result of the community in Steward that supports environmental literacy and innovation.

**45. (3A4) Describe whether/how significant teacher professional development opportunities in environmental and sustainability education are provided for all teachers in your school.**

Each year 3-5 visiting innovators visit and mentor the full school community in topics that focuses on sustainability, innovation, health and environment. - helping to spread awareness and share in our culture shift to a more environmentally conscious school. Our visiting innovator last year, David Berdish, Sustainability manager at Ford Motor company, gave a provocative presentation to all Middle School and Upper School including faculty, staff and students on green manufacturing and design, transportation issues and human trafficking problems within the industry of motor vehicles. This year, a speaker from Nike's sustainability program will be doing the same. Teachers are invited to bring their classes down to help plant, water, or harvest the crops in the organic student gardens during the Fall and Spring for donation to FeedMore, healthy cooking demos, or a variety of other lessons the teacher may have. Summer professional development, titled "Innovation Week", is offered to teachers, where they learn environmental sustainability, biomimicry, systemic STEM practices, and engage with other teachers in creating horizontal and vertical integration of their lessons. They bring lesson plans for the next year to work on with resident environmental experts. Currently a third of teachers, across multiple divisions, have gone through this camp due to their passion being in these areas. For the lower school teachers, Kelly Johnson, of "Wings, Worms, and Wonders", helped create lesson plans and systematic STEM practices for these teachers across their curriculum – integrating sustainability into their everyday plans. Our stellar summer grant program allows teachers the opportunity to bring in professional development that suits their passions for teaching, and lets others share in that passion. We do not force sustainability professional development on teachers, and instead help those that are interested to hone their knowledge. This then allows the opportunity to offer their lessons to other divisions, and other teachers, delivering a powerful and knowledgeable teacher to the classroom as opposed to requiring all teachers to teach all subjects. What's produced is a highly adaptable, highly energized set of teachers that pass this energy down to the students in a saturated, focused lesson that has impact, relevance, and passion.

**Element 3B: Use of the environment and sustainability to develop STEM content knowledge and thinking skills to prepare graduates for the 21st century technology-driven economy**

**46. (3B1) For schools serving grades 9-12**

What percentage of your eligible graduates last year completed Advanced Placement Environmental Science? 13.6 %

What percentage of these students scored 3 or better on the Advanced Placement Environmental Science assessment? 30 %

Does the school use other environmental science-related courses and measures instead (e.g., International Baccalaureate - Environmental Systems, 2- and 4-Year IHE dual enrollment, etc.)? Yes, the school looks at all of our courses through a systems approach and includes environmental science lessons in many of our other AP courses such as AP Physics, AP Chemistry, and our Biomedical Design and Innovation Design classes. These classes are required of eligible graduates and so the percentage is closer to 100% of students who have been exposed to environmental science through biomimicry, physics, chemistry and innovation design.

**47. (3B2) Describe whether/how your school uses sustainability and the environment as a context for learning science, technology, engineering, and mathematics skills and concepts and how much time is devoted to this practice each week.**

We have a fantastic team of passionate faculty and staff members that spend a tremendous amount of time and energy making cross-curricular connections that create big picture connections and systems thinking into their lessons. Our focus as a school is shifting to innovation, design and research within a liberal arts setting. Observation, data collection, problem solving and scientific inquiry are skill sets that are being embraced by art, English, math, and history teachers.

We are experiencing a renaissance in education and our inspiration is that we are all a part of this World and our students should be excited to discover and shape an improved one. It would take pages to describe every lesson and every connection to the sciences because there are so many. These connections have become intertwined across curriculum and divisions and student experiences are evolving into something very unique. We are bringing in experts and encouraging and supporting faculty and students in their own passions. In addition to the investment of ideas and people we are constantly investing in equipment and new technologies as well as designing our own. The exploration and understanding of sustainability and our natural resources is complex and we are tackling these topics from a many different angles, lessons small and large. Students are encouraged to fail and applauded for resilience and problem solving. Our classes utilize the technology of Vernier Technology sensors for data collection. This data is applied to various software, programing and coding. Students design and 3-D print their own creature using AutoCAD based design software while meeting specific environmental parameters outlined by assignment. Engineering and erosion control projects of small towns are constructed by middle school teams.

**48. (3B3) Describe whether/how your school uses sustainability and the environment as a context for learning green technologies and career pathways.**

The Visiting Innovators Program brings many green technology professionals into the Steward School to help educate and inspire the students. We also have had two colleges, Warren Wilson and Guilford, who specialize in sustainability visit for students to talk to and tour their options. The Steward School also has partnered with a local non-profit, The Tricycle Gardens, a company that offers access to fresh vegetables for lower income families. Every year, they offer volunteer and mentor programs that include on site work for Middle school special programs and Lower School nutrition programs in partnership with the Science Museum and Bon Secour. A strong network of organic vegetable gardeners act as advisory when questions or techniques are explored. These experts include: Amy Hicks, Janet and Dan Aardema at Broadfork farm, Tricycle gardens, and a Thyme to Plant and James River Green Building Council.

**49. (3B4) Describe how your school's environmental and sustainability education program pays particular attention to systematic STEM practices required for an age-appropriate understanding of natural systems.**

Our sustainable education program focuses on applying the scientific method through all divisions in a natural environment focused systemic approach. Data collection, observation, making graphs, and analyzing and answering a problem begins at the Kindergarten level with activities like insect counting, observing and sketching natural flora, and meaningful watershed experiences. These skills are further honed through the grades with research on environmental policy change in English, studying erosion in math, and earthquake mechanics in science. We have also partnered with VA Tech on our Arabadopsis project for Middle School to study gene expression through plants. This partnership has produced lessons for third grade on genetics using data collected by the middle schoolers, leading to a better, and more hands on method of learning for the third graders. Abstract thought, biomimicry based design, and senior projects on natural systems are all the achievement of this systemic approach.

**50. (3B5) Do your students engage in Meaningful Watershed Education Experiences (MWEE) or participate in other meaningful outdoor investigations?**

Yes! The 4th grade learns all about how our field irrigation, retention ponds, rain gardens, and storm drains all make up part of our watershed and how we contribute to the overall watershed of our county. Testing the water for pH and dissolved oxygen using Vernier sensors to reinforce mathematics skills, and learning local geography and map reading are integral parts of this lesson. Every student that takes Algebra measures the slope of parking lots and fields to determine flow rates and erosion rates respectively. This is tied into civic engineering and planning of parking lots and campuses. An annual canoe trip down the James River for the seniors involves stopping off to test water quality, planning routes around devastated areas, and abstract planning for flood situations. Our seniors in AP Environmental Science regularly test and report back water quality of campus ponds.

### **Element 3C: Development and Application of Civic Knowledge and Skills**

**51. (3C1) Describe how outdoor learning is used to teach an array of subjects in contexts, engage the broader community, and develop civic skills.**

Outdoor learning spans subject lines and always helps foster vertical and horizontal communication as the outdoors provides an opportunity for students of all ages to learn and make valuable connections to the outdoors and their community. We have students engaging with the organic gardens to provide lessons in: mathematics, history of crops, biodiversity in grains, counting, sketching, erosion, porosity of materials, geography, watershed experiences, energy as a resource and community engagement with food access for underserved schools in the area. Field trips to local community gardens teach students teamwork, communication, organization and other civic skills that are used to create presentations and video journals of their work for the community.

**52. (3C2) Describe whether/how students are encouraged to conduct class or individual, age-appropriate, civic/community engagement projects focused on environmental or sustainability topics. If not in all grades, specify which grade levels and subjects. Describe students' civic/community engagement projects and how they integrate environment and sustainability topics.**

Stewardship is an integral part of character development at our school, and students must complete community service hours to graduate. Many of the students choose environment related volunteer work with the James River Association, recycling events, Tricycle Gardens urban farm, and the growing leaders work with Home Again homeless shelter. Our Latino Education Advancement Program (LEAP) worked with Youth Life Foundation, a nonprofit focused on providing after school education for underserved communities, on STEM related projects over the summer. Students participated in Citizen Science in partnership with the BlueBird Society of Virginia; we conducted workshops that were open to the community as free events where people learned habitat conservation, constructed bluebird houses, and learned to collect data on eggs and hatching. Maymont partnered with Steward students to host Frog Watch, a national citizen science data collection project to promote more research on amphibian health. The Steward School is also working in collaboration with VCU and The Ford Motor company on a student led grant that addresses food deserts and transportation needs for a pilot program called "Green Rides." This program will provide transportation to identified food desert residents to a city center with diverse food marketplaces.

**53. (3C3) Describe whether/how your school partners with local academic, businesses, government, nonprofits, informal community institutions, museums and/or other schools to help advance your school, other schools (particularly schools with lesser capacity in these areas), and/or the community toward meeting goals consistent with those of the Green Ribbon Schools program.**

The Steward School has an extensive partnership network that comprises of expertise in sustainability, energy conservation and environmental education. These partners also include groups that serve underserved youth in Richmond Virginia. These experienced and passionate advocates all work to deliver customized lessons to make the most impact for student understanding of sustainability issues in their own community and worldwide. Edible Education has hosted multiple nutrition education events here, as seen in the video on our site, to help teach kids how to cook nutritious meals from the garden. Edible Education also harvests the food in a special lunch program where they are providing healthy meals to St. Andrews, an underserved Lower School in Richmond's East End. Anna Julia Cooper Episcopal School and Youth Life Foundation, both serve underserved youth from Richmond. A local partner, MightyKids, came in to host the physical fitness portion of MS Health education, teaching the kids how to check their pulse, what heart rate is, why it matters, and how our campus promotes walking through our blue bird trails and forested areas. The Blue Bird Society, James River Green Building Council, Sustainable RVA, Maymont Foundation, Science Overdrive, Lumen Energy, Rice Rivers Center VCU, Bonner Center for Civic Engagement UR, Green Rides, Tricycle gardens, Code RVA, RVA Makers guild, Science Museum, Bon Secours, Central Virginia Food Collaborative, James River Association, Chesapeake Bay Association have created a comprehensive network of support.

**54. (3C4) Describe additional indicators or benchmarks (quantified whenever possible) of progress toward the goal of 100% of your school's students being environmentally literate.**

The school intends to use surveys as a benchmark for our environmental literacy. This year, the school went 1 to 1 and has been focused on rolling that out. There are plans to use surveys with these 1 to 1 devices to help collect quantifiable data in the future. A less formal indicator is asking questions before any lesson on sustainability or the environment, and then asking the same questions after. It is very often that scores improve and even a week later the information retained. We have made it a point to ask students we remember from the lesson some of the same questions we asked previously. Many remember the answers still.

**55. (3C5) Describe any other ways that your school integrates core environment, sustainability, STEM, green technology, and civics into curricula to provide effective environmental and sustainability education, highlighting innovative or unique practices and partnerships.**

Whenever we are planning activities for a grade wide event, we always try to make sure we incorporate some form of sustainability or environmentalism, and a form of civics. With our 9<sup>th</sup> graders, we gave a lesson that combined biomimicry with digital responsibility. We also used biomimicry in our senior day activities. The students self-identified as artists, engineers, or architects and they all had to try and mimic a concept from nature to solve a problem. They learned of the Nambi beetle and how a device, the AirDrop, was modeled after it's adaptations to desert life. Our partnerships with local companies and our Visiting Innovators program helps bring this tertiary education to life at Steward, and create lasting impressions upon our students. We have been experiencing a culture shift here at Steward, and everybody is much more environmentally conscious.



The Bryan Innovation Lab is Steward's resource for all things innovation and design. It boasts a native meadow, two BMP retention ponds, and naturally sourced materials with PV solar panels, geothermal wells, and underground cisterns.

Planting in the Gardens with all grades, students in middle school applied their knowledge of geometrical spacing and the plants adult root size to determine the maximum yield of each bed. Here, the lower schoolers help them put their work to practice and plant!



Physics and Biomedical Design instructor, Laura Akesson, teaches a student how to solder in a hackRVA partnership lesson to teach kids the basics of soldering and circuitry to make speakers.

Here, students can be seen tracking the progress of their cotton plant, before getting to learn the process of how cotton turns into clothes. Lessons on natural resource consumption and sustainability followed in the classroom.



Cary Jamieson, Director of the Bryan Innovation Lab, giving a lesson on the importance of using raised beds to reduce run off when planting in the organic garden, in front of the native meadow and retention pond.