Introduction

Science, Technology & Engineering, and Environmental Literacy & Sustainability (STEELS) Standards guide the study of the natural and human-made world through inquiry, problem-solving, critical thinking, and authentic exploration. This document displays a curriculum framework for Environmental Literacy & Sustainability. It is designed to focus curriculum and teaching, provide guidance for multiple approaches to curriculum development, encourage less reliance on textbooks as curriculum, and avoid activity-oriented teaching without focus/purpose

Environmental Literacy And Sustainability Long Term Transfer Goals

Long Term Transfer Goals (LTTG) provide the overarching practices that serve as a foundation for a robust curriculum. All curricula should relate to one or more of the LTTGs detailed below – as they highlight the effective uses of understanding, knowledge, and skill that we seek in the long run (i.e., what we want students to be able to do when they confront new challenges – both in and outside of school.)

Students will be able to independently use their learning to:

- Engage in informed consumer practices and choices that take into account the impact on agricultural and environmental systems.

- Categorize, analyze, and interpret how humans and environmental systems relate and affect one another.

- Evaluate and engage in discussion surrounding local and global issues that relate to resource use and management.

- Examine, analyze, interpret, and apply how an individual and community impacts the use and management of natural resources.

- Examine, develop, analyze, and interpret how watersheds function as a system and are impacted by external factors.

- Engage in informed use of land and water to contribute to a positive impact on local watersheds and wetlands.

- Understand how complex human and natural systems interact with each other and use empathy and data- informed evidence to make choices for the well-being of other species, including humans and the environment.

- Integrate scientific practices to research and investigate complex issues, problems, and phenomena.

- Understand, describe, and communicate the interconnected nature of local, regional, national, and global scales of environmental issues.

- Evaluate cost-benefit analysis in addressing solutions to environmental impacts.

- Carry out an investigation and collect data in an authentic environmental setting.

- Explain how the natural and designed worlds are interrelated and the application of scientific knowledge, technology, and engineering can have beneficial or harmful consequences, some of which may be unintended.

- Make informed decisions and identify solutions to environmental challenges.

- Recognize environmental injustices and take actions to mitigate them at various scales.

3.4 Environmental Literacy and Sustainability

Sub-domain: Sustainability and Stewardship

Strand: Environmental Sustainability

Long Term Transfer Goals
across all grades

Students will be able to independently use their learning to:

Understand how complex human and natural systems interact with each other and use empathy and data-informed evidence to make choices for the well-being of other species, including humans, and the environment.

Big Idea

Best management practices and data driven resource management, as well as environmental laws and policies, encourage environmental sustainability.

Essential Questions
may be used or modified across grade bands

How do actions and regulations support the equitable availability of resources for current and future generations?

Component	K-2	3-5	6-8	9-12
Performance Expectation (Standard)	**3.4.K-2.C** Explain ways that places differ in their physical characteristics, their meaning, and their value and/or importance.	**Intentionally Blank**	**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.	**3.4.9-12.G** Analyze and evaluate how best resource management practices and environmental laws achieve sustainability of natural resources.

Clarifying Statement	Emphasis is on making observations of local environments such as schoolyards, streams, mountains, and fields and share their value or meaning. Examples of value or meaning could be recreational, esthetic (aesthetic), economic and ecological importance such as a home for animals.	**Intentionally Blank**	Emphasis is on the intended outcomes of best management practices (e.g., stormwater, forest, land use, wildlife, and waste management) and environmental laws (i.e., international, federal, state, and local jurisdictions).	Emphasis is on assessing the outcomes of best management practices (e.g. stormwater, forest, land use, wildlife, and waste management) and environmental laws (i.e., international, federal, state, or local jurisdictions).
Disciplinary Core Ideas	**Biodiversity and Humans** There are many different kinds of living things in any area, and they exist in different places on land and in water. **Human Impacts on Earth Systems** Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.	**Intentionally Blank**	**Human Impacts on Earth Systems** Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. **Developing Possible Solutions** There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.	**Human Impacts on Earth Systems** The sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources. **Developing Possible Solutions** When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts.
Crosscutting Concepts	Patterns Stability and Change	**Intentionally Blank**	Cause and Effect Stability and Change	Stability and Change Cause and Effect
Scientific & Engineering Practices	Obtaining, Evaluating, and Communicating Information Analyzing and Interpreting Data	**Intentionally Blank**	Obtaining, Evaluating, and Communicating Information	Engaging in Argument from Evidence

Vocabulary	evidence, values, empathy, observation, physical characteristics, law, resources, compassion	**Intentionally Blank**	sustainability, evidence, values, empathy, observation, finite, policies, renewable non-renewable, complementary	ecological function, ecological value, system function, economics, globalization, intergenerational, aesthetic, finite, takings, common goods, NIMBY, regulatory process, data driven process, fossil fuels, equitable access, tragedy of the commons

3.4 Environmental Literacy and Sustainability

Sub-domain: Sustainability and Stewardship

Strand: Environmental Stewardship

Long Term Transfer Goals
across all grades

Students will be able to independently use their learning to:

Make informed decisions and identify solutions to environmental challenges.
Evaluate cost-benefit analysis in addressing solutions to environmental impacts.

Big Idea

Environmental stewardship practices are essential to improving environmental quality, sustainability, and community well-being.

Essential Questions
may be used or modified across grade bands

How can human actions improve environmental quality, sustainability, and community well-being?

Component	K-2	3-5	6-8	9-12
Performance Expectation (Standard)	**Intentionally Blank**	3.4.3-5.F Critique ways that people depend on and change the environment.	3.4.6-8.H Design a solution to an environmental issue in which individuals and societies can engage as stewards of the environment.	3.4.9-12.H Design and evaluate solutions in which individuals and societies can promote stewardship in environmental quality and community well-being.
Clarifying Statement	**Intentionally Blank**	This could include both positive and negative ways that people depend on and impact the environment. Examples include but are not limited to water, fuel, food, land, and recreation.	Examples of design solutions could include written or drawn plans, as well as implementing project actions.	Examples of design solutions could include theoretical or tangible plans, as well as implementing project actions.

Disciplinary Core Ideas	**Intentionally Blank**	**Human Impacts on Earth Systems** Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. **Natural Resources** Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not.	**Human Impacts on Earth Systems** Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts. **Developing Possible Solutions** There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. .	**Human Impacts on Earth Systems** The sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources. **Developing Possible Solutions** When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts.
Crosscutting Concepts	**Intentionally Blank**	Cause and Effect Stability and Change	*Connections to Nature of Science* Science Addresses Questions About the Natural and Material World	*Connections to Nature of Science* Science Addresses Questions About the Natural and Material World
Scientific & Engineering Practices	**Intentionally Blank**	Obtaining, Evaluating, and Communicating Information Engaging in Argument From Evidence	Constructing Explanations and Designing Solutions	Constructing Explanations and Designing Solutions
Vocabulary	**Intentionally Blank**	advocate, ownership, responsibly, stewardship, conservation, recreation, access, share	culture, perspectives, resource management, waste stream/management, fossil fuel, land development land use, biotic, abiotic, extraction, atmosphere biosphere, minerals, extinction, renewable nonrenewable, habitat loss, pollution	Best Management Practices (BMP) biogeochemical, biodiversity, culture, desertification, carrying capacity, overharvest, pollution tolerance, diversity index, limiting factors, mitigation, niche, population dynamics. risk management, sustainability

3.4 Environmental Literacy and Sustainability

Sub-domain: Sustainability and Stewardship

Strand: Environmental Justice

Long Term Transfer Goals
across all grades

Students will be able to independently use their learning to:

Recognize environmental injustices and take actions to mitigate them at various scales.

Big Idea

Environmental justice plays an important role in providing equitable protection from environmental hazards or concerns for all people.

Essential Questions
may be used or modified across grade bands

How do human actions impact environmental justice issues for individuals and communities?
How do human actions impact the equitable access, use, and disposal of natural resources?

Component	K-2	3-5	6-8	9-12
Performance Expectation (Standard)	**Intentionally Blank**	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.	3.4.6-8.I Construct an explanation that describes regional environmental conditions and their implications on environmental justice and social equity.	3.4.9-12.I Analyze and interpret data on a regional environmental condition and its implications on environmental justice and social equity.

Clarifying Statement	**Intentionally Blank**	Emphasis is on diverse points of view that may change over time due to new information, developing technology, priorities, or competition for finite resources.	Examples include both current and historical conditions due to systemic inequalities, including but not limited to human health impacted by Superfund sites, air quality, urban heat islands, acid mine drainage, access to green space, biodiversity, and water quality. Explanations could be constructed using primary and secondary sources, both print and digital.	Emphasis is on formulating a conclusion supported by data. Interpretation could be constructed using primary and secondary sources. Examples include both current or historical conditions due to systemic inequalities including but not limited to human health impacted by superfund sites, air quality, urban heat islands, acid mine drainage, access to green space, and water quality.
Disciplinary Core Ideas	**Intentionally Blank**	**Natural Resources** Energy and fuels, that humans use, are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not. **Human Impacts on Earth Systems** Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.	**Biodiversity and Humans** Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on—for example, water purification and recycling.	**Ecosystem Dynamics, Functioning, and Resilience** Moreover, anthropogenic changes (induced by human activity) in the environment—including habitat destruction, pollution, introduction of invasive species, overexploitation, and climate change—can disrupt an ecosystem and threaten the survival of some species. **Human Impacts on Earth Systems** The sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources.
Crosscutting Concepts	**Intentionally Blank**	Cause and Effect Stability and Change	Cause and Effect	Cause and Effect *Connections to Nature of Science* Science Addresses Questions About the Natural and Material World
Scientific & Engineering Practices	**Intentionally Blank**	Analyzing and Interpreting Data Obtaining, Evaluating, and Communicating Information Using Mathematics and Computational Thinking	Obtaining, Evaluating, and Communicating Information	Engaging in Argument from Evidence

Vocabulary	**Intentionally Blank**	equal, sharing, access, differences, opinions, facts	equity, access, justice, perspective, health hazards, environmental justice areas, demographics, risk factors	equity, access, justice, perspective, health hazards, environmental justice areas, demographics, risk factors. justice, disenfranchisement, isolation, redline