



## 2015-2016 School Nominee Presentation Form

### ELIGIBILITY CERTIFICATIONS

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#### 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. The Department of Defense Education Activity (DoDEA) is not subject to the jurisdiction of OCR. The nominated DoDEA schools, however, are subject to and in compliance with statutory and regulatory requirements to comply with Federal civil rights laws.
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 2015-2016**

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Public Charter Title I Magnet Private Independent Rural

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

Mr. Mitchell Nida

Official School Name: (As it should appear on an award)

Berkeley Springs High School

Official School Name Mailing Address: (If address is P.O. Box, also include street address.)

149 Concord Avenue Berkeley Springs West Virginia 25411



County: Morgan

State School Code Number \*: 058-501

Telephone: 304-258-2871 Fax: 304-258-5058

Web site/URL: <http://berkeleyspringshighschool.weebly.com>

E-mail: [mnida@k12.wv.us](mailto:mnida@k12.wv.us)

*\*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.

A handwritten signature in blue ink that reads "Mitchell Nida".

Date: 1-28-2015

(Principal's Signature)

Name of Superintendent:

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

Mr. David Banks

District Name: Morgan County Schools

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

A handwritten signature in blue ink that reads "David Banks".

Date: 1-28-2015

(Superintendent'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: West Virginia Department of Education

Name of Nominating Authority: Ms. Robin Sizemore

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

A handwritten signature in blue ink that reads "Ms. Robin Sizemore".

Date: 1-28-2015

(Nominating Authority's Signature)

## **SUMMARY AND DOCUMENTATION OF NOMINEE'S ACHIEVEMENTS**

Provide a coherent summary 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. Then, include concrete examples for work in every Pillar and Element. Only schools that document progress in every Pillar and Element can be considered for this award.

Please see attachment.

## **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 [ed.green.ribbon.schools@ed.gov](mailto:ed.green.ribbon.schools@ed.gov) according to the instructions in the Nominee Submission Procedure.

OMB Control Number: 1860-0509

Expiration Date: March 31, 2018

### **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.



**BERKELEY SPRINGS HIGH SCHOOL**  
**SUMMARY**

**County:** Morgan County

**School:** Berkeley Springs High School

**Principal's name:** Mitch Nida

**Principal's email:** mnida@k12.wv.us

**Principal's phone:** 304-258-2871 x103

If the lead contact is not the principal, complete this section.

**Lead contact's name:** Leigh Jenkins

**Lead contact's email:** nljenkin@k12.wv.us

**Lead contact's phone:** 304-258-2871 x126

**Grade levels:** 9 - 12

**School type:** Public Secondary School

**Does your school have at least 40 percent of your students receiving free or reduced meals?**

Yes, 46.26%

**Total enrollment:** 716

**Graduation rate:** 91%

**Attendance rate:** 96%

Berkeley Springs High School has demonstrated a culture of environmental awareness and concern for the protection of our pristine, rural setting in the eastern Appalachian mountains of West Virginia. The school is blessed to lie within the Chesapeake Bay watershed which has provided the school with access to watershed education and opportunities for funding in the area of environmental education. Along with a community of individuals focused on healthy watersheds and education outreach, the school has always had the support of the community in providing key education and opportunities for students to participate in service projects to improve the riparian buffer of Warm Springs Run and to create awareness for protecting and improving other local watersheds.

Along with the rural nature of the community comes an interest in the resurgence of farming and growing produce for our local farmers market. Local growers have supported the culture of growing fresh produce by providing employment for many of our students as well as providing options for students to grow produce on campus to be sold to the school district for use in school cafeterias. Local produce from many of the surrounding farms are sourced through the school district and enhance the commitment to providing local, nutritious produce while contributing to economic development in the community. All of these small, sustainable steps educate students to become aware of their



Our school's facilities management are also striving for safety and excellence in the products they choose for use in our schools. While currently under some budget constraints which preclude our ability to make major facilities improvements, conservation of energy is a priority for all county employees. At Berkeley Springs High School, professional employees and staff alike are encouraged to model behaviors that are consistent with conserving energy and recycling paper products. While improvements can always be made, our high school has written and received recycling grants which bring an awareness to students that recycling matters and that turning off lights when one leaves a room is an easy habit to get into. In addition, the increase in asthma among our student population has led the state to mandate certain steps to improve indoor air quality for all students attending county schools, including Berkeley Springs High School. While many facilities improvements could be made to make the operation of the county schools even more efficient, conservation is the tool that the county can employ right now that provides the greatest opportunity for sustainable practices.

The curriculum provided for students at the high school is a reflection of our teachers and their commitment to creating an environmentally literate citizenry in our graduates. Although there is no state requirement to complete an environmental science course in order to graduate, our state now requires students to complete an earth science course during their ninth grade year, followed by biology, and a third science of choice. The exposure to earth systems science was seen as a vital move toward overall science literacy for students. Through the Next Generation Science Standards, all students will encounter a broader and deeper exposure to how our earth works in order to make more sound and environmentally aware choices in the future. At Berkeley Springs High School, all students will be exposed to environmental studies through the science and social science coursework they are required to take, whether it be in civics or in their earth science, biology, and chemistry courses.

To close, the process of applying to the West Virginia Sustainable Schools program and to the Green Ribbon Schools program has heightened our awareness of all that we are currently doing to promote an environmentally literate student population, as well as the areas where we can improve our curriculum and our facilities management toward a more sustainable future.



## **BERKELEY SPRINGS HIGH SCHOOL** **DOCUMENTATION OF ACHIEVEMENT**

Berkeley Springs High School has won the following awards:

- In 2001, Leigh Jenkins, Eastern Panhandle Soil Conservation District, Conservation Teacher of the Year
- Best 1st Year Envirothon Team 2004 (12th Place in state competition)
- 2015 Envirothon 4th Place Team

### Pillar I – Reduce environmental impacts

Berkeley Springs High School (BSHS) is working to improve the conservation efforts surrounding their facilities and practices. They have an energy management and conservation plan that aims at reducing waste and costs. They are part of a CommuniTree program that focuses on urban tree planting and watershed education. They have made great strides in the areas of recycling and transportation as well. While many counties in West Virginia have not prioritized purchasing recycled products or certified green cleaning products, Morgan County Schools are leading the way in this area with county-wide policies. Lastly, the county has also embarked on a large study to assess their transportation practices. They are implementing improvements and new policies based on this survey.

### Pillar II – Improve health and wellness

BSHS has 816 square feet of growing space on campus and uses local produce in their cafeteria. Students spend at least 30 minutes each day engaging in physical activity. The campus weight room is available to students and staff before and after school. BSHS also offers a variety of sports, PE classes, dance, weight training, and other activities. Students in physical education participate in outdoor sports that include softball, tag football, and track. Berkeley Springs High School has a wellness committee that strives to promote overall health and well-being. The committee provides incentives, such as free pedometers, if teachers voluntarily practice preventative activities such as losing weight, exercising, eating a healthier diet, or wearing sunscreen in the summer. During the winter months, teachers are given suggestions for eating healthy over the holidays. Teachers participate in the "Let's Move! WV" by having their students get up and move around sometime during class.

BSHS is also very conscientious of indoor environmental quality. They employ an expert to insure BSHS adheres to ASHRAE standards, strictly follows WV code with their Integrated Pest Management plan, and utilize a Chemical Hygiene Plan modeled from the Flinn Chemical Hygiene Plan. Mercury has been eliminated at BSHS, radon and mold are monitored for and experts are consulted if mold is found, tobacco is prohibited on campus, and BSHS conducts all periodic and comprehensive inspections of the school facility to identify any environmental health or safety issues.

### Pillar III – Sustainability literacy and learning

BSHS incorporates sustainability literacy and learning in a wide variety of classes to address the social, economic, and environmental aspects of sustainability. In economics class, students design, create, and market products in economically sustainable ways. Students in civics learn about current environmental issues like fracking and climate change and how they influence policy decisions, then A.P. Government students learn about the impact of mountaintop removal and how this issue impacts the state of West Virginia. Chemistry classes learn about green technologies and



involved in monitoring (using Save Our Streams protocol) and maintaining the health of a nearby stream including planting 150 trees on the BSHS campus to help serve as a riparian buffer. Students also helped construct four raised garden beds for a total of 256 square feet of growing space. A unique highlight of BSHS's sustainability curriculum is the elective Experimental Design course. This inquiry-based course allows students to design their own ecological experiment. Student projects have included road salt contamination of a local stream, projects with biochar and compost, and projects related to agriculture and increasing carbon dioxide levels. These projects incorporate science, technology, engineering and math skills, and have even resulted in students building three small greenhouses and designing an extremely cost-effective heating system inspired by geo-thermal technology.

## **REVIEWER'S COMMENT**

### **Pillar I: Reduced environmental impacts and costs**

**Element IA:** *Reduced energy use and/or greenhouse gas emissions through the use of an energy audit or emissions inventory and reduction plan, cost-effective energy efficiency improvements, and on-site renewable energy and/or purchase of green power*

Morgan County Schools has used biodiesel for the last 5 years, and their buses have stickers stating the use of Renewable Biodiesel fuel.

Morgan County Schools has developed a partnership with KorEnergy. This annual partnership involves an agreement creates the ability for an electric customer to voluntarily act as a backup resource to support the reliability of the electric grid. As a participant in this program, each year, they have between 1 and 3 energy shutdowns. BSHS participates in the shutdown. The shut downs are scheduled so that they do not interfere with student learning.

Additionally, Morgan County Schools has an Energy Resource and Conservation Management Plan. This plan gives recommendations for interior and exterior lighting, electrical use, water, irrigation, heating and cooling, reducing waste and recycling, community use of buildings and kitchen conservation practices. During breaks, they have Energy Shut down Lists as well for all buildings and have a teacher and staff list of daily musts for conserving energy.

Finally, there is a Morgan County Schools Green Challenge that schools may participate in with their students. It is complete with a recycling calculator and was made available in fall of 2015. The county hopes they start this Green Challenge Program in all schools in future years.

**Element IB:** *Improved water quality, efficiency, and conservation.*

The West Virginia CommuniTree project promotes urban tree planting and public education through volunteerism on a regional scale. The program also focuses on enhancing and promoting awareness of watershed and riparian area needs, such as storm water management, water quality issues, buffer zone planting, and soil erosion. In 2013 Berkeley Springs High School was awarded 150 riparian trees through WV Project CommuniTree. These trees were planted throughout the campus as well as at the County Board office. On April 25th of that year Cacapon Institute (CI) provided in-class lessons to Mr. Chenoweth's science classes on the benefits of trees, especially their ability to mitigate stormwater runoff pollution. Then on May 2nd, 60 students, two teachers, and two grounds maintenance personnel volunteered to help plant the trees. The students came from Ms. Jenkins & Mr. Chenoweth's science classes. Each class participated for ~45 minutes each. Students were planting from 9:00 till 2:30 with a break for lunch. Each class was given a planting training that included the benefits of trees and how to properly plant and mulch a tree. Native tree species that were planted include 5 Sycamore, 25 Black Willow, 5 Cottonwood, 5 Swamp White Oak, 5 Shumard Oak, 5 Pin Oak, 5 Sweet Gum, 5 Hackberry, 6 River Birch, 6 Hornbeam, 8 Red Maple, 10, Hazel Alder, 10 Elderberry, 8 Viburnum, 7 Buttonbush, and 35 Dogwood tree whips.

The constructed wetland on the Morgan County complex adjacent to West Virginia Route 522 corridor is one method of storm water control that indirectly influences how pollutants runoff into Warm Springs Run. On the Berkeley Springs High School campus we have about 10,560 square feet of stream area. A storm water drain pipe runs through the stream carrying run-off from the campus buildings. This water remains pesticide free due to the fact that we do not use chemical pesticides on our campus. A Communitree grant received in 2013 provided 150 native trees to plant as a riparian buffer for the stream. Another Communitree grant is being sought to plant more trees for urban shading and to



flood plain of Warm Springs Run. This creates the future possibility of more growing space for our school gardens and more tree planting space for native trees and shrubs.

Contamination, such as lead, is no risk due to their use of municipal water.

**Element IC:** *Reduced solid waste production through increased recycling, reduced consumption, and improved management, reduction, or elimination of hazardous waste stream.*

Morgan County has a recycling calculator available, and the Advanced Placement Environmental Science class plans to use this to calculate how much paper is recycled annually during the solid waste unit in their curriculum this spring. At this point each classroom on campus has a recycle bin or box that is emptied once a week into a large, rolling recycle bin that is then emptied into the larger, outside solid recyclable waste bin for pickup. In addition, the Science National Honor Society has provided recycling pickup as a service to some of the local restaurants. These materials are then dropped off at the local recycling center south of town. Other service organizations have plans to recycle plastic bottles at athletic events, but this will be the first year that the amount of paper recycling at the school will be measured. The kitchen does break down boxes to recycle, and old and used textbooks are also recycled.

None of the school's office/classroom paper is recycled or chlorine free. However, paper towels and toilet paper used in the school meet the Green Seal Standard GS-1 based on their chlorine-free, water efficiency, and content of 100% recovered material with a minimum of 50% post-consumer material. The packaging of these products is also made of 100% recycled paper, which meets the U. S. EPA guidelines for post-consumer waste.

The concession stand and athletic restrooms on campus have hand blowers instead of paper products which eliminates much of the solid waste that might be generated at athletic events. In addition, we have removed lighting containing mercury. Most of the campus has T8 lighting. Building A is totally T8, building B is totally T8, Building C & D are half completed.

All of our cleaning products are from Daycon and have a certified EcoLogo green seal on them. The kitchen's use of bleach is the only non-green chemical used on campus.

**Element ID:** *Expanded use of alternative transportation to, during and from school, through active promotion of locally-available options and implementation of enabling projects and policies.*

BSHS conducted a short transportation survey with a return rate of 58%. Students primarily ride the bus to and from school (47%). 24% of students are dropped off by a parent. 4% of the students who responded walk to school, a third of these only one way. Finally, of the 105 students who drive (25%), 45% drive alone, 36% drive with one passenger, 14% drive with two passengers, and 48% drive with three or more passengers.

Vehicle loading/unloading areas are at least 25 feet from building air intakes, doors, and windows (WV Policy 6200 minimum is 15 feet). BSHS has no idling signs in all school bus loops. Drivers are instructed in staff development training on policy 4336, reminders are put out about idling of school buses. Drivers are asked to shut their bus off if it is idling too long. Most of the buses in the fleet has a idling timer of 10 minutes and will automatically shut the bus off at 10 minutes of idling. Buses are shut off while waiting on students if temperature is above 40 degrees.

Not only are school buses equipped with an automatic shut off for idling, principals and school staff are present as buses are unloaded and loaded. They assist in monitoring this process. The Bus Supervisor and Transportation Director do spot checks as well. Cameras on board each bus can be reviewed periodically to make sure that buses are not idling if it is not necessary. BSHS also provides heater boxes as needed seasonally when the temperature consistently falls below



the buses. There is signage in each school zone both in bus loops and parent pick-up loops which state their school zones are idle free zones. Within the past few years, they have had an Eagle Scout educate parents and staff about idle free zones by discussing it with them and providing literature on the subject.

Morgan County School's Transportation Department uses Transfinder, a routing and trip software used for planning trips and bus routes. The purpose of this software is to assist in the evaluation of all bus routes annually by their Bus Supervisor. They try to fill up the buses to maximize their efficiency. They use turn arounds for our buses where possible to avoid any dead head miles in our routes. Route planning also involves getting as close to a student's residence so that students can walk to the bus stop rather than be driven by parents, thus reducing the need for parents to drive to bus stops. They do have some bus stop shelters as well, where students can wait for the bus. When drivers take athletic or curricular trips, they map the most efficient and safe route to the destinations.

BSHS has Safe Pedestrian Routes to school or Safe Routes to School. There are several cross walks in town within the walking distance to the school. The school has a crossing guard in the afternoon to assist with traffic and student well-being. Sidewalks are found along all town blocks and around community buildings that house after-school programs.

## **Pillar II: Improve the health and wellness of students and staff**

**Element 2A:** *An integrated school environmental health program based on an operations and facility-wide environmental management system that considers student, visitor, and staff health and safety in all practices related to design, construction, renovation, operations, and maintenance of schools and grounds.*

Morgan County Schools has an Integrated Pest Management (IPM) plan and strictly adheres to WV Code for integrated pest management. Each school is provided an IPM notebook each school year. It includes the license of our pest management company, material safety data sheets, map of the facility, pest sighting log sheets, inspection maintenance logs and documentation of monthly service visits. The pest management company provides staff development training to our custodians and maintenance staff in order to properly identify and report pest sightings. BSHS works with a pest management company that uses certified green products such as Mother's Earth. These products are made using 100% high purity freshwater diatomaceous earth as an absorptive desiccant dust. Building level custodians frequently assess classrooms for pests. If pests are spotted, the custodian will call the pest and mold control provider, a company known for using the above eco-friendly products. Green sprays, mousetraps, sticky pads and cages for larger pests, such as bats, are used to trap organisms rather than using chemical pesticides.

Morgan County Schools has a Chemical Hygiene Plan modeled from the Flinn Chemical Hygiene Plan. The school Chemical Hygiene Officer is the principal, Mitchell Nida. Science teachers and custodians are trained on the proper use and storage of chemicals. Chemicals are stored in chemistry supply closets, locked custodial closets, and locked closets/spaces when used in the kitchen. All acids and flammable chemicals are stored according to code and locked in the proper storage cabinets in one classroom on campus. Teachers may then use the chemicals needed from this common storage area. Our cleaning products are from Daycon and have a certified EcoLogo green seal on them. The kitchen is the only place on campus where bleach is used.

Mercury has been eliminated in BSHS including the removal of all products containing mercury such as thermometers and light bulbs. BSHS has removed lighting containing mercury. Most of the campus has T8 lighting. Building A is totally T8, building B is totally T8, Building C & D are half completed.

Radon testing occurs every other year in all buildings that are below ground or partially below ground at the high school.



for repairs. Custodians make daily inspections of their areas to watch the control of water. If wetness occurs, dehumidifiers and fans are used to dry the area. Custodians then monitor for mold. All wet ceiling tiles and insulation are replaced. If mold is suspected custodians work with indoor air quality professionals to eliminate the mold.

Morgan County Schools has exhaust hoods in the kitchens which are inspected on a regular basis. There are chemical hoods in labs for chemical storage cabinets as well as separate exhausts for the chemistry classrooms. Their preventative maintenance program conducts inspections of all exhaust fans to ensure they are working properly at all times.

BSHS takes a variety of steps to protect indoor environmental quality and follows all codes and regulations to protect indoor air quality at all times. BSHS monitors for mold and works with indoor air quality professionals if mold is discovered. School Dude is used to document the preventative maintenance program and generate any preventative maintenance work orders. BSHS also has a yearly contract with Southern Air which provides the school district with a year-round Southern Air employee who is dedicated solely to Morgan County Schools. He is responsible for the preventative maintenance of our buildings ventilation systems and helps ensure BSHS adhere to ASHRAE standards. He ensures that all exhaust fans, HVAC units, and ventilation systems are running properly and get the necessary preventative maintenance they need to run efficiently. He uses a CO<sub>2</sub> sensor to check the air quality for proper air exchanges on the school campus. Through the HVAC system, he uses control systems to maintain quality air and comfort in the buildings. Additionally, one building at BSHS is equipped with CO<sub>2</sub> sensors, and an annual air quality inspection is conducted by a state agency.

BSHS conducts all periodic and comprehensive inspections of the school facility to identify any environmental health or safety issues. These include inspections by the State Fire Marshall, BRIM, the Health Department, annual fire extinguisher checks by a certified company, sprinkler inspections, cleaning and inspections of the fire alarms and smoke detectors, eye wash station inspections, state bus inspections, bleacher inspections, exhaust hood inspections, and all other required inspections. They also follow preventative maintenance schedules through our work order system. During all inspections, inspectors are accompanied by a member of the maintenance staff. Staff then input maintenance needs into our work order system for repair.

BSHS enforces the prohibition of tobacco products on campus, in public school buses, and at school-sponsored events in compliance with WVDE Policy 4373. They use signs to notify the public of this policy. The campus is a tobacco-free campus with laminated signs in the bathrooms explaining the dangers of tobacco. Public service announcements are made during all sporting events to the effect that the campus is a tobacco-free zone. Students caught with tobacco products receive a 3-day after-school suspension, along with a referral to teen court. Repeat offenders are sent to magistrate court.

At BSHS the focus is to improve the administration of medication, symptom recognition and treatment of asthma in the hopes of reducing missed school days by those children with asthma. A full time nurse monitors students with colds and infections that may trigger their asthma. She also is able to pretreat students with Albuterol prior to exercising. Latex materials have also been removed from the nurse's supplies. The school campus is tobacco free and strong colognes and perfumes are prohibited. Our custodial staff cleans rooms on a regular basis using green products with little odor. Our rooms are usually cleaned at the end of the day when few students are present. Carpets are cleaned and vacuumed routinely. Our maintenance staff sees that any pest management is done during school breaks or just before the weekend. For the most part grass and plant maintenance is done after school. The cafeteria staff members are aware of all students with known food allergies. A school menu is published and sent home with all students and is also found online in the county's website. Any diet changes and concerns can be answered by our Director of Student Services. Prevention of triggers is the best way to avoid asthma flare ups and that means everyone is educated about asthma.

**Element 2B:** *High standards of nutrition, fitness, and quantity of quality outdoor time for both students and staff.*



Berkeley Spring High School has an on-site, 256 square foot outdoor growing space in their raised beds. They have an additional 400 square feet of flat growing space in the greenhouse and another 160 square feet of vertical space for hanging plants. Morgan County Schools also uses local produce in all of our county school cafeterias.

BSHS is in compliance with WV Policy 2510 that states students spend at least the 30 minutes of school supervised physical education each day. Additionally, at least 50% of the students' annual physical education takes place outdoors. The campus has a weight room that is open in the mornings before school and four afternoons (Monday - Thursday) each week for students and staff to work out. BSHS also offers a variety of sports, PE, dance, weight training and various other activities. Students in physical education participate in outdoor sports that include softball, tag football, and track.

BSHS participates in the USDA's Healthier School Challenge, and they integrate health measure into assessments.

Berkeley Springs High School has a wellness committee that strives to promote overall health and well-being. The committee provides incentives, such as free pedometers, if teachers voluntarily practice preventative activities such as losing weight, exercising, eating a healthier diet, or wearing sunscreen in the summer. During the winter months, teachers are given suggestions for eating healthy over the holidays. Teachers participate in the "Let's Move! WV" by having their students get up and move around sometime during class.

### **Pillar III – Effective sustainability literacy and learning**

**Element IIIA:** *Interdisciplinary learning about the key relationships between dynamic environmental, energy and human systems.*

All students are required to complete physical science and biology, but many have a choice as to which science courses they will take for their required third science. With the adoption of Next Generation Science Standards, students will now be required to take earth science during their 9th grade year, biology during their 10th grade year and then have a selection of courses to take as a third year science. At the high school we offer AP Biology, AP Chemistry, AP Physics, and AP Environmental Science. In addition, students are able to choose chemistry or physics, or physical science as their third science credit. Students may also choose Human Anatomy and Physiology or Experimental Design for their third or fourth year science. These course offerings provide a robust general science education for our students.

**Element IIIB:** *Use of the environment and sustainability to develop Science, Technology, Engineering, Arts, and Math (STEAM) content knowledge and thinking skills to prepare graduates for the 21st century technology-driven economy.*

Environmental and sustainability concepts are taught in much of the curriculum addressing the three pillars of sustainability: social, economic, and environmental. In economics, students learn how to design, create, and market products in economically sustainable ways. Students in economics purchase good quality 100% cotton t-shirts and tie-dye them in school colors or in any colors desired. Students sell the t-shirts and are then able to purchase supplies. In civics, students are expected to be current on events in politics including the economy and the environment. Civics students discuss climate change, and this year the summit taking place in Paris, and analyze the social, economic and the environmental impacts climate change policy decisions will have on the country and the world. In civics, students study the impact of energy extraction, such as fracking and discuss the policy implications our current country's energy extraction policy has on this state, the country and the world. Also, the Advanced Placement Government curriculum covers the impact of mountaintop removal and how this issue impacts the state of West Virginia.

In chemistry classes, green chemistry lessons are taught which emphasize green technologies and careers. Chemistry labs are performed on a regular basis using chemicals in smaller quantities in order to have less of an adverse impact on



wetland and watershed health. The high school is located about a quarter mile from an outdoor classroom and wetland that is part of the Morgan County School's complex. This wetland was constructed to handle runoff from the 522 corridor and serves to filter runoff prior to entering Warm Spring Run which meanders through the Morgan County School complex, including Berkeley Springs High School (BSHS). Students measure water quality in both the wetland and the stream by testing pH, nitrogen, and phosphorus levels. Students also conduct a biological assessment of macro-invertebrates living in the stream using a save-our-streams methodology. Students conduct stream bank assessments and study the importance of creating a riparian buffer along the stream.

As an elective science, students are able to take Experimental Design. This inquiry based course allows students to design the projects they want to study. Several of the projects were ecologically based. The wetlands Total Dissolved Solids (TDS) filtration project used TDS meters to trace how well road salt from 522 was being filtered out of the water before it reached Warm Springs Run. The study was conducted over the course of about 4 months with noticeable results. The wetlands flora/fauna survey analyzed the wetlands and surrounding drainage area specifically looking for *Ambystoma* salamander species because of their indicator species status over other amphibians. This project was conducted at the same time as the filtration and TDS project. In addition, students designed a biochar project. Students produced biochar from wood debris and inoculated with bacteria and nutrients from worm castings that were composted in the classroom. Biochar locks in carbon from the air and puts it back into the soil and provides a huge amount of surface area for beneficial bacteria and water to be stored in the soil. Students also grew (100+) avocados from seed. Students built three small greenhouses within the greenhouse (4ft long, 2ft wide, and 3ft tall). The students used one as a control which was open to the outside environment, one was covered to increase heat, and one was covered with CO<sub>2</sub> being added, which added extra heat plus extra atmospheric CO<sub>2</sub>. Students ran the experiment for 4 months to see how the plants would respond; collecting atmospheric CO<sub>2</sub> readings in each little greenhouse three times per week. Plants in the extra CO<sub>2</sub> box had three times the leaf mass as the others to compensate and had lower CO<sub>2</sub> levels than even the control group as a result. Students also designed underground heated growing bins using the same grow beds from the avocado project, insulated them, and ran a network of PVC pipes underground, leaving one unheated as a control. Of the other two, one had twice the amount of piping in it. These went back to a double-barrel system. The inner barrel had water, an aquarium pump, and an aquarium heater in it with about 15 gallons of water. This was then insulated and put inside of another barrel and sealed. This system ran for about three months and we were able to grow warm-weather crops in the two heated ones all winter long. It was sustainable because it only used a small amount of electricity to keep the beds heated compared to the cost of propane to heat the whole greenhouse. The cost of our project was approximately 1/50th of the cost of heating with propane for the same amount of time. Projects such as these are incorporating science, technology, engineering, and math skills into the existing science curriculum.

Much of the curriculum in place at BSHS is focused on creating curriculum that enforces STEAM and how the combination of these skills prepares graduates for the 21st century technology-driven economy. In 2009, students in Advanced Placement Environmental Science developed a plan to retrofit the existing greenhouse at BSHS for the purpose of creating a year-round learning lab. The design incorporated photovoltaic solar panels that were installed on an adjacent building to supply the greenhouse with all of its electric needs, and a solar hot water heater to provide root bed heating to growing tables. The students submitted their project to the State Farm Youth Advisory Board and received a \$41,000 grant for the project. That same year student interns were hired to support the project. Students were required to create a business plan which included a growing program at the high school and a marketing strategy that would involve selling produce at the local farmer's market. Student interns successfully implemented their business plans and sold some of their produce at the market.

Three common career clusters that students tend to choose for their secondary educational requirements are the agricultural, science and natural resources, the health services, and science, technology, engineering and math (STEM). The connection to green career pathways is provided through the courses offered in the Agricultural, Science and Natural Resource pathway - Agribusiness Systems, Power, Structures and Technology, and Landscape Systems. In



and Technology Academy which focus students on health careers. Students who are interested in a science and technology career pathway are focused on pursuing a pure science or perhaps an engineering degree. Students in the STEM pathway might well be exposed to green careers through AP Environmental Science or Biology and be encouraged to select a career in environmental design, environmental studies, or environmental policy.

**Element IIIC:** *Development of civic engagement knowledge and skills, and students' application of these to address sustainability and environmental issues in their community.*

Students at Berkeley Spring High School engage in a variety of civic activities along with investigating current environmental issues in their civics and government classes. Along with the measurement of water quality standards at the wetlands and along Warm Springs Run, in the last two years, students have been involved in a Communitree grant and helped to plant 150 trees on the BSHS campus. Students learned the proper method for planting trees and their importance in the overall health of the Warm Springs Riparian buffer. The trees have been maintained over the last two years and monitored for their health.

Students also participated in the construction of the four raised garden beds that have been built over the past two years. The construction of two of the beds was part of a Day of Caring in our county. There is a total of 256 square feet of outside growing space in the gardens.

Students spend time each year learning about their watershed and measuring human impact on the quality of the water in Warm Springs Run. Stream monitoring projects place students in the environment measuring the health of the stream by counting the number and variety of macro invertebrates in the benthic sediment. These outdoor experiences provide students with rich opportunities to experience their high school campus.

In addition, students have the opportunity to participate in the local farmers market marketing produce they themselves have grown. Students also find jobs in the local restaurant market, a market which relies heavily on locally sourced foods for their menus. BSHS students are learning to use locally sourced products from school gardens in their menus, such as herbs grown in the greenhouse and lettuce grown in the school's raised beds.

Connections have been made with local non-profit organizations such as the Cacapon Institute, and the local watershed organizations such as the Warm Springs Run Watershed Association, the Friends of Sleepy Creek, and the Friends of the Cacapon River Watershed Association. These organizations actively participate in educational programs that enhance student learning in the area of environmental sustainability. The Cacapon Institute's mission is to protect rivers and streams in the Potomac River and Chesapeake Bay watersheds. The Cacapon Institute was instrumental in implementing the Communitree grant that BSHS was awarded.