Grade 5

3.3.5.F Earth and Space Sciences: Earth and Human Activity

Students who demonstrate understanding can *generate and design possible solutions to a current environmental issue, threat, or concern.*

Clarifying Statement: This could include but is not limited to topics such as biodiversity, watersheds, invasive species, natural resources, etc.

Assessment Boundary: N/A

Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Crosscutting Concepts (CCC)
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. • Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution. • Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation or design a solution to a problem. • Construct an explanation of observed relationships (e.g., the distribution of plants in the back yard).	**Cycles of Matter and Energy Transfer in Ecosystems** • Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment.	***Connections to Nature of Science*** **Science Addresses Questions About the Natural and Material World.** • Science findings are limited to questions that can be answered with empirical evidence.

Pennsylvania Context: Examples of Pennsylvania context include but are not limited to acid mine drainage, fracking, water quality, invasive species such as the spotted lanternfly and zebra mussel, and threatened or endangered species such as the eastern hellbender.

PA Career Ready Skills: Identify multiple ways to solve conflicts and practice solving problems.

Connections to Other Standards Content and Practices

Standard Source	Possible Connections to Other Standard(s) or Practice(s)
Agriculture (AFNR)	CS.04.01.01.c: Devise strategies for stewarding natural resources at home and within community.
Science, Environmental Literacy and Sustainability (NAAEE)	5-8 Strand 3.2.C. Planning and taking action: Learners use their research results to develop action strategies and design solutions at levels consistent with their maturity and preparation. As appropriate, they implement their plans.
PA Core Standards: ELA	CC.1.2.5.G: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
PA Core Standards and Practices: Math	MP.2: Reason abstractly and quantitatively. MP.4: Model with mathematics. CC.2.4.5.A.2: Represent and interpret data using appropriate scale.
PA Standards: Social Studies	7.4.5.B: Identify the effect of people on the physical systems within a community.
Educational Technology (ISTE)	1.4. Innovative Designer: Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions.
Technology and Engineering (ITEEA)	STEL-7H: Illustrate that there are multiple approaches to design. STEL-7I: Apply the technology and engineering design process.