Environmental Literacy Plan
Lancaster-Lebanon IU13
ExCEL@IU13

District Profile	
District Name	Lancaster-Lebanon 13
District Description/Character Statement *(This narrative should include components such as demographics, location, surrounding land use, # schools, #teachers, # Students, identification of environmental health and environmental justice issues, active community partners, expected changes in community over the next 5-10 years)*	The IU13 center-based programs are located among 4 buildings within Lancaster County, PA. The programs contain 23 classrooms, serves 166 students, and employs 24 emotional support teachers. The students in the center-based programs have been identified with varying disabilities such as: emotional disturbance (ED), specific learning disability (SLD), other health impairments (OHI), or autism (AS). 100% of students in the program have IEPs with severe behaviors that impede their learning or that of others. The classrooms are organized by grade band: there are multiple grade levels per classroom (e.g. an elementary classroom could include grades 3-5 and a middle school classroom could include grades 6-8). For these students, nature can serve as a classroom as well as a therapeutic environment. Pennsylvania students' health and learning potential is directly impacted by environmental issues including indoor and outdoor air quality, water quality and availability, food access and sustainable agriculture, degrading and contaminated infrastructure, persistent elevated noise levels, and other environmental issues exacerbated by changing climate impacts. IU13 estimates that about 43% of its center-based students come from districts classified as either Urgent or High Need on the Environmental Literacy Equity Map. IU13 is located in the southeast part of Pennsylvania, on the east bank of the Susquehanna River. Lancaster County is almost completely within the Chesapeake Bay Watershed, and only one school district in Lebanon County has less than half of its geographic footprint inside the Watershed. IU13's location and proximity to the Bay means everyday choices like recycling, composting, energy, and water use play a role in the health of the larger Bay watershed. There are currently 64 Wastewater Management and Remediation Services in Lancaster County

	alone. As the current employees retire and the demand for qualified employees in this field continues to grow, we must ensure we have an educated and skilled workforce to fill the fast growing job demands.
District Vision for Environmental Literacy *(this may be dynamic as the community and knowledge base evolve)*	Our vision is to develop environmentally literate learners able to make everyday life decisions and understand their impact on the environment by providing equitable and hands-on access to environmental education.
District Environmental Literacy Leadership Team Members *(NOTE: This can include community partners, faculty, staff, students and other stakeholders. It is highly recommended that one or more students be part of this team and encouraged to provide voice in each pillar of this template)*	IU13 Center-based program administrators, IU13 Special Education Consultants (SECs), IU13 Instructional Services STEM consultant, Chesapeake Bay Foundation, Lancaster Agriculture Council, Thaddeus Stevens College, Lancaster Conservation District, PA Department of Environmental Protection (DEP), Stroud Water Research Center, PA Department of Education, PA Department of Conservation and Natural Resources (DCNR), Elizabethtown College, Lancaster County Parks and Recreation, ENGINE of Central PA STEM Ecosystem and Lancaster County STEM Alliance.
How will this plan address issues of equity and access to high-quality environmental literacy education in the district?	By focusing on systematic environmental literacy planning that emphasizes equity for students with special needs, and revising science curriculum, this plan will change the opportunity structure that favors some students over others for reasons that may include disability. By writing a curriculum incorporating a standards-aligned MWEE in each grade level, all students will receive access to at least one environmental education experience per year.
Program Sustainability and iterative evaluation *(May include audits, curriculum review sequence, alignment to comprehensive plans)*	This project utilizes seed funding from the NOAA B-WET program to initiate, implement, and institutionalize a comprehensive environmental literacy program across Lancaster and Lebanon counties. Over a four-year period, IU13 has coordinated the development of a shared Environmental Literacy Plan (ELP), aligning K–12 instructional practices to Pennsylvania's Environment & Ecology standards, the STEELS framework, and best practices in field-based, place-based learning. **Curriculum and Instructional Sustainability:** A total of eight STEELS-aligned, three-dimensional instructional units were created and piloted across grade bands 5–12, each tied to local environmental phenomena. These units are designed to be repeated annually with iterative refinements. All instructional materials and durable, non-consumable equipment were procured strategically to support years of use beyond the grant period. The curriculum ensures that each student is provided with at least one high-quality

outdoor environmental learning experience per year.

Professional Learning and Internal Capacity:
Professional development for classroom educators and IU13 special education consultants was a core strategy to ensure sustainability. Teachers received training on environmental science content, outdoor learning pedagogy, accessibility practices, and local stewardship strategies. IU13 consultants, trained alongside classroom teachers, now serve as internal capacity builders to continue supporting teachers after the conclusion of grant funding.

Evaluation and Continuous Improvement:
IU13 has implemented an iterative evaluation cycle to review progress and impact. Key strategies include:
- Post-PD teacher surveys to assess confidence, knowledge, and perceived instructional shifts
- Student surveys on environmental awareness and stewardship behaviors
- Feedback debriefs after field experiences and unit pilots
- Cross-district curriculum reviews every 3–5 years to assess alignment and equity of experience

Findings from evaluation cycles will guide revisions to units, PD offerings, and partnership planning.

Alignment to District and Regional Planning:
IU13 will continue to support districts in integrating environmental literacy goals into their Comprehensive Plans, curricular frameworks, and Profiles of a Graduate. Environmental instruction will also be leveraged as a vehicle for meeting equity goals, SEL outcomes, and student engagement strategies.

Partnership Continuity and Field Site Access:
Strong relationships with local and state environmental organizations—such as Stroud Water Research Center, Lancaster County Parks, DCNR, Thaddeus Stevens College, Lancaster County Conservation District, and others—have been established. These partnerships will continue to provide access to field sites, subject matter expertise, and career-connected learning opportunities, reinforcing real-world relevance and sustaining the program's regional footprint.

Pillar 1: Reduced Environmental Impact: **Describe how your school, district, or postsecondary institution is reducing environmental impact and costs in the areas below. Use supporting data and reference participation in pertinent benchmarking programs to demonstrate progress where possible. Identification of issues and strategies should be community wide and include student voice and partnerships with facilities and operations management. Bridges to other pillars, including curricular connections are recommended.**

Overarching Goal(s):
Students and staff at the IU13 center-based schools will increase awareness and overall effectiveness of sustainability efforts within their circle of influence and increase the number of IU13 facilities that reduce the impacts of building and grounds on the local environment.

IU13's approach to reducing environmental impact prioritizes hands-on student involvement, partnerships with the facilities team, and integration with classroom learning. Through real-world audits and design challenges, students explore sustainability topics such as energy, water, waste, and transportation. Each center-based program identifies site-specific needs and student-driven solutions, reinforcing both academic content and civic responsibility.

	Goal(s)	Outcome(s)	Strategies
Energy conservation and efficiency *Reducing or eliminating greenhouse gas emissions; using an energy audit or emissions inventory and reduction plan, cost-effective energy efficiency improvements, conservation measures, and/or on-site renewable energy and/or purchase of green power;* *Identify your energy-efficient facilities and practices, ecologically and educationally*	Empower IU13 students and staff to make environmentally sustainable decisions regarding energy conservation and efficiency.	Students will understand the factors that make a product energy efficient. Students will be able to construct an argument for using energy efficient products. Students will be able to design a solution to an energy-related problem in their school and community.	**Facilities Strategies:** Students will partner with the IU13 facilities department to participate in an energy efficiency audit. Students will partner with the facilities department at IU13 to develop solutions to problems identified during the energy efficiency audit. Students will gain exposure to STEM careers through their collaboration with members of the facilities department. **Student Curricular Strategies:** Students will engage in the engineering design process (STEM learning) to design

			solutions to identified problems. Students will engage in the science and engineering practices to increase energy efficiency within their center-based building.
Improved water quality, efficiency and conservation *Improving water quality, efficiency, and conservation; including use of onsite best management practices inside and outside the property.*	Empower IU13 students and staff to make environmentally sustainable decisions regarding water quality, efficiency and conservation.	Students will understand the factors involved in calculating water usage. Students will be able to construct an argument for using products and procedures that decrease water usage. Students will be able to design a solution to a water-related problem in their school and community.	**Facilities Strategies:** Students will partner with the IU13 facilities department to participate in a water usage audit and evaluate water conservation and efficiency on the property of their facility. Students will partner with the facilities department at IU13 to develop solutions to problems identified during the water usage audit and property review. Students will gain exposure to STEM careers through their collaboration with members of the facilities department. **Student Curricular Strategies:** Students will engage in the engineering design process (STEM learning) to design solutions to identified problems. Students will engage in the science and engineering practices to decrease water consumption within their center-based building and on the grounds of their facility.
Reduced waste production,	Empower IU13 students and	Students will understand the	**Facilities Strategies:**

improved recycling and composting programs *Reducing solid, food, and hazardous waste production through increased recycling and composting, reduced consumption, and improved management, reduction, or elimination of toxic cleaning chemicals or hazardous waste.*	staff to make environmentally sustainable decisions regarding waste production, recycling and composting programs.	factors involved in calculating the amount of waste produced and the amount of recycling within their facility. Students will be able to construct an argument for using products and procedures that will decrease waste and increase reuse and recycling within their facility. Students will be able to design a solution to a waste-related problem in their school and community.	Students will partner with the IU13 facilities department to participate in a waste audit and evaluate the amount of recycling that leaves the school facility. Students will partner with the facilities department at IU13 to develop solutions to problems identified during the waste audit and recycling evaluation. Students will gain exposure to STEM careers through their collaboration with members of the facilities department. **Student Curricular Strategies:** Students will engage in the engineering design process (STEM learning) to design solutions to identified problems. Students will engage in the science and engineering practices to decrease waste and increase recycling within their center-based building and on the grounds of their facility.
🛣️ **Use of alternative transportation to, during and from school** 🚌 *Expanded use of alternative transportation, through active promotion of locally available, energy-efficient options and implementation of alternative transportation supportive*	Educate students to alternative forms of transportation and their impacts on the environment.	Students will explore alternative forms of transportation that are being investigated by the IU13 fleet of vehicles. Students will be able to construct an argument for using alternative forms of transportation.	**Facilities Strategies:** Students will partner with the IU13 facilities team to explore how alternative forms of transportation are being used at IU13. Students will partner with the facilities department at IU13 to discuss alternative transportation options and their benefits and drawbacks.

projects and policies			
		Students will identify and evaluate potential solutions to a transportation-related challenge impacting their school or local community.	Students will gain exposure to STEM careers through their collaboration with members of the facilities department. **Student Curricular Strategies:** Students will engage in the engineering design process (STEM learning) to design solutions to identified problems. Students will engage in the science and engineering practices to discuss strategies for reducing their impact on the environment through their use of transportation.

📌Need help with this section? Refer to: Pillar One: Reduced Environmental Impact

Pillar 2: Positive Impact on Student and Staff Health: Describe how your school, district, or postsecondary institution improves the health and wellness of students and staff in the areas below. Incorporate metrics and include program participation where possible.

Overarching Goal(s):

IU13 staff and students will gain an understanding of how lifestyle choices such as nutrition, exercise and self-care impact our overall health, and how the products used to clean and maintain the school buildings impact the health of staff, students and the environment.

IU13 recognizes that student and staff wellness is deeply connected to the health of the learning environment. Through hands-on engagement with environmental health topics, center-based students explore the relationships among nutrition, physical activity, mental wellness, and indoor environmental quality. IU13's approach prioritizes authentic learning experiences in partnership with facilities staff, as well as practical strategies aligned to the Whole School, Whole Community, Whole Child (WSCC) model. Students not only learn how environmental and lifestyle choices impact well-being—they take action to improve it.

	Goal(s)	Outcome(s)	Strategies

Environmental Health Program *Integration of an environmental health program that considers sound health and wellness and safety in all design, construction, renovation, operations, and maintenance of facilities and grounds* *Encourages implementation of integrated pest management or other preventative protocols in the following areas:* ● *Cleaning and maintenance;* ● *Mold and moisture prevention and remediation* ● *Reduced exposure to chemical and environmental contaminants;* ● *Ventilation, improved indoor air quality;* ● *Pest management and pesticide use reductions*	Educate students to alternative forms of environmentally friendly and sustainable cleaning products. Educate students to the processes used to monitor mold levels and air quality within the IU13 buildings and facilities. Equip students with strategies for managing pests that maintain the health of the students, staff and environment.	Students will be able to identify signage and symbols that identify sustainable or dangerous cleaning products. Students will be able to design a plan for how to continually monitor and remediate the mold levels and air quality within their center-based classroom. Students will be able to identify pests within their facility and design an eco-friendly pest management system.	Students will partner with IU13 facilities to design signage to inform students, teachers and guests regarding cleaning products used. Students will partner with the IU13 facilities department to shadow a routine facilities inspection that includes air quality, mold, safety, pest management, maintenance and cleanliness on the property of their facility. Students will engage in the engineering design process (STEM learning) to design solutions to identified problems. Students will engage in the science and engineering practices to improve the overall environmental health of their facility.

Nutrition, Fitness and Outdoor Time *Describe how your school is working to meet the high standards of [Whole School Whole Community, Whole Child health](#). Be sure to include how your school is supporting the following efforts:* ● *Nutrition and improved access to healthy foods in and out of school* ● *Outdoors physical activity* ● *Other: components you may include are health education, health services, counseling, psychological and social services, sun safety, staff health promotion, and family and community involvement*	Educate students to make healthy food and snack options both in and out of school. Educate students to the physical and mental health benefits of outdoor physical activity. Educate students to the resources available in the community to support physical and mental health.	Students will be able to construct an evidence-based argument regarding food and snack choices. Students will develop solutions to increase physical activity both inside and outside of the school day. Students will design a plan to increase their community awareness of physical and mental health resources available.	Students will design solutions that increase awareness of healthy food and snack choices. Students will partner with IU13 facilities to create outdoor spaces that allow an increase in physical activity (walking trails, playgrounds, etc.). Students will engage in the engineering design process (STEM learning) to design solutions to identified problems. Students will engage in the science and engineering practices to improve the overall health of the staff, students and environment.

📌Need help with this section? Refer to [Pillar Two: Positive Impact on Student and Staff Health](#)

Pillar 3: Effective Environmental and Sustainability Education (Summary and Overall Perspective)

: School districts can provide opportunities for teachers and students to engage in "awareness to action" discussions and learning programs. As schools implement sustainable practices, teachers need necessary tools to involve students in understanding the reason behind the changes and how they impact the natural and social world in which they live.

Overarching Goal(s):

All IU13 students will build environmental literacy through hands-on, interdisciplinary, and standards-aligned instruction that empowers them to investigate local phenomena, understand human-environment interactions, and take civic action in their communities.

At IU13, environmental and sustainability education is not an add-on—it's a catalyst for student voice, critical thinking, and real-world relevance. Through a thoughtfully designed, standards-aligned curriculum and a network of community partnerships, center-based students participate in Meaningful Watershed Educational Experiences (MWEEs) that engage both the mind and the senses. Teachers are equipped with professional development, curriculum resources, and instructional coaching to bring these experiences to life. As a result, students develop a deeper understanding of environmental systems, STEM pathways, and their role in shaping a sustainable future.

	Goal(s)	Outcome(s)	Strategies
Curriculum *Pillar Three focuses on effective environmental and sustainability education, which includes:* ● *Interdisciplinary learning about the key relationships between dynamic*	Develop a standards-aligned curriculum for the IU13 center-based classrooms that focuses on environmental literacy and sustainability for all grade levels and courses. Equip classrooms with materials and resources needed to implement the	Students will participate in standards-aligned environmental education curriculum that develops their environmental literacy, content knowledge, habits, skills and dispositions. Students will be trained to use authentic equipment used by	All center-based classroom teachers will receive a standards-aligned curriculum written by a team of teachers guided by IU13 C&I staff that can be adapted to the needs of their students. Teachers will receive guidance in identifying the equipment

environmental, energy and human systems; ● *Use of the environment and sustainability to develop STEM content knowledge and thinking skills; and* ● *Development and application of civic engagement knowledge and skills.* ● *Identification of resources, ancillary curriculum that supplements current, community resources to provide.* Note: consider interdisciplinary learning, development of STEM thinking, and civic engagement **(Refer to Appendix A: Environmental Literacy Framework)**	environmental education curriculum. Incorporate career, education and work standards into the environmental education curriculum. Each center-based classroom engages in at least one grade-level-appropriate MWEE annually, aligned to instructional content and local environmental issues.	professionals in the field during their outdoor field experiences. Students will identify and explore potential STEM career choices that can be pursued post-graduation and skills necessarily for these careers.	needed to support their curricular goals. Students will be given opportunities to shadow IU13 facilities staff and local environmental experts to explore career pathways in STEM and environmental science.
Instruction Note: consider the use of MWEE at each grade level or selective grade levels **(Refer to Appendix A: Environmental Literacy Framework)**	Engage every student in every grade in a standard-aligned Meaningful Watershed Educational Experience (MWEE) that involves an outdoor field experience and culminates in an action project.	Students will participate in authentic learning experiences that are engaging and empowering and lead to civic action in their communities. Students will regularly participate in environmental education that includes STEM projects and hand-on learning.	Teachers will design MWEEs that align with their curricular topics. Students will use the science and engineering practices to identify, explore, and develop solutions to local environmental education issues.
	Teachers will receive	Teachers will earn a MWEE	3-day professional learning

Professional Development	environmental education training available through the online asynchronous MWEE 101 course. Teachers will receive an intense 3-day environmental education training led by Thaddeus Stevens faculty that will provide content knowledge on the topics within the PDE environment and ecology standards. This training will be made continually available to teachers through a Schoology course. Teachers will be trained in instructional practices to implement environmental education lessons and activities in their classrooms. The Special Education Consultants (SECs) will receive individual training to provide ongoing support to teachers in the implementation of the environmental education curriculum. An online asynchronous PD course will be developed to support continued content	101 completion certification. Teachers show content knowledge and pedagogy growth as a result of participating in the professional development opportunities. Teachers will demonstrate increased efficacy in teaching environmental concepts with their students. Teachers will implement content learned during professional development in their lessons. The SECs will work directly with center-based teachers providing instructional coaching to support the implementation of the new curriculum. Teachers will deepen their content knowledge and instructional practices in environmental education, as evidenced by lesson implementation, student engagement, and increased	workshops will be provided by outside experts to include content knowledge and instructional strategies using a MWEE. Teachers will have access to the free online asynchronous MWEE 101 course. Teachers will have access to the online asynchronous course to reference. Instructional coaching will be provided by SECs and STEM coach.

	learning from the workshops.	confidence.	
Community Partnerships *(Potential resources to support environmental literacy and facility management planning and instruction may include but are not limited to: Find EE near Me, DCNR Conservation Education Resources, PA Game Commission; PA Fish and Boat Commission, PA Conservation Districts)*	Establish community field sites to support the MWEE outdoor field experiences. Collaborate with local environmental experts in the design, implementation, support, and delivery of the environment education curriculum.	Introduce teachers to various field site locations. Professional learning on using equipment to conduct field site investigations.	Field site agreement to be shared among teachers and potential field sites. A resource library with contact information of various field sites and available opportunities at that site. Teachers will have access to Find EE Near Me to help locate possible field sites.
Funding *Pennsylvania DEP Environmental Education Grant Program invests in schools to improve environmental awareness among students and staff alike.* https://www.dep.pa.gov/Citizens/EnvironmentalEducation/Grants/pages/default.aspx	Utilize the NOAA B-Wet grant funds to develop ongoing environmental education curriculum and outfit classrooms with the non consumable supplies needed to participate in outdoor field experiences. Leverage the funding through local STEM ecosystems to continue to build the capacity and sustainability of this project. Grant funding is strategically used to build durable infrastructure—curriculum, equipment, and partnerships—that will outlast	Teachers will gain access to the resources needed to support the content and instructional strategies provided during the professional development workshops (including field resources to support their MWEE).	Support teachers in aligning lessons with materials needed and purchasing the needed consumable and nonconsumable materials.

	the initial award period.		

📌Need help with this section? Refer to [Pillar Three: Effective Environmental and Sustainability Education](#)

Appendix A: Environmental Literacy Framework

To complete this table, be sure to identify where there are existing environmental literacy components in each grade band including field experiences, outdoor laboratories and explorations, after school or camp settings. You may also include programming offered in out of school time such as 21st Century Programs, Migrant Education, or enrichment programs.

Refer to Pillar 1 & 2 to identify the opportunities where students may be engaged in school grounds-based opportunities. Additionally, consider what issues or opportunities exist within the wider community that may be appropriate for supporting student investigations.

We recommend clearly labeling which elements are Meaningful Watershed Educational Experiences (MWEEs), as opposed to stand alone field experiences or other environmental literacy activities. MWEEs should include issue investigation, outdoor field experiences, synthesis and conclusions, and stewardship and civic action. The Environmental Literacy Model (ELM) and Think Cloud can be helpful planning tools for developing MWEEs. Environmental Literacy Model: https://cbexapp.noaa.gov/pluginfile.php/86376/mod_resource/content/2/MWEE%20Tool--ELM%20Form_508_rev01_editable.pdfn
Think Cloud: https://www.cbf.org/document-library/education-resources/mwee-toolbox.pdf

Theme	Grade Levels	PA STEELS Standard(s)	Driving Question	Field Experience Site	Partnerships
Stormwater Management	K-4	*3.4.3-5.C Examine ways you influence your local environment and community by collecting and displaying data.*	How do I impact the water around me?	On-site at schools	IU13 Maintenance Dept.
	5-8	*3.4.6-8.C Develop a model to describe how watersheds and wetlands function as systems, including the roles and functions they serve*	What happens to water after a storm? What are the impacts?	On-site at schools	IU13 Maintenance Dept.
	9-12	*3.4.9-12.C Analyze and interpret how issues, trends, technologies, and policies impact watersheds and water resources.*	What are the most effective and sustainable ways to manage stormwater in our community?	*On-site at schools *Local Community location (walkable if possible) *Optional to go to Lancaster City for Green Infrastructure Tour	IU13 Maintenance Dept.
Safe Drinking Water	K-4	*3.4.3-5.F Critique ways that*	How can we make sure everyone	*Stroud Mobile Lab	Stroud Water Research

		people depend on and change the environment.	in our community has access to clean and safe drinking water?	*Site of Choice to do stream testing	Center
	5-8	*3.4.6-8.H Design a solution to an environmental issue in which individuals and societies can engage as stewards of the environment.*	How can we, as stewards of our community, protect our drinking water sources and promote sustainable water use practices?	*Stroud Mobile Lab *Site of Choice to do stream testing	Stroud Water Research Center
	9-12	*3.4.9-12.H Design and evaluate solutions in which individuals and societies can promote stewardship in environmental quality and community well-being.*	How can we design and implement an innovative solution to address challenges facing our local drinking water sources?	*Stroud Mobile Lab *Site of Choice to do stream testing *Lancaster Area Sewer Authority Wastewater Treatment Plant	Stroud Water Research Center
Wildlife	K-4	*3.4.K-2.C Explain ways that places differ in their physical characteristics, their meaning, and their value and/or importance.*	How can we identify different types of habitats that support wildlife in our local environment and find ways to protect these special places?	School Animal Observations *Middle Creek Wildlife Preserve * Speedwell Susquehanna Trails *Millersville University	*PA Game Commission *Millersville University
	5-8 Birds	*3.4.6-8.E Collect, analyze, and interpret environmental data to describe a local environment.*	What can we learn from wildlife data in our area to better understand and protect these important species?	School Animal Observations *Middle Creek Wildlife Preserve * Speedwell Susquehanna Trails *Millersville University	*PA Game Commission *Millersville University
	9-12 Reptiles	*3.4.9-12.E Plan and conduct an investigation utilizing*	How does our local community impact wildlife? In what ways	School Animal Observations	Lancaster County Naturalist Program

| | Amphibians Invertebrates | environmental data about a local environmental issue. | could we improve their habitats to promote long-term ecological sustainability? | Site Animal Observation | Pollinator Park- Lancaster Conservancy

The Donegal Fish and Conservation Association |
|---|---|---|---|---|---|
| **Agriculture** | K-4 | *3.4.K-2.A Categorize ways people harvest, redistribute, and use natural resources.* | What are some examples of natural resources in our everyday lives, and how can we categorize them based on how they are harvested, redistributed, and used by people? | | |
| | 5-8 | *3.4.3-5.A Analyze how living organisms, including humans, affect the environment in which they live, and how their environment affects them.* | How do living organisms, including humans, interact with and affect their environment, and what are the consequences of these interactions?

How can changes in the environment, such as pollution, deforestation, and climate change, impact the health and well-being of living organisms, including humans?

How do human activities, such as agriculture, industrialization, and urbanization, impact the environment and the organisms that live in it? | Kreider Farm

Oregon Dairy

Walnut Creek Farm (*Penry Rd in Manheim)*

Farmer's Market

Spooky Nook Alpaca/Llama | Local farmers

Local FFA programs |
| | 9-12 | *3.4.6-8.A Develop a model to describe how agricultural and food systems function, including the sustainable use of natural resources and the production, processing, and management of* | What are some innovative practices and technologies that can be used to improve the sustainability of agricultural and food systems, and how can these | Oregon Dairy Tour

Purdue Mobile Lab

Manheim Central | Local farmers

Local FFA Programs |

				Greenhouse	
		food, fiber, and energy.	be integrated into existing systems?	Soil gathering- possibly at the farmer partner site as well as multiple other sites for soil texture activity.

EAP- Selling produce at Roots.
Partner with local farmer to fund a riparian buffer. | |
| **Invasive Species** | K-4 | *3.4.3-5.E Construct an argument to support whether action is needed on a selected environmental issue and propose possible solutions.* | How do we prevent invasive species from coming into and spreading in our local area? | Site visit from list | Lancaster Conservation District |
| | 5-8 | *3.4.6-8.F Obtain and communicate information on how integrated pest management could improve indoor and outdoor environments.* | How can we make people aware of the impact of invasive species to help protect native plants and animals in our community? | Plant recognition app

Salunga Trail (Spooky Nook) / Lititz to Ephrata Rail Trail | Lancaster Conservation District

Penn State Extension (Alyssa Collins) |
| | 9-12 | *3.4.9-12.F Evaluate and communicate the effect of integrated pest management practices on indoor and outdoor environments.* | In what ways can we partner with local organizations to effectively manage and control invasive species? And what impact can that have on our local ecosystems? | Plant recognition app

Salunga Trail (Spooky Nook) / Lititz to Ephrata Rail Trail | North Museum

Professor at F&M/ Millersville / Stevens |
| **Population Growth** | K-4 | *3.4.3-5.D Develop a model to demonstrate how local environmental issues are connected to larger local environment and human systems.* | How does population growth affect the plants and animals in an ecosystem? | | |
| | 5-8 | *3.4.6-8.D Gather, read, and* | Why is it important to maintain a | | Guest Speaker: contractor, |

		synthesize information from multiple sources to investigate how Pennsylvania environmental issues affect Pennsylvania's human and natural systems.	healthy balance between human and natural communities? How do we encourage that balance?	LCSWMA - managing human	city planner
	9-12	*3.4.9-12.D Apply research and analytical skills to systematically investigate environmental issues ranging from local issues to those that are regional or global in scope.*	How do population growth, resource consumption, and habitat destruction impact the interconnectedness of ecosystems on a global scale? What strategies could lessen these effects to promote sustainability?	LCSWMA - managing human	Guest Speaker: contractor, city planner
Air Quality	K-4	*3.4.3-5.G Investigate how perspectives over the use of resources and the development of technology have changed over time and resulted in conflict over the development of societies and nations.*	What role do political and economic factors play in shaping perspectives on resource use and technology development, and how have these factors changed over time? What lessons can be learned from historical conflicts over resource use and technology development that can inform current and future decision-making about these issues?		
	5-8	*3.4.6-8.I Construct an explanation that describes regional environmental conditions and their implications on environmental justice and social equity.*	In what ways do environmental factors, such as air and water quality, climate, and natural resources, affect the health and well-being of different communities within a region? What are the potential trade-offs between environmental	Test air quality in the school	

			protection and economic development in the region, and how can these be addressed to ensure equitable outcomes for all communities? How do regional differences in environmental conditions affect access to resources and opportunities, and what are the implications for social and economic equity?		
	9-12	*3.4.9-12.I Analyze and interpret data on a regional environmental condition and its implications on environmental justice and social equity.*	How can data on regional environmental conditions be used to inform policy decisions related to environmental justice and social equity, and what are the potential challenges in implementing these policies? How can data on regional environmental conditions be used to identify disparities in access to resources, exposure to pollution, and other factors that contribute to environmental injustice?		
Energy Use	K-4	*3.4.K-2.D Plan and carry out an investigation to address an issue in the local environment and community*	How can we design and carry out investigations to gather data and information about local environmental issues, including sampling, data analysis, and interpretation? How can we use our investigation and findings to advocate for change and promote greater		

			sustainability in our local community?		
	5-8	*3.4.6-8.G Obtain and communicate information to describe how best resource management practices and environmental laws are designed to achieve environmental sustainability.*	How can environmental laws and regulations be used to promote sustainable resource management and protect natural resources, and what are some examples of successful implementation of these laws? How can we ensure that resource management practices and environmental laws are equitable and address issues of environmental justice, including the disproportionate impacts of pollution and resource depletion on low-income and marginalized communities? How can technology and innovation be used to promote sustainable resource management and reduce environmental impacts, and what are some examples of successful implementation of these strategies?	Bainbridge (Covanta Energy) Ephrata Electric - Jai Howard Solar Company Geothermal Electric Cars What happens to batteries, equipment that can't be recycled/re-used?	
	9-12	*3.4.9-12.G Analyze and evaluate how best resource management practices and environmental laws achieve sustainability of natural resources.*	How can we evaluate the effectiveness of different resource management practices and environmental laws in achieving sustainability goals, including the preservation of biodiversity and the reduction of pollution?		

			How can we analyze the economic, social, and environmental impacts of different resource management practices and environmental laws, including their impacts on different stakeholders and communities?		