

## 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 early learning to 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 and sustainability 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.
8. The school or its district has in place and is willing to provide a link to or a copy of a non-discrimination policy, upon request. The U.S. Department of Education reserves the right to disqualify a nomination and/or rescind an award if unlawful discrimination is later discovered.

### U.S. Department of Education Green Ribbon Schools

Name of Principal: *Dr. Dana McCauley*

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

Official School Name: *Crellin Elementary School*

(As it should appear on an award)

*\*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.

*Dana McCauley*  
(Principal's Signature)

Date: *2.23.2022*

Name of Superintendent: *Ms. Barbara Baker*

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



District Name: Garrett County Public Schools

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

  
(Superintendent's Signature)

Date: 2-23-22

#### 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: Maryland State Department of Education

Name of Nominating Authority: Mr. Mohammed Choudhury  
(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.

  
(Nominating Authority's Signature)

Date: 2/25/22

Date

**Nominating Authority's Signature**

**SUBMISSION**

The nomination package, including the signed certifications, narrative summary, documentation of evaluation in the three Pillars, and photos should be submitted online according to the instructions in the Nominee Submission Procedure.

OMB Control Number: 1860-0509

Expiration Date: December 31, 2023

#### 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: An Overview of Our Work Encompassing All Three Pillars**

Our desire and commitment to making environmentally friendly changes began when we noticed acid mine drainage seeping into Snowy Creek behind the school. The reclamation project that ensued was made possible by the commitment of school and community members and collaboration with local, state and federal agencies. Not only were we able to remedy the discharging pollution into Snowy Creek, but we increased the overall health of the riparian area and surrounding land while creating an outdoor classroom. Our outdoor classroom, the Environmental Education Laboratory, provides not just students but community members a place to learn and recreate. These intimate experiences create lasting, positive memories that fuel the desire to be stewards of the environment. While we began improving the overall health of the schoolyard, we began to question the building's systems in place. Studying renewable energy sources encouraged new practices and a greater understanding of our environmental footprint. As upgrades to the school building were planned a focus was on efficient energy sources.

By the end of FY2016 energy efficient upgrades to decrease our overall energy consumption were in place. An immediate decrease in energy usage was evident with the installation of the Metasys system, our heating and cooling systems which can be controlled remotely and can be scheduled according to school usage and weather conditions. In addition, areas of the school's exterior that had been compromised have since been properly sealed and insulated to prevent further energy loss through the building envelope. New double pane windows have been installed in the classrooms of the original building, improving both lighting and preventing heat loss. Lighting upgrades include new interior and exterior LED lights, providing a more energy efficient option with low voltage and improved environmental performance. Several rooms have automatic lights that turn on and off independently with the presence of movement. Next steps include LG Split System units to be installed in 2022 in the main body of the school to supply air conditioning, heating and dehumidification. These units will decrease the need to use the less efficient baseboard heating units. We now have low flow faucets and toilets which enable us to conserve water on a regular basis. Rain barrels are utilized outdoors to provide water for gardens and barn animals. The greenhouse employs a hydroponics system that allows for the recycling of water for plant use.

In 2017, Crellin Elementary employed a full time head custodian. His role includes the regular daily and weekly inspections of all HVAC and plumbing systems. He also examines the interior and exterior structural integrity of the premises. County based employees perform annual inspections of the operational systems as well. The school

makes a coordinated effort to include community agencies in providing social and psychological services to students and staff. These services are aimed at meeting the needs of the whole individual including nutrition, fitness and mental health.

### **Awards and Recognitions**

The recognitions and awards earned by Crellin Elementary School are shared and reflect the collaborative successes achieved through student, teacher, parent, and community partnerships.

***Maryland Green School Award*** (2005, 2009, 2013, 2017) for our efforts in the uses of environmental practices and ability to sustain and grow practices. This award program recognizes a holistic, integrated approach to authentic learning that incorporates local environmental issue investigation and professional development with environmental best management practices and community stewardship.

***President's Environmental Youth Award*** (2006) for our contribution and work on our stream reclamation project and the instructional connections we made. The President's Environmental Youth Award recognizes young people across America for projects that demonstrate their commitment to the environment. Crellin Corps of Discovery was one of ten projects chosen in the nation.

***National Civic Star Award*** (2007) for the collaborative efforts between Crellin School, the Crellin community, local, state, and national organizations in the Crellin School reclamation project. This award recognizes programs that implement unique and creative methods to cultivate community partnerships that result in enriched student achievement.

***Ernest L. Boyer Best Practices in Character Education*** (2007) for integrating character education in daily practices and projects and the connections we made with the natural environment. The Boyer Award recognizes schools for their accomplishments in character education, invites evaluation and development of character education programs and encourages efforts to promote exemplary practices that will benefit other schools.

***Comcast Parent Involvement Award*** (2007) for parents whose exemplary contributions to public education have led to improvements for Maryland's public school children, teachers, schools, programs, and/or policies. Comcast created the award with the Maryland State Department of Education to highlight the positive impact parents have on public schools and to encourage all parents to get involved in whatever way they can.

***Richard C. Bartlett Science Award*** (2009) for successfully integrating environmental education into our daily educational programs. The Richard C. Bartlett Environmental Education Award is awarded annually to outstanding educators who serve as an inspiration and model for others.

**Chesapeake Bay Teacher of the Year Award** (2010) for outstanding commitment to environmental education. This award is given to a practicing, formal classroom teacher who motivates and inspires students by promoting environmental awareness throughout the school and community; uses the outdoors, school grounds, and the community to enrich classroom experiences and develop future environmental stewards; engages colleagues and parents to participate in students' environmental education experiences; and serves as a mentor to other educators in the school and throughout the state.

**Intel School of Distinction for Elementary Mathematics** (2011) for an outstanding program in mathematics, which involves *STEM* activities and an interdisciplinary approach, resulting in high achievement.

**Unsung Hero Award** (2011) for the creation and implementation of the Operation Conservation Program. This program taught sustainability practices, alternative forms of energy, and community outreach.

**Richard A. Johnson Environmental Education Award** (2012) for outstanding contributions to environmental education in Western Maryland.

**Schools That Change Communities** (2013) is a PBS documentary which highlights Crellin Elementary School's efforts to improve the education and health of the Crellin community.

**Edutopia** (2015) produced a series of videos that highlight the environmental instruction and projects taking place at Crellin Elementary School.

**Wings of a Dove** (2018) is a documentary film which highlights Crellin Elementary School's efforts to engage the community in bringing the steel pans to Crellin through a community build.

In addition to the recognitions, we have garnered funds through multiple grant funding sources to develop and facilitate unique programs. These funding sources include the Chesapeake Bay Trust, State Farm Youth Advisory Board, and the National Institute of Food and Agriculture: Classroom Challenge Grant.

Effective environmental and sustainability education is the crux of both the mission and the vision of Crellin Elementary School. Using a place based approach, opportunities for solving real world environmental problems guide our instructional program. Students engage in research to affect their community. We think globally, and act locally. If we want students to take care of their environment, they have to spend time in it and learn to value it. Using problems as opportunities to learn is what transforms students into scientists, activists, problem solvers and world changers. As evidenced by the list of completed projects, ongoing initiatives, and recognitions, our commitment to creating an environment that encourages students to be mindful stewards of this place we call home. As so eloquently stated by a Crellin student, **"We are responsible for helping the world, so there is a lot to learn"** (2012).

## **Pillar 1: Efforts to Reduce Environmental Impact and Costs**

***“Without environmental sustainability, economic stability and social cohesion cannot be achieved.”***

**— Phil Harding**

### ***Improved energy conservation/energy-efficient building.***

In 1962 Crellin Elementary School students carried their desks along Crellin Street from a two room schoolhouse to the newly constructed 7,356 SF schoolhouse on Kendall Drive. Still in use today, the building has had several upgrades and room additions. Originally serving grades K-3 the school consisted of a cafetorium, small office, and three classrooms. With the inclusion of fourth and fifth grades, two modules were added in 1978 adding an additional 2,654 SF. In collaboration with Community Action a new 2,604 SF addition housing a Head Start classroom, media center, staff restroom and an additional office was constructed in 1998. In 2012, the Head Start classroom moved to an alternate location allowing each grade level (K-5) to occupy its own classroom. The electrical, heating, and cooling systems in place were all compliant with standards at that time. The original structure utilizes electric baseboard heaters. The 4th and 5th grade portables have wall mount electric heaters in addition to electric baseboard heaters. The kindergarten wing is equipped with a hot water boiler (LP gas), providing hydronic hot water baseboard heat, which is more efficient than electric baseboard heat. In 2016, in order to decrease the overall energy consumption as well as to improve the comfort and safety of students and staff, energy upgrades began.

### **Heating and Cooling Systems**

In 2016, Crellin Elementary School's existing system was upgraded to an automated controls system called Metasys from Johnson Controls. This program allows school personnel to have complete control of the HVAC system remotely. The system has scheduled day, evening, and weekend setbacks that allow for optimum energy savings. All classrooms had new digital, wireless thermostats installed. The school boiler now has independent monitoring of classroom temperatures. Mitsubishi Ductless Split System Units were installed in the fourth and fifth grade portable classrooms. Mitsubishi's have inverter driven programming, a more efficient means to heat and cool the classrooms. Prior to these upgrades, there were numerous wall penetrations lacking insulation. These penetrations were insulated and the building envelope was upgraded with new metal siding, proper door sweeps, astragals, and caulking and insulation where needed.

### **Lighting Upgrades**

In 2016, lighting upgrades were made in the school. New LED bulbs were installed in the cafeteria and in all exterior lights. The interior lights were given a bulb and ballast upgrade. The bulbs were upgraded to T8-24 watt bulbs with matching ballasts and all fixtures were upgraded. In several rooms the lights now operate automatically with motion sensors as people enter and exit. Prior to 2016 the windows were only single pane glass. In classrooms there were small operable windows that did not allow for egress. New double pane, single hung full case windows were installed and allowed for egress. With natural light illuminating those classrooms, the need for artificial light decreased. All glass door panels were replaced with double pane glass providing additional insulation.

**Energy Usage:** The following table displays the electricity usage (KWH) at Crellin Elementary School from 2014 through 2021. The upgrades and modifications made in the heating, cooling and lighting systems at the start of fiscal year (FY) 2016 made a significant difference in the amount of energy used by the end of the fiscal year. Our energy usage was at an all time low in FY 2021 declining to 149,520 KWH.

FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
210,320 KWH	194,600 KWH	152,520 KWH	159,520 KWH	168,200 KWH	163,720 KWH	152,360 KWH	149,520 KWH

### **Additional Improvements**

Crellin Elementary School has an agriculture program which includes two barns, one which has been converted into a henhouse. In 2016, through student research, we learned that in order to maximize egg production the hens require 16 hours of light each day. We also needed to protect the hens at night from predators, but wanted them to have free range during the day. Students assisted with the installation of a solar panel which powers a rechargeable battery. The battery converts the chemical energy to electrical energy and initiates the lighting system as well as an automatic door. As the sun rises the timer goes off, opening the door so the hens can go outside. As the sun sets, the timer again triggers the lights to go on (for a predetermined amount of time) and the hen door slowly closes. The closing of the door creates a noise that reminds the hens it is time to go in. This system ensures proper lighting and safety measures are taken while eliminating the need to keep the lights on at night, saving energy.

In 2022, LG Ductless Mini Split Systems will be installed in the kindergarten classroom, media center, first grade classroom, second grade classroom, third grade classroom, and two units will be installed in the cafeteria. These systems are heat pumps which

provide heating and cooling based on facility demands. This system will provide dehumidification to the facility as well. These new, more efficient units are able to heat at lower external temperatures and will dramatically cut energy usage as they are up to 30-40 percent more efficient than the baseboard heaters currently used.

### ***Use of alternative transportation to, during, and from school.***

Garrett County Public Schools provide transportation to and from school for all in area students and those who utilize community child care. Crellin School has two designated buses that transport elementary, middle and high school students simultaneously. This prevents the need for buses to retrace routes for each school level. While Crellin Elementary School's location is near a main road there are students who live in the school neighborhood who can safely travel to and from school without motorized transportation. Currently 90% of students have the opportunity to ride a bus and 10% of those students live close enough that they can walk or ride a bike. These students are encouraged to utilize a walking trail behind the school to walk or ride their bike on. A bike rack is provided for those who choose to ride their bike. At our Back to School Night, when transportation is discussed, the opportunity to walk and/or bike ride to and from school is highlighted. Parents who provide private transportation are given names of families who live near them so they have the opportunity to carpool. When taking field trips we group grades together to minimize the number of trips a bus needs to make. Our community initiatives give students the opportunity to walk through and around the community as a group. As they get to know their neighbors they feel a sense of security. We hope that as students become familiar with their neighborhood the likelihood that they will choose to walk or bike to school will increase.

### ***Improved water quality, efficiency, and conservation***

Between 2017-2019, automatic, low flow faucets and low flow toilets were installed in the restrooms. The kindergarten, first grade, second grade and third grade classroom sinks are water efficient, having restrictors which limit the water flow. In the schoolyard we have rain barrels collecting water which is used on the gardens. We also have two rain barrels set up in the barnyard so students can easily access water for the animals. In the greenhouse we have a hydroponic system where we grow lettuce and tomatoes. The water circulates through tubes from a container continuously using a sump pump. This eliminates the need for watering the plants with a hose and wasting water. To control stormwater runoff we planted a rain garden with native plants designed to attract birds and butterflies. During the school reclamation project (2004) we graded the area at the stream and planted grasses, shrubs and trees to mitigate erosion and prevent flooding. At the same time the acid mine drainage (AMD) flowing underground and into



the stream was channeled to two treatment ponds lined with limestone to mitigate the effects of the AMD. The reclamation project provided us with 5.5 acres of land that is now ecologically healthy. The various ecosystems found throughout the area are interconnected and support a variety of life.

### ***Reduced waste production and improved recycling and composting programs***

In 2004 we gained ownership of approximately 5.5 acres of land behind our school that borders Snowy Creek, a tributary of the Youghiogheny River. The plot of land was covered with gob, the waste rock removed during coal mining, and in locations reached a depth of nine feet. In addition, acid mine drainage was found seeping into Snowy Creek. We asked our county government for the property because we were collaborating with federal, state and local agencies including the Office of Surface and Mining and Maryland Bureau of Mines, on a project to restore the land to serve as an outdoor classroom, our Environmental Education Laboratory. Before the official reclamation began, a large number of community members assisted as we cleaned up the area, collecting over 50 tires and dumpsters full of trash. During the reclamation, underground pipes were installed to guide the polluted water to treatment ponds lined with limestone. The limestone works as an antacid to extract the acid before sending the water to Snowy Creek. The wetland area, which sits adjacent to the treatment ponds, also filters the water before it enters Snowy Creek. The barren riparian area along Snowy Creek allowed for the erosion of rock and soil directly into the water. By grading the area at the stream and planting grasses, shrubs and trees we were able to mitigate the erosion, prevent flooding, provide shade to the stream, and create habitat for animals. The gob and soil removed from the area was used to create an amphitheater on our property. The structure is used for school and community events as well as for sled riding. The boardwalk over the wetland areas is made out of Trex. Trex decking is made from 95% recycled materials, including reclaimed wood and sawdust as well as recycled plastic from many common household items. This same material was used in the construction of our playground.

We are always mindful of the supplies and materials we use. Refillable water bottles are used so we do not create additional trash. Students used recycled materials, such as tires and an old slide to assist parents in building an animal playground in the barnyard for the goats and sheep to climb and play on.

The Great American Can Roundup was a campaign designed to reduce litter and solid waste in communities, save energy and conserve natural resources. The program's goal was to educate students about the importance and benefits of recycling cans. Crellin School became inspired and wanted to continue to incorporate recycling into our

daily lives so we participated in the Great American Can Roundup for four years (2013-2016). During that time we recycled over 3,898 pounds of aluminum cans, winning the state contest three out of the four years. When the state program ended, students continued to collect cans. The campaign also motivated community members who collect cans for us to take to the salvage yard to be recycled bi-monthly.

In addition to collecting and recycling cans, we also gather discarded paper from classrooms and offices to be recycled. We shred some of the paper and use it as bedding in the hens' nesting boxes and we take some to the county recycling center. In 2018 we worked with Kevin Martin of Rock Creek Steel Drums, to build our own steel drums to be used in music class. Instead of purchasing barrels we were able to acquire used barrels for the construction of the drums. Not only was this a cost savings, but it kept those barrels ending up in the landfill.

At Crellin Elementary we use students' and cafeteria leftover food as part of our composting program. We have three rotating composters. In a separate location we compost the animal waste and soiled straw from the sheep barn. We use our compost in our native gardens, sunflower beds, and wildflower meadow.

## **Pillar 2: Improve the Health and Wellness of Students and Staff**

***“Wellness is the complete integration of body, mind, and spirit - the realization that everything we do, think, feel and believe has an effect on our state of well-being.”***

**-Greg Anderson**

### ***An integrated school environmental health program***

Crellin Elementary School supports and expands Garrett County Public Schools (GCPS) environmental health program. In an effort to maintain student and staff health and safety the following practices are in place:

To prevent air contamination and to allow air circulation, each room is equipped with a portable air purifier. The portable air purifiers are equipped with HEPA filters and UV lights which are replaced yearly and the MERV 8 PreFilters are replaced monthly.

Custodial staff performs daily and weekly inspections on all HVAC and plumbing. County maintenance staff performs annual inspections and maintenance on all HVAC, air handlers, exhaust fans, and the boiler.

Safety Data Sheets for all cleaning products are kept and accessible and all cleaning products are purchased and approved by GCPS. GCPS purchases microfiber dust mops, wet mops, flat mops and dusters that can be washed and reused multiple times for use in the school building.

Crellin has been recognized as an asthma friendly school by the Maryland Asthma Control Program. Since 2009 we have earned a bronze, silver or gold award yearly. To earn this recognition evidence of several criteria must be made. The criteria includes: evidence of efforts made to make the school building and grounds free of tobacco smoke; evidence of policies and practices to assure appropriate emergency care and individual Asthma Action Plans are in place; evidence of good indoor air quality that is monitored; health and education data and information is collected and available.

An Integrated Pest Management System is in place. IPM procedures will determine when to control pests and whether to use mechanical, physical, chemical, cultural, or biological means. Applying IPM principles prevents unacceptable levels of pest activity and damage by the most economical means and with the least possible hazard to people, property, and the environment. The choice of using a pesticide will be based on a review of all other available options and a determination that these options are not

acceptable or are not feasible. Cost or staffing considerations alone will not be adequate justification for use of chemical control agents, and selected non-chemical pest management methods will be implemented whenever possible to provide the desired control. It is the policy of this School System to utilize IPM principles to manage pest populations adequately. The full range of alternatives, including no action, will be considered.

***High standards of social and psychological services, nutrition, fitness, and outdoor time***

Crellin Elementary has a Pupil Service Team composed of teachers, the principal, counselors, a social worker, a Judy Center teacher, a school psychologist, a pupil service worker, and the school nurse. This team meets monthly to identify student needs and create plans for intervention and support. The needs vary including emotional, physical, and family needs. Additional county personnel resources can be included in these support plans.

Crellin Elementary has a school counselor who is assigned to our school two days a week but available other days when needed. He provides whole group, small group, and individual lessons and therapy on a variety of topics based on the needs of the group or individual. His groups meet in his office, on the nature trails, or even in the barnyard, wherever the child is most comfortable. Topics range from strategies in mindfulness, a holistic approach to social-emotional learning, bullying, and child protection. To assist him we have a school social worker who also provides counseling services. Both of these school personnel work in conjunction with the school principal to identify needs of students and families. Home visits are made weekly to families in need of support.

Crellin Elementary has a full time registered nurse on staff. In her role she not only takes care of the physical and psychological needs of students and staff but also serves as a resource to the community. She teaches whole group classroom lessons focused on maturation, nutrition, and handwashing. Our school nurse also provides medical advice and recommendations to parents and assists them in locating doctors who will meet their health needs.

Crellin Elementary and the GCPS Health Services work with Garrett County Health Department to initiate county and school wide wellness programs. Flu vaccines are offered free of charge to staff and students. These clinics are set up in the schools and GCPS offices to allow for easy access. COVID testing can be administered at each school to those students and staff who are ill or have been exposed. COVID vaccination

sites have been set up in schools and throughout the community for easy access. Dental health lessons are taught in each classroom yearly by Health Department personnel. These lessons teach students the importance of daily dental care, encourage regular visits to the dentist, and promote healthy eating habits. Our media specialist organizes and facilitates the “Play Hard Live Clean” campaign, sponsored by the Garrett County Health Department. In this program students are invited to complete three challenges. The challenges relate to healthy eating, physical activity and mindfulness and participation in the campaign earns students a medal and certificate. Choice boards are provided for each challenge and are completed at home.

Through a partnership with the Deep Creek Lions Club, vision screenings are conducted yearly at Crellin Elementary. The Lions Club provides glasses for students who need visual aids and require financial assistance to obtain them.

Crellin Elementary has formed a working relationship with the University of Maryland Extension Office. Through this partnership we are able to provide a variety of programs for the students, staff and the community. Kristin Spiker, Senior Agent Associate, has been working closely with teachers to expand on the health curriculum and providing parent workshops focused on food and nutrition for the past ten years. Within the school day, Mrs. Spiker implements the SNAP-Ed lessons in kindergarten, second and fourth grades. These lessons include preparing fruits and vegetables for consumption, cooking demonstrations, and trying new foods through tasting opportunities. She supports the yearly planting of our community garden by providing funds for planting materials and supplies. The fresh food grown in our community garden is consumed by students and community members throughout the spring, summer and fall. Mrs. Spiker provides school wide educational materials to promote drinking water, additional nutrition lessons, and resources to encourage physical activity. During family events she provides nutrition education resources supporting self-efficacy in preparing fruits and vegetables for consumption at home and encourages participants to try new foods through tasting opportunities. At these events and through school social media outlets she promotes the use of SNAP/WIC or other food supplement benefits to purchase healthy foods.

In our efforts to consume locally sourced foods and teach sustainability practices we engage in several unique practices. Ashley Bodkins, Extension Office Master Gardener Coordinator, assists us in sustaining the community garden which provides fresh vegetables throughout the growing and harvesting seasons. We also grow lettuce and tomatoes in the greenhouse hydroponics system throughout the year and are able to consume the eggs from our hens. These food sources are consumed by students and staff in our school food program and are shared with community members.

Students experience a minimum of 30 minutes of physical activity (recess) per day with opportunities for additional physical activity. Recess is multi-grade levels and students choose their activity. They may choose to play on the equipment, roll down the amphitheater hill, participate in group games, jump rope, etc. Physical activity is often incorporated into the morning and afternoon schedules and through hands-on physical activities take place daily in our Education Environmental Lab (EEL) and in Sunshine Farm barnyard (our school farm). Activities include: raking and jumping in leaves, sled riding down our amphitheater hill, shoveling snow, constructing, planting and maintaining gardens, building forts in the hemlock forest, playing in Snowy Creek, nature walks, barns chores (feeding animals and cleaning barn stalls), community clean up activities, Crellin Cares initiatives (cleaning neighborhood yards, shoveling driveways), and community walking tours. We encourage and provide sunscreen for all outdoor activities and give students the option of playing in shaded areas.

The Garrett County Adolescent and Child Health Work Group was formed in response to adolescent health statistics that showed a need for an increase in the number of children receiving wellness exams and in health education. This need initiated the Healthy Lifestyles Work Group, focusing on health, nutrition and exercise. In 2021, Crellin Elementary was chosen as the pilot school for this program, now titled "Go Healthy Crellin". A dietician from the Health Department and local physician assistants assist our school nurse in performing student screenings related to weight, height, and blood pressure. This information is shared with parents and assistance is provided when concerns arise. School staff ensure that students are engaged in daily physical activities and our school wide family activities include topics related to family health, wellness and physical activity experiences.

**Pillar 3: Efforts to Ensure Effective Environmental and Sustainability Education**  
***The essence of education is not to transfer knowledge; it is to guide the learning process, to put responsibility for study in the student's own hands...and place people on their own path of discovery and invention.***

-Tsunesaburo Makiguchi

***Interdisciplinary learning about the key relationships between dynamic environmental, energy and human systems***

Crellin Community “Corps of Discovery”, created in 2005, is a dedicated group of students, community members, organizations, and local, state, and federal agencies committed to protecting the natural resources of our community and engaging students with meaningful learning opportunities. Our vision was to maximize opportunities and utilize the stream restoration project as an educational tool for our students and community. The Environmental Education Laboratory at Crellin Elementary is an outdoor classroom where students participate in hands-on activities that enrich their environmental knowledge. Utilizing the wetland, boardwalk, hemlock forest, vernal ponds, no-mow areas, meadows, the orchard, and Snowy Creek, our students have unique backyard learning opportunities. Teachers work with environmental and content specialists from Garrett College, Maryland Department of Natural Resources, the Youghiogheny Watershed Association, West Virginia University, and Glenville State College to create age appropriate lessons that support the Maryland curriculum standards. Educational opportunities outside of the school walls include exploring the schoolyard habitat by planting and maintaining a native butterfly garden, building and erecting bird and bat boxes, exploring the riparian area, planting native trees and shrubs and chemical and biological testing to determine stream quality. These intimate experiences have created a sense of responsibility and stewardship that will transfer to any watershed in which our students come in contact. Additionally, our learning projects continue to engage parents and community members which leads to raised awareness and increased knowledge of environmental issues. These experiences have encouraged our school to adopt “green” practices such as water conservation, recycling, and reducing waste.

In 2011, while at the Intel School of Distinction Ceremony in Washington DC, we heard about an elementary school in Kansas that had an agriculture program. We were intrigued with the program and sent one of our teachers to the school to learn how they operated the program. She was inspired and in turn inspired us to pursue creating an agriculture program at Crellin. With funds from the Intel award and through a grant from the State Farm Youth Advisory Board, we were able to construct two barns and a greenhouse. While this was occurring, staff members attended the Maryland Ag in the

Classroom week long class and the National Ag in the Classroom conference for ideas on how to incorporate agriculture into our lessons. As a staff we looked at the content standards and made curricular connections at each grade level. This type of professional development happens in Crellin School at the beginning of each year with teachers. We created grade-level scrolls to use as a guide for planning instruction, to be sure we are vertically aligned, and to see connections between grade levels allowing for multi-grade lessons. Crellin's *Sunshine Farm* is funded through grants and our Parent Teacher Organization. We have expanded our vegetable garden, planted an orchard, and now have a hydroponics system in the greenhouse. We currently have four sheep (two are pregnant), one lamb and several hens. In the past we have cared for goats, an alpaca, and a calf.

Since the completion of our Environmental Education Laboratory we have engaged students in meaningful place-based lessons and projects. By connecting content areas in these activities students are able to experience learning holistically. It enables them to understand how concepts and systems are connected. Through the agriculture program we are able to teach various content areas. We incorporate reading and writing and use "I wonder" questions students have about the animals and plants as research projects. Using these authentic "wonders" makes projects meaningful to students. Students are responsible for the daily barn chores. They feed and water the animals and keep the barn clean. Students also collect the eggs and prepare and package them to be sold. They learn to "pay bills", including the purchase of feed, straw and hay, with the funds they earn. They enjoy playing with the animals on the barnyard playground and students have been involved in the birthing of our lambs. When the wool is sheared students clean and card it to sell or to spin into yarn. The sheared wool has been entered into the local Garrett Agricultural Fair.

In 2011, Crellin Elementary teachers designed a program titled, Operation Conservation. Objectives in this program included teaching students the types of energy, alternative forms of energy, and how to monitor and conserve energy. Students used monitoring tools to collect data on the amount of energy used throughout the school and in their homes. Students created posters to remind others of practices that conserve energy and presented their learning at a school Energy Expo. These conservation practices are still taught and followed to this day. This energy study led us to explore renewable energy sources. While learning about solar energy with our learning partners at Glenville State College we were introduced to the mayor of a town in Ghana. Upon learning of the lack of electricity and the challenges associated with it in his community our students were inspired to be part of a solution. Students assembled small solar panels that would charge a battery to provide electricity for a lamp. These components were packaged and through community donations, shipped overseas to



Ghana. The depth of learning that occurred through this one project transcended across many content areas.

### ***Development and application of civic engagement knowledge and skills***

To arm students with the 21<sup>st</sup> Century Skills of collaboration, creativity, critical thinking, and problem solving, we must provide them with opportunities to engage in learning that allows them to acquire and practice these skills. To meet these demands, in 2018, we created a school-based research program titled, *Young Researchers Institute (YRI)*. Using a project-based model, coupled with the place-based philosophy of solving authentic problems that are relevant to students, we facilitated student research. The *Sustainable Agriculture Project* was the first project in the Young Researchers Institute.

The *Sustainable Agriculture Project*, had several distinct components including:

- Multi-age level research teams were comprised of students in all grades, but focused on third-fifth grade students;
- The research problems identified were based on students' questions and concerns. These topics focused on sustainable agricultural practices and the environmental effect of those practices related to our school farm;
- Core subject area content and curriculum objectives were integrated into the research;
- Students worked with professors and researchers from West Virginia University, local farmers, and experts from the Maryland Extension Office to learn about their research topics;
- Students developed a hypothesis, designed and executed a research plan, collected and interpreted data, drew conclusions, and communicated their findings;
- Specific time was scheduled weekly within the instructional day for the research teams to meet.

Students identified the following problems and research topics:

1. Students found an infestation of pests in our community vegetable garden, which ruined many of the crops. This research team investigated methods for preventing pests from invading our vegetable gardens without using pesticides;
2. Our data showed up to a 75% decrease in egg production in the winter months. Students investigated methods for maintaining egg production throughout the winter;
3. The soil on school property differs in various areas due to historic coal mining. Students investigated soil properties and determined remedies for improving the quality of the soil to sustain plant growth;

4. The amount of animal and barn waste was growing. Students investigated ways to compost and reuse the waste in a purposeful way while preventing damage to the watershed.

The need to shift to virtual learning required us to think creatively on how to restructure this program. We were able to assemble materials and supplies that were distributed to each family in the school. Instructional videos were posted on our virtual learning platform that guided students and their families through activities that supported the learning taking place through the research projects. In a twist of fate the pandemic challenges enabled all school families to actively participate in the hands-on learning activities. Although the original projects were interrupted by the pandemic, we were able to complete them in spring 2021. Each of the research teams' findings are being used to increase the sustainability of our outdoor program. With the *Young Researchers Institute* program structure in place we can initiate additional research projects in single or multiple classrooms. Currently, our first grade students are researching the bedding our hens prefer in hopes they will lay more eggs in the nesting boxes.

In our efforts to consume locally sourced foods and teach sustainability practices we routinely engage in several unique programs. Ashley Bodkins, Extension Office Master Gardener Coordinator, assists us in planting the community garden which provides fresh vegetables to community members throughout the growing and harvesting seasons. In addition, we are able to use the growing process to teach multiple concepts and skills. Some of these skills include; measuring volume to determine the amount of compost needed, determining placement of seedlings, creating appropriate timelines for planting and harvesting, and performing physical labor to plant and maintain the garden. Each grade level has a role in the process and collaboration between students is important to the success of the garden. In addition to the community garden our hydroponics system in our greenhouse is used to extend our growing season of our lettuce and tomatoes. Our food pantry also supplies our community with non-perishable food items. It is stocked and used by school and community members. Each year at the Garrett County Agricultural Fair many of our students show and sell livestock. Through generous donations Crellin School acquires locally raised hogs and a beef cow to be used as fresh meat in our school lunch program. Some of this meat is distributed to local families with food insecurities.

Students in the third grade classroom take on the responsibility of our Trout in the Classroom program. We have been involved in this program since 2007 and use it as a means to not only teach about the stream ecosystem but as a way to give back to the environment. Collaborating with Trout Unlimited and the Department of Natural Resources, students set up equipment that mimics the natural environment to care for trout eggs as they progress through their life cycles to the fingerling stage. When they

reach the appropriate size, the fingerlings are released in Snowy Creek behind our school. While the young fish are contained in the classroom, students are learning about water quality, food webs, trout anatomy, conservation and environmental stewardship.

As the hub of the community, Crellin staff and students regularly participate in Crellin Cares projects that directly address community sustainability and environmental issues. Some of these activities include: neighborhood trash bashes, leaf raking, providing and planting vegetables for older community members, and gutter and small home repairs.

### ***Use of the environment and sustainability to develop STEM content knowledge and thinking skills***

Through community project-based sustainability and environmental endeavors, Crellin School students and staff continually engage in STEM driven problem solving tasks. Students have had many opportunities to identify problems in their own community, conduct research, and plan and implement original solutions to those problems. Examples of these STEM driven projects include:

- Creating an Integrated Pest Management System for our community garden to decrease or eliminate the harmful pests that destroy the crops;
- Designing a system that uses a renewable energy source and the transfer of energy to operate an automatic chicken door and lights in the henhouse;
- Design and maintain a hydroponics system in our greenhouse as a way to extend our growing season and produce fresh vegetables;
- Designing and constructing a barnyard playground utilizing materials that would have been taken to the landfill;
- Writing books and brochures that describe projects;
- Creating and maintaining a bird sanctuary to encourage and care for native species;
- Designing and maintaining our community vegetable garden, Rose Mary's Garden, to provide food for school and community members;
- Creating and implementing compost systems for both leftover food and animal waste;
- Analyzing the school's soil properties and identifying practices to support plant growth;
- Finding and utilizing barrels to build our Steel Drums instruments.

Through all of these experiences, students are gaining a sense of place and learning to appreciate and care for the environment. We view "problems" as opportunities to collaborate and learn. We hope to continue to build this sense of responsibility and foster their desire to make a difference.