

U.S. DEPARTMENT OF EDUCATION
Green Ribbon Schools

U.S. Department of Education Green Ribbon Schools 2013

For Public Schools only: ☐ Charter ☒ Title I ☐ Magnet ☐ Choice

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

Official School Name Albert M. Greenfield Elementary School
(As it should appear in the official records)

School
Mailing Address 2200 Chestnut St
(If address is P.O. Box, also include street address.)

Philadelphia PA 19103
City State Zip

County Philadelphia State School Code Number* 5186

Telephone (215) 299 3566 Fax (215) 299 3567

Web site/URL _____ E-mail dlazar@philasd.org

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

[Signature] Date 2-12-13
(Principal's Signature)

Name of Superintendent* WILLIAM R. HITE, JR., ED. D
(Specify: Ms., Miss, Mrs., Dr., Mr., Other)

District Name* SCHOOL DISTRICT OF PHILADELPHIA Tel. (215) 400-4040 / (215) 400-5196

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate. This is one of the highest performing green schools in my jurisdiction.

[Signature] Date 2-13-12
(Superintendent's Signature)

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



PART II – SUMMARY OF ACHIEVEMENTS

Instructions to School Principal

Provide a concise and coherent "snapshot" that describes how your school is representative of your jurisdiction's highest achieving green school efforts in approximately 800 words. Summarize your strengths and accomplishments. Focus on what makes your school worthy of the title U.S. Department of Education Green Ribbon School.

PART III – DOCUMENTATION OF STATE EVALUATION OF NOMINEE

Instructions to Nominating Authority

The Nominating Authority must document schools' high achievement in each of the three ED-GRS Pillars and nine Elements. For each school nominated, please attach documentation in each Pillar and Element. This may be the Authority's application based on the Framework and sample application or a committee's written evaluation of a school in each Pillar and Element.

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.

1. The school has some configuration that includes one or more of grades K-12. (Schools on the same campus with one principal, even a K-12 school, must apply as an entire school.)
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.

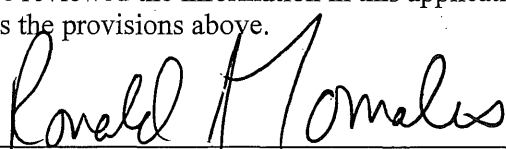
Name of Nominating

Agency Pennsylvania Department of Education

Name of Nominating

Authority Ronald J. Tomalis, Secretary of Education

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 2/14/13

**Pennsylvania Department of Education
Nomination for Green Ribbon Schools Award
Albert M. Greenfield School, School District of Philadelphia**

In 2006, Greenfield looked like a typical urban school. Built in the 1970's, the brick building was equipped with outdated mechanical equipment and the schoolyard was an asphalt parking lot. To bring about a meaningful change, a dedicated group of parents, teachers and students initiated the "Greening Greenfield" project to transform the existing school into a healthy, sustainable place for students to learn and play.

The Greening Greenfield Committee established a set of rigorous goals: (1) green the existing building and school yard; (2) teach students to be environmental stewards; (3) share the sustainable story with the community.

The efforts at Greenfield have provided great results—both inside and outside of the school building. As part of improvements to the physical plant, much of the old, outdated mechanical equipment has been replaced with new, energy efficient models and the school achieved 52% energy savings in the past year. To increase building performance even more, Greenfield will transfer from an antiquated steam-powered heating system to natural gas heating in 2013.

Greenfield was pleased to be selected by Philadelphia Water Department as a pilot site for its "Green City, Green Waters" plan to use green storm water infrastructure as the primary approach to reduce the incidence and volume of Combined Sewer Overflows. As part of this project, Greenfield partnered with the Community Design Collaborative, local professionals, and the school community to create a Master Plan that dramatically transformed the existing, impervious school yard into a green oasis. In 2009 and 2010, the first two phases of the Master Plan were installed, including state-of-the-art storm water management controls that capture and treat 97% of rainwater that falls onto the school yard. The installation involves pervious paving and two native plant rain gardens.

Other educational amenities installed on-site include a weather station, photovoltaic solar array, mural, outdoor classroom, and urban orchard garden. For an existing school in a high-density urban neighborhood, Greenfield truly maximized the opportunities on-site and serves as a model for other urban schools.

And, a key part of Greening Greenfield is to ensure students are engaged in every aspect of this work—and that it is integrated throughout the curriculum. This occurs both inside and outside of the building. Outdoors, students learn about micro-climates, indigenous plants, rain water absorption, and non-point source pollution. Native plant rain gardens, an urban orchid garden and the solar pv systems also provide hands-on learning opportunities for students.

Teachers at Greenfield have found new ways to incorporate sustainability and environmental science in the classroom—and every classroom has a designated period for science each day. At every grade level, environment and ecology standards are introduced through on-site and offsite learning experiences. For example, the rooftop solar installation includes a real-time photovoltaic

display monitor which students utilize in the fifth grade course and students collect soil samples and catalogue native plants documenting the natural changes to the school gardens each year.

To instill the importance of environmental stewardship, Greenfield follows a very special tradition each Earth Day when all classes visit the Schuylkill River Trail and discuss the impacts of storm water management. To build upon this experience throughout the school year, Greenfield partners with the Fairmount Water Works Interpretative Center, a local non-profit that provides educational resources focused on healthy watersheds.

Additionally, Greenfield students will participate in the Energy Pilot Program with the Delaware Valley Green Building Council. Students will undergo training to become energy auditors and will complete an energy audit of the school to identify inefficient practices and promote energy conservation.

To continue efforts to improve student health, the Greening Greenfield Committee has focused on healthy eating as an important component to this process. Greenfield partnered with The Philadelphia Orchard project to plant an urban orchard garden on-site. Students plant and tend to the garden and learn about different fruit offerings; Asian pears, figs, raspberries, persimmons and peaches. Greenfield also holds several healthy food events each year, such as International Food Day and Fresh Food Fairs. As students are exposed to new types of fresh fruits and vegetables, they are more likely to choose healthy options.

The final step in the Greening Greenfield process is to share their success story with the community. The Greening Greenfield Committee often speaks at community events about how they engaged the local community in the design of the Master Plan and how they maximized fundraising to achieve their goals. The success of the Greening Greenfield project is a testament to the power of enlisting community support. The Greening Greenfield Committee realized their goals by securing the necessary resources---through fundraisers, securing grants, and building local partnerships. For example, Greenfield's photovoltaic installation was made possible through a benefit concert by the rock group, The Disco Biscuits. Greenfield raised the remainder of the funds through an e-cycle day, a silent auction, a student penny-drive, and sales of a student-designed Greening Greenfield t-shirt, and Mercury Solar, the photovoltaic system design/builder, generously donated the installation labor.

The Albert Greenfield School has been transformed through the partnerships created and their innovative strategies have yielded tremendous results. Energy conservation, actively engaged students and staff, and a robust curriculum component demonstrate the commitment that Greenfield has made, and also reflect the benefits of creating a vision that includes student-led change and community collaboration.

School Contact Information

School Name : Albert M. Greenfield School

School District (if applicable) : The School District of Philadelphia

Street Address : 2200 Chestnut Street

City : Philadelphia

State : PA

Zipcode : 19103

School Website : www.GreeningGreenfield.net

Principal First Name : Dan

Principal Last Name : Lazar

Principal Email Address : dlazar@philasd.org

Principal Phone Number : (215) 299-3566

Lead Applicant First Name (if different from principal) : Evelyn; Lisa

Lead Applicant Last Name (if different from principal) : Sample-Oates; Armstrong

Lead Applicant Email : esampleoates@philasd.org; larmstrong@GreeningGreenfield.net

Lead Applicant Phone Number : (215) 400-4040; (215) 977-8516

Level: K - 8

School Type: Public

How would you describe your school? Urban

Does your school have at least 40 percent of your students from a disadvantaged background? (students who are eligible for free and reduced-price school meals, students with disabilities, who are limited English proficient, migrant, or receiving services under Title I of the Elementary and Secondary Education Act): Yes

Pillar 1: Environmental Impact and Energy Efficiency

Buildings, grounds and operations goal: The school has reduced its environmental impact and is working towards net-zero impact (zero carbon, solid waste, and hazardous waste footprints).

Pillar 1 includes four main elements:

- A) Reduced greenhouse gas emissions, using 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.
- B) Improved water quality, efficiency, and conservation.
- C) Reduced solid waste production, through increased recycling, reduced consumption, and improved management, reduction, or elimination of hazardous waste stream.
- D) Expanded use of alternative transportation to, during and from school, through active promotion of locally-available options and implementation of enabling projects and policies.

Each question in this section is designed to measure your school's progress towards Pillar 1 and its associated four elements.

1A1: In what year was your school constructed? 1968-1970

1A2: What is the total building area of your school? 96,000 square feet

1A3: Has your school constructed a new building or renovated an existing building in the past ten years?
No

Please provide the following information:

1A4: Do any parts of your existing buildings meet green build standards (for example: LEED, CHPS, Green Globes, or other standards)? No

Please provide the following information:

1A5: Please indicate which green building practices your school is using to ensure your building is energy efficient.

School has fully implemented the Facility Energy Assessment Matrix within EPA's Guidelines for Energy Management.

School has an energy and water efficient product purchasing and procurement policy in place.

Other (please describe): Upgraded outdated and inefficient mechanical equipment on-site. Participated in district-wide program under Facilities Management and Services to modify mechanical equipment schedules for energy efficiency. Real-time photovoltaic display monitor provides renewable energy generation information to building occupants.

1A6: Has your school received EPA ENERGY STAR certification or does it meet the requirements for ENERGY STAR certification? No

If your school received the certification, please note the year it was achieved and the score received.

1A7: Has your school reduced its total non-transportation energy use from an initial baseline? Yes

Please provide the following information:

Percentage reduction : 52%

Measurement unit used (kBtu/square foot, kBtu/student, annual therms, etc.) : Weather Normalized Source EUI (kBtu/SF)

Time period measured (mm/yyyy-mm/yyyy) : Baseline Year: 11/2010-10/2011; Comparison Year: 11/2011-10/2012.

How did you document this reduction (i.e. ENERGY STAR portfolio, district report)? : ENERGY STAR Portfolio Manager

1A8: What percentage of your school's energy is obtained from:

On-site renewable energy generation (i.e. solar, wind, biomass) : 1%, Solar, 5.3 kW Photovoltaic Array

Purchased renewable energy : 0%

1A9: Can your school demonstrate a reduction in its Greenhouse Gas emissions? Yes

Please provide the following information:

Initial GHS emissions rate (MT eCO₂/person) : 4.78×10^5 MtCO₂e

Final GHG emissions rate (MT eCO₂/person) : 1.88×10^5 MtCO₂e

Percentage reduction : 61%

Time period measured (mm/yyyy-mm/yyyy) : Baseline Year: 11/2010-10/2011; Comparison Year: 11/2011-10/2012.

How did you document this reduction (e.g., the inventory module from Clean Air Cool Planet's Campus Carbon Calculator, EPA Portfolio Manager)? : ENERGY STAR Portfolio Manager

1A10: Does your school reduce and/or offset the greenhouse gas emissions from building energy use? Yes

Please provide the following information:

List offsets used : On-Site Photovoltaic Array

Current total GHG emissions (MtCO₂e) : 4.78×10^5 MtCO₂e

Baseline total GHG emissions (MtCO₂e) : 1.88×10^5 MtCO₂e

Change from baseline : 61%

Time period measured (mm/yyyy-mm/yyyy) : Baseline Year: 11/2010-10/2011; Comparison Year: 11/2011-10/2012.

1B1: What percentage of your students walk, bike, bus, or carpool (2+ students in the car) to/from school?
73%

1B2: How was this data collected and calculated? (Maximum 100 words)

Enrollment for the 2012-2013 academic year is 579 students. This school is a neighborhood school, but 42% of the school population is made up of desegregated students that live outside of the catchment area.

Parents visually surveyed on two days in December 2012 to gather the following data: (9%) of students live over 1.5 miles from school and utilize mass transit to travel to school; (12%) of students are special education students that travel to school by yellow bus; (52%) of students walk, bike, or carpool to school.

1B3: Which of the following policies or programs has your school implemented:

Our school has a well-publicized no idling policy that applies to all vehicles (including school buses).

Vehicle loading/unloading areas are at least 25 feet from building air intakes, doors, and windows.

Our school has established Safe Pedestrian Routes to school which are distributed to parents and posted in our office.

Our school promotes bike/ped programs.

1B4: Describe how your school transportation use is efficient and environmentally benign (e.g. the percentage of school-owned electric/hybrid/alternative fuel vehicles in your fleet, or other indicators of significant reductions in emissions):

The district currently provides yellow bus service to approximately 9,000 students who qualify under special education, hazardous exceptions, no child left behind, and overcrowding. All district and contracted buses meet governmental emission reduction standards. The District partners with Philadelphia's public transportation system, SEPTA. All students who live farther than 1.5 miles from their assigned school are eligible to receive a complimentary Transpass for traveling to school via bus, trolley, subway, or train. Secure bicycle parking is also provided to students on site. Pedestrian paths are guarded by professional and student crossing guards for a two block radius around the school.

1C1: Can you demonstrate a reduction in your school's total water consumption (measured in gallons/occupant) from an initial baseline? Yes

Please provide the following information:

Percentage reduction domestic : 13%

Percentage reduction irrigation : N/A – No irrigation on-site.

Time period measured (mm/yyyy-mm/yyyy) : Baseline Year: 11/2010-10/2011; Comparison Year: 11/2011-10/2012.

How did you document this reduction (i.e. ENERGY STAR Portfolio Manager, school district reports)? :

ENERGY STAR Portfolio Manager

1C2: Which of the following practices does your school employ to increase water efficiency and ensure water quality? (Please check all that apply)

Our school's landscaping is water-efficient and/or regionally appropriate.

Our school has a program to control lead in drinking water (including voluntary testing and implementation of measures to reduce lead exposure).

Our school has implemented stormwater best management practices and/or low-impact development strategies (i.e. rain gardens, vegetated swales, pervious paving, rainwater harvesting, green roofs).

Our school uses water control features in bathrooms, locker rooms, kitchens, etc. that include, low flow faucets, automatic sensor faucets, low flow toilets and shower heads.

Please provide the following information about your school's landscaping

What percentage of your total landscaping is considered water-efficient or regionally appropriate? : Site was previously an asphalt parking lot and 100% of landscape was fully restored with native and adapted vegetation. All of the plants specified on-site were selected to be native to the region.

What types of plants are used and where are they located? : Native perennials, shrubs, and trees in rain gardens; fruit trees in the urban orchard garden, including Asian pears, figs, peaches, raspberries, and persimmons.

Please describe the alternate water sources used for irrigation or toilet flushing. (Maximum 100 words)

Please describe the program you have in place to control lead in drinking water. (Maximum 100 words)

The "Safe Drinking Water Program" was initiated in 2000 (Amended in 2002) by the School District and the Philadelphia Department of Public Health. The Agreement called for the following: testing of drinking water

in all District facilities (with the exception of those constructed after January, 1991, and facilities in which plumbing had been totally replaced after January, 1991); and, the remediation of plumbing components for outlets exhibiting high lead-in-water. From 2000 to 2004, Greenfield was tested to ensure that all drinking water outlets dispense water that has less lead than the USEPA's recommended standard (20 ppb).

Please describe your best management practices for stormwater. (Maximum 200 words)

Prior to the Greening Greenfield project, 100% of stormwater run-off from the school yard was discharged directly into the combined sewer and stormwater treatment system. Storm drainage was collected by three large area drains located in the school yard along Sansom Street. The need for all three of the original area drains has been eliminated by the Greening Greenfield school yard improvements.

After Phase I and Phase II implementation, 97% of the rainwater that falls onto the school yard is infiltrated and treated on-site through the use of stormwater best management practices. Stormwater is infiltrated through the recycled rubber playing surface into a subsurface stormwater storage/infiltration bed. During large storm events, stormwater run-off that is not absorbed into the pervious paving is redirected through swales to one of two rain garden systems. Both rain gardens are planted with woodland forest plants that are native to the Pennsylvania region.

1C3: Our school's drinking water comes from: Municipal water source

Please describe how the water source is protected from potential contaminants. (Maximum 100 words)

1C4: Please describe any additional progress your school has made towards improving water quality, efficiency, and conservation. (Maximum 200 words)

The Greening Greenfield Committee is currently fundraising for the next phase of the Master Plan. They raised \$117,500 towards installing a vegetated roof that shall cover half of the school building's roof. This installation shall further reduce stormwater run-off and continue to promote biodiversity on-site. The green roof installation is planned for 2013.

1C5: What percentage of the school grounds are devoted to ecologically or socially beneficial uses (school vegetable garden, wildlife or native plant habitats, outdoor classroom, environmental restoration projects, rain garden, pervious walking or running trails, etc.)?

90%; including outdoor classroom, rain gardens, urban orchard garden, etc. Greenfield has one of the most ecological diverse school grounds in the School District of Philadelphia.

1C6: Do any parts of your outdoor landscape meet the National Sustainable Sites Initiative guidelines? If Yes, please explain.

Yes: Greenfield did not formally participate in the Sustainable Sites program because it was released after the school yard upgrades were complete; however many of the goals of the Sustainable Sites program were incorporated into the site design. Previously, the site of Greenfield was an asphalt parking lot, which was restored with native vegetation. Stormwater management design considered natural hydrology of the site to maximize infiltration and reduce stormwater run-off.

1D1: What percentage of solid waste is diverted from landfilling or incinerating due to reuse, recycling and/or composting (i.e. Recycling Rate)?

A - Monthly garbage service in cubic yards (garbage dumpster size(s) x number of collections per month x percentage full when emptied or collected). : 32.00

B - Monthly recycling volume in cubic yards (recycling dumpster sizes(s) x number of collections per month x percentage full when emptied or collected). : 21.15

C - Monthly compostable materials volume(s) in cubic yards (food scrap/food soiled paper dumpster sizes(s) x number of collections per month x percentage full when emptied or collected). : 0.00

Recycling Rate = $(B+C) / (A+B+C) \times 100$: 39.8%

1D2: Does your school have a composting system? Yes

1D3: Please provide the following information about your school's hazardous waste:

How much hazardous waste does your school produce (lbs/person[staff+students]/year)? : The district schedules universal waste pick-ups once a year. In May 2012, Greenfield recycled the following universal waste quantities according to Federal, State and local regulations: 812 linear feet of fluorescent lamps. The Greenfield Home and School Association organizes a community E-Cycle Day each spring. In 2011, they collected 6,520 lbs of electronic equipment, including all of Greenfield School's discarded electronic equipment, which was recycled by Elemental, Inc., a PA company devoted to recycling electronic equipment. How is the amount generated calculated? : The Office of Environmental Management and Services records universal waste quantities for all schools in the district. For the annual E-Cycle Day, the Greenfield Home and School Association received a receipt from Elemental Inc. detailing the electronic equipment which was recycled.

List the types of hazardous waste generated : Mercury-containing lamps, computer equipment.

How is hazardous waste monitored? : The Building Engineer stores spent universal waste in labeled cardboard boxes. The Office of Environmental Management and Services schedules universal waste pickups for each school once a year and provides annual training for Building Engineers about universal waste management. The Building Engineer stores spent computer equipment, appliances, and maintenance equipment, and schedules a pick-up through the district-wide recycling program for durable goods.

1D4: Which of the following benchmarks has your school implemented to minimize and safely manage hazardous waste? (Please check all that apply)

Our school has a hazardous waste policy for storage, management, and disposal that is actively enforced. Our school disposes of unwanted computer and electronic products through an approved recycling facility or program.

All our computer purchases are Electronic Product Environmental Assessment Tool (EPEAT) certified products.

List the green cleaning standard(s) used.

1D5: Does your school use "third party certified" green cleaning products? Yes

Please provide the following information about the green cleaning products used in your school:

What percentage by volume of all cleaning products in use are "third party certified" green cleaning products? : 30%

What specific green cleaning product standard (Green Seal, Ecologo, etc.) does the school use? : Green Seal

1D6: What other indicators do you have of your school's reduction of solid waste and elimination of hazardous waste? (Maximum 200 words)

A compelling part of the Greening Greenfield project is the conversion from four large dumpsters to two small dumpsters. To maximize the square footage of the site improvements, the dumpsters were reduced in size. To logistically achieve this goal, the Principal started an educational initiative to increase recycling. For example, students attended educational assemblies about recycling and staff members discussed recycling procedures during Professional Development seminars. To gain recognition for their efforts, Greenfield participated in Recycle Bowl in 2012 and won 2nd place in Pennsylvania. They are currently preparing their Recycle Bowl calculations with hopes to win in first place in 2013.

Beyond recycling, an important part of waste management is source reduction. The Principal uses email to communicate with parents and plans to go paperless next year to eliminate the amount of paper flyers that are sent home with students each day. Also, Greenfield utilizes online curriculum programs to reduce the amount of paper handouts that are used in classrooms.

All garden waste is composted on-site. The outdoor classroom is equipped with a compost tumbler so students can participate in aerating the compost. This strategy reduces the amount of waste entering landfills.

1D7: This is the end of Pillar 1. Please describe any other accomplishments or progress your school has made towards reducing/eliminating environmental impacts or improving your energy efficiency. (Maximum 200 words)

Greenfield is one of the schools participating in the Energy Pilot Program with the Delaware Valley Green Building Council. Representatives from the US EPA will train one classroom to become energy auditors. The students will complete a walkthrough of the school and take readings in temperature, air velocity, humidity, and light levels. The data will be evaluated using graphs and charts. Greenfield has plans to expand the program by training a middle school classroom, who will then train an elementary school classroom, who will then train a kindergarten classroom. The program has the potential to reduce energy consumption and increase awareness about energy conservation. The students will bring the lessons they learn back home to share with their families, further expanding the outreach of the program

Pillar 2: Healthy School Environments

Healthy student and staff environment goal: The school improves the health and performance of students and staff.

Pillar 2 includes two main Elements:

- A) An integrated school environmental health program based on an operations and facility-wide environmental management system that considers student and staff health and safety in all practices related to design, construction, renovation, operations, and maintenance of schools and grounds.**
- B) High standards of nutrition, fitness, and quantity of quality outdoor time for both students and staff.**

Each question in this section is designed to measure your school's progress toward Pillar 2.

2A1: Which of the following practices does your school employ with regards to pest management? (Please check all that apply)

Our school has an integrated pest management plan in place to reduce and/or eliminate pesticides.

Copies of pesticide labels, copies of notices, MSDS and annual summaries of pesticide applications are all available and in an accessible location.

Our school prohibits children from entering a treated area for at least 8 hours after the treatment or longer if required by the pesticide label.

2A2: Which of the following practices does your school employ to improve contaminant control and ventilation? (Please check all that apply)

Our school has eliminated mercury-containing thermometers, chemical compounds, art chemicals, etc. and elemental mercury.

Our school disposes of any unwanted mercury laboratory chemicals, thermometers and other devices in accordance with federal, state, and local environmental regulations.

Our school has CO alarms that meet the requirements of the National Fire Protection Association code 720.

There are no wood structures on school grounds that contain chromate copper arsenate.

Our school prohibits smoking on campus and in public school buses.

2B1: Which practices does your school employ to promote nutrition, physical activity and overall school health? (Please check all that apply)

Our school participates in the USDA's Healthier School Challenge or another nutrition recognition program.

Our school partners with local food growers to supply produce.

Our school has an onsite food garden.

Our students spent an average of 120 minutes per week over the past year in school supervised physical education.

At least 50% of our students' annual physical education takes place outdoors.

Please list your school's USDA Healthier School Challenge award level or describe other nutrition program. (Maximum 100 words)

Greenfield participates in the district-wide program called "Philadelphia Campaign for Healthier Schools," recognized as one of the most effective models across the nation. The objectives of the program: create Coordinated School Wellness Council with teachers, staff, and parents; increase physical activity and availability of healthy foods; provide nutritional education; decrease the availability of unhealthy items. The Greening Greenfield Healthy Eating and Living Program received funding by United Way. Activities include: outdoor gardening days, Earth Day picnics and environmental activities, Green and Gold Outdoor Recreation Days, International Food Day, fruit smoothie days in the school yard, and other healthy eating events.

Please describe the type of outdoor exercise opportunities and nature-based recreation available to students. (Maximum 200 words)

All students have one 45 minute gym class per week. Also, all students have 15 minutes of recess each day, totaling an average of 120 minutes per week.

2B2: Our school encourages teaching and learning outdoors on school property or has opportunities in neighboring public open spaces; such as parks, trails, or community gardens. If yes, please explain.

Yes: For an urban school, Greenfield maximizes its use of outdoor learning opportunities, including outdoor classroom, native plant rain gardens, and urban orchard garden. Classrooms hike along the Schuylkill River Trail several times a year.

2B3: What percentage (by cost) of food purchased by your school is certified as "environmentally preferable" (e.g. Organic, FairTrade, Food Alliance, Rainforest Alliance, etc.)? 0%

2B4: This is the end of Pillar 2. Please describe any additional progress your school has made in terms of the school's built and natural environment (including unique community and/or business partnerships) to promote overall student and staff health and safety. (Maximum 200 words)

One of the main priorities of the Greening Greenfield project is introducing fruits and vegetables to students through gardening and healthy snack programs. An urban orchard garden was planted on-site in association with The Philadelphia Orchard project. The urban orchard garden includes Asian pears, figs, raspberries, persimmons and peaches. Each year, Greenfield hosts healthy food events, such as International Food Day, Fruit Smoothie Days, and Earth Day picnics.

Sixth through eighth grade participate in the Fuel Up to Play grant by the National Dairy Council and the National Football League, which encourages healthy eating and regular physical activity. A local yoga studio volunteers once a week to teach yoga to students in kindergarten, fifth grade, seventh grade, and autistic support. Greenfield has a popular track club which participates in the prestigious Penn Relays each year. There is an after-school cooking club that visits local restaurant Pure Fare, a hot-spot for local, organic, and healthy eating. Pure Fare teaches students about nutrition and local agriculture, and then students cook a healthy snack with staff.

Pillar 3: Environmental and Sustainability Education

Student achievement goal: Provide effective environmental and sustainability education, incorporating STEM, civic skills and green career pathways.

Pillar 3 includes three main Elements:

- A) Interdisciplinary learning about the key relationships between dynamic environmental, energy and human systems.**
- B) Use of the environment and sustainability to develop STEM content knowledge and thinking skills to prepare graduates for the 21st century technology-driven economy.**
- C) Development of civic engagement knowledge and skills, and students' application of these to address sustainability and environmental issues in their community.**

Each question in this section is designed to measure your school's progress toward Pillar 3.

3A1: Is your school district's curriculum aligned to the Pennsylvania Environmental and Ecology standards?

Yes

3A2: Which practices does your school employ to help ensure the environmental and sustainability literacy of your graduates? (Please check all that apply)

Our school has an environmental or sustainability literacy graduation requirement.

Environmental and sustainability concepts are integrated throughout the curriculum.

Environmental and sustainability concepts are integrated into classroom based and schoolwide assessments.

Professional development opportunities in environmental and sustainability education are provided for all teachers.

Please describe your school's environmental or sustainability literacy graduation requirement. (Maximum 200 words)

The K-8 science curriculum is based on the Pennsylvania Department of Education Environment and Ecology Standards and it is heavily focused on environmental science. Scientific materials include Full Option Science Systems (FOSS), Science and Technology for Children (STC), and Holt Science and Technology.

Please describe your classroom based on schoolwide assessments in environmental and sustainability concepts and include what percentage of students scored "proficient" or better. (Maximum 200 words)

All K-8 students are assessed in science and are evaluated using a variety of strategies including science notebooks, class participation, observation and hands-on activities.

Please describe professional development opportunities available in environment and ecology standards. Include the percentage of teachers who participated in these opportunities over the past 2 years. (Maximum 200 words)

Greenfield has four dedicated science teachers so that every classroom gets a designated period of science each day. 100% of science teachers have completed Professional Development programs with one or more of the following local programs: Pennsylvania Horticultural Society Tree Tenders Program, Delaware Valley Earth Force, Schuylkill Center for Environmental Education, Philadelphia Orchard Project, the Fairmount Water Works Interpretive Center, and PECO. Many of these programs focus on outdoor learning opportunities and taking advantage of gardens on-site. These training programs were made possible through the Greening Greenfield Committee. They raised \$600 to award two teachers \$300 stipends to enroll in environmental education training workshops. After attending the workshops, the teachers made presentations to the Home and School Association about how they planned to apply what they learned in their classroom teaching.

3A3: If your school serves grades 9-12, please provide the following information:

Percentage of last year's eligible graduates who completed the AP Environmental Science course during their high school career. : N/A

Percentage of these students who scored a 3 or higher on the AP Environmental Science exam. : N/A

3B1: Do your school's science courses frequently use sustainability and the environment as a context for learning science (such as asking questions, developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, constructing explanations, and engaging in argument from evidence when exploring environmental and sustainability issues)? Yes

Please describe. (Maximum 200 words)

Each fall, Mr. Bentz, Greenfield's middle school science teacher, leads the students in a leaf classification project. In the spring, his students collect soil samples from the rain gardens on-site and analyze microorganisms found in the soil. Over the past three years, through these projects, Greenfield's students have catalogued and analyzed the changes in plant and wildlife populations over time.

Ms. Brown, the fifth grade science teacher, leads a solar energy unit each year, which incorporates live data

from the photovoltaic array on the school's roof. Energy production data from Greenfield's photovoltaic installation is transmitted to a publically accessible website and it is prominently displayed on a flat screen monitor display in the school lobby. In addition, she has students use the school yards' varied features to experiment with the power of the sun and solar energy.

Ms. McCarty's kindergarten classroom studies seed propagation – growing their own vegetable plants from seeds. Many counting, measuring, observation and prediction exercises are focused on the growing seedlings.

Ms. Adler, the K-3 science teacher, utilizes the outdoor teaching resources on school grounds to talk about plant pollination, plant growth and makes other connections between the outdoor classroom space and the curriculum.

3B2: Since green/sustainable concepts cross curriculum areas, where within the following standards content are they being taught, at what grade levels and what main resources are being used?

	What Standard Areas	Main Content Addressed	Grade Levels	Main Resources
1	PDE ASEE Standard 4.6 Ecosystems and their Interactions	Trees, Weather	Kindergarten	Urban Orchard Garden, Weather Station, PA Woodland Rain Gardens, Outdoor Classroom
2	PDE ASEE Standard 4.6 Ecosystems and their Interactions	Pebbles, Sand and Silt	First Grade	PA Woodland Rain Gardens
3	PDE ASEE Standard 4.6 Ecosystems and their Interactions	Insects, Air and Weather	Second Grade	PA Woodland Rain Gardens, Weather Station, Outdoor Classroom
4	PDE ASEE Standard 4.6 Ecosystems and their Interactions	Plant Growth and Development	Third Grade	PA Woodland Rain Gardens, Urban Orchard Garden, Outdoor Classroom
5	PDE ASEE Standard 4.1 Watersheds and Wetlands	Land and Water	Fourth Grade	PA Woodland Rain Gardens
6	PDE ASEE Standard 4.2 Renewable and Nonrenewable Resources	Solar Energy, Ecosystems	Fifth Grade	Real-Time Photovoltaic Display Monitor, Outdoor Classroom
7	PDE ASEE Standard 4.8 Humans and the Environment	Environments	Sixth Grade	PA Woodland Rain Gardens, Urban Orchard Garden, Outdoor Classroom, Walking Field Trips to Adjacent Schuylkill River Trail
8	PDE ASEE Standard 4.6 Ecosystems and their Interactions	Weather and Climate	Seventh Grade	Weather Station, Outdoor Classroom, Real-Time Photovoltaic Display Monitor

3B3: Does your school have a STEM curriculum and/or coordinator? Yes

Please explain. (Maximum 200 words)

Mr. Bentz is Greenfield's 7th and 8th grade science teacher and STEM Curriculum Coordinator. Mr. Bentz has a Bachelor of Arts degree in environmental science.

3B4: Has the school's use of green building materials, alternative or renewable energy sources or green technologies, been incorporated into the curriculum and/or utilized by teachers and students in the classroom? Yes

Please explain. (Maximum 200 words)

The Greening Greenfield Master Plan transformed the school's urban site into an outdoor laboratory that teaches children about micro-climates, indigenous plants, rain water absorption, non-point source pollution, drinking water protection, energy conservation and harvesting, and their symbiotic relationship to the environment.

With the Greenfield School yard's green improvements complete, Greenfield teachers are using the native plant rain gardens, urban orchard garden, photovoltaic solar system, and weather station as hands-on, educational resources to support teaching of the School District of Philadelphia's science curriculum, exposing students to opportunities to lead and serve in environmentally responsible ways.

3B5: If your school is a high school, does your school curriculum make connections between classroom and college and career readiness, in particular post-secondary options in environmental and sustainability fields? N/A

Please describe these college and career connections. (Maximum 200 words)

3C1: Do students conduct an age-appropriate, self-selected, civic/community engagement project at every grade level? Yes

3C2: Do students have meaningful outdoor learning experiences (experiences that engage students in critical thinking, problem solving and decision making) at every grade level? Yes

Please share how outdoor learning is used to teach an array of subjects in contexts, engage the broader community, and develop civic skills. (Maximum 200 words)

Greenfield became a Treaty Partner under the Urban Conservation Treaty for Migratory Birds in association with the U.S. Fish and Wildlife Service. The program educates students about protecting wildlife habitats, managing invasive species, and reducing hazards to birds.

Another important partnership is Greenfield's connection this year with Native Nursery from Quakertown, Pennsylvania. Native Nursery is working with classrooms to identify and catalog the native plants in the gardens with the goal to create book. The book will serve as an educational resource to document changes in plants throughout various seasons. The book will also serve as resource for landscape designers to understand how to specify the appropriate plants for urban rain garden installations.

Greenfield teachers have discovered that the K-8 science curriculum seamlessly transitions into outdoor learning - kindergarten: trees; first grade: pebbles, sand, silt; second grade: insects; third grade: plant growth and development; fourth grade: land and water; fifth grade: solar energy; sixth grade: environments; seventh grade: leaf identification and soil sampling. With just a little ingenuity, teachers help every student experience the wonder and magic of the rain gardens and the urban orchard garden while simultaneously meeting the requirements of the K-8 science curriculum.

3C3: What opportunities exist for parents to learn about the green practices implemented at your school, including how these practices are benefiting the children and reducing operation and maintenance costs?

At the commencement of the Greening Greenfield project back in 2006, the Committee held several Home and School meetings with parents and the local community to discuss the Master Plan. Parents were instrumental in developing and implementing the site improvements.

Greenfield does not have funding for professional landscaping; therefore, much of the landscape maintenance at Greenfield is completed by the school community. Each month, parents, teachers, and students volunteer their time to tend to the gardens and clean up the school yard. Students planted many of the native plants on-site and maintain the urban orchard garden. Participation at the volunteer days includes students of all grade levels and many parents.

3C4: Please describe your partnerships with the local community (e.g., academic, business, government, nonprofit and informal science institutions) to help advance your school, other schools (especially schools with fewer resources) and the greater community toward the 3 Pillars. Include both the scope and impact of these partnerships. (Maximum 300 words)

Inspired by the success of the Greening Greenfield project, the Community Design Collaborative (CDC) and AIA Philadelphia organized a design charrette in May 2012 called "Transforming Urban School Yards." The objective of the day-long event was to prepare school and community leaders to transform their schoolyards. Attended by over 150 people, the program began with a presentation by three Greenfield parents titled, "Greenfield, Making it Happen." The advocacy efforts of Greenfield School's students, teachers, parents, and community partners has resulted in this measurable impact to our urban environment – forging the way for 17 schools to plan for green school yard projects. Please visit this link for more information:

<http://blog.cdesignc.org/great-ideas-for-green-schoolyards/>

It was very important to the Greening Greenfield Committee that the school yard be open to the public after hours. There is not much open green space in Center City Philadelphia, so the school yard is used often and by a variety of community groups. City Year uses the yard each year for group orientation activities. Also, a small group of people meet each morning on-site to practice Tai Chi. Lastly, community members have participated in Greenfield's outdoor clean-up days, such as Philly Cares Day and Green Apple Day of Service. Students at Greenfield participate in various community service programs. For example: (1) Sixth graders are partnering with Need in Deed, a local non-profit that promotes connections between classrooms and community service. Students create a group research project around an issue in their community. (2) Fourth graders are decorating quilts for patients at the Children's Hospital of Philadelphia. (3) Third graders participate in a program called Reading Buddies. Students walk to a local senior center to read to senior citizens.

3C5: This is the end of Pillar 3. Please describe other methods and measurements your school uses to ensure matriculating students are environmentally and sustainability literate. (Maximum 200 words)

New this year, Greenfield is partnering with the Fairmount Water Works Interpretive Center, a local non-profit that provides educational resources about watersheds. Teachers are developing curricular units that maximize the educational opportunities of the school yard improvements, which will be shared with other schools in the greater Philadelphia region and the United States.

With the physical improvements to the green schoolyard and rooftop solar energy system complete, the Greening Greenfield Committee is focusing on facilitating integration of environmental stewardship into the teachers' and students' day to day activities, and on spreading the word that schools can successfully advocate for healthy, sustainable environments. The story of Greenfield School's collaboration with the Philadelphia Water Department to pilot the Green City Clean Waters Green School initiative has been documented in the Green Treks video about Greening Greenfield. This nine minute video has now been distributed nationally on PBS TV networks, and is having a far-reaching impact on how people view the potential of their urban school yards to be green open spaces. See this website link for viewing how Greenfield students are leading the way in establishing a new standard for environmental and sustainability literacy: <http://vimeo.com/15231400>.