# Virtual Field Trips

## The Amazon Rainforest - Part 2 - Older Grades

<table>
<thead>
<tr>
<th>Theme</th>
<th>NCSS.1. Culture</th>
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DEFINITION
SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.

CATEGORY 3.1.
KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION 3.1.2.
Concerts such as: location, region, place, and migration, as well as human and physical systems.

LEARNING EXPECTATION 3.1.5.
The concept of regions identifies links between people in different locations according to specific criteria (e.g., physical, economic, social, cultural, or religious).

LEARNING EXPECTATION 3.1.6.
Patterns of demographic and political change, and cultural diffusion in the past and present (e.g., changing national boundaries, migration, and settlement, and the diffusion of and changes in customs and ideas).

LEARNING EXPECTATION 3.1.7.
Human modifications of the environment.

THEME NCSS.3. PEOPLE, PLACES, AND ENVIRONMENTS
DEFINITION
SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.

CATEGORY 3.2.
PROCESSES - Learners will be able to:
LEARNING EXPECTATION 3.2.1.
Ask and find answers to geographic questions related to regions, nations, and the world in the past and present.

LEARNING EXPECTATION 3.2.3.
Acquire, organize, and analyze information and use geographic tools to draw conclusions about historic or current national and global environmental change.

THEME NCSS.5. INDIVIDUALS, GROUPS, AND INSTITUTIONS
DEFINITION
SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF INTERACTIONS AMONG INDIVIDUALS, GROUPS, AND INSTITUTIONS.

CATEGORY 5.1.
KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION 5.1.2.
Concepts such as: mores, norms, status, role, socialization, ethnocentrism, cultural diffusion, competition, cooperation, conflict, race, ethnicity, and gender.

LEARNING EXPECTATION 5.1.9.
That groups and institutions influence culture in a variety of ways.

THEME NCSS.9. GLOBAL CONNECTIONS
DEFINITION
SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF GLOBAL CONNECTIONS AND INTERDEPENDENCE.

CATEGORY 9.2.
PROCESSES - Learners will be able to:
LEARNING EXPECTATION 9.2.3.
Investigate and explain the ways in which aspects of culture, such as language, beliefs, and traditions, may facilitate understanding, or lead to misunderstanding between cultures.
THAT PROVIDE FOR THE STUDY OF CULTURE AND CULTURAL DIVERSITY.

CATEGORY 1.1. KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION 1.1.1. 'Culture' refers to the socially transmitted behaviors, beliefs, values, traditions, institutions, and ways of living together of a group of people.
LEARNING EXPECTATION 1.1.3. How culture influences the ways in which human groups solve the problems of daily living.
LEARNING EXPECTATION 1.1.6. That culture may change in response to changing needs, concerns, social, political, and geographic conditions.
LEARNING EXPECTATION 1.1.7. How people from different cultures develop different values and ways of interpreting experience.

THEME NCSS.1. CULTURE

DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF CULTURE AND CULTURAL DIVERSITY.

CATEGORY 1.2. PROCESSES - Learners will be able to:
LEARNING EXPECTATION 1.2.1. Ask and find answers to questions related to culture.
LEARNING EXPECTATION 1.2.7. Draw inferences from data about the ways in which given cultures respond to persistent human issues, and how culture influences those responses.

THEME NCSS.2. TIME, CONTINUITY, AND CHANGE

DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF THE PAST AND ITS LEGACY.

CATEGORY 2.1. KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION 2.1.6. The origins and influences of social, cultural, political, and economic systems.

THEME NCSS.3. PEOPLE, PLACES, AND ENVIRONMENTS

DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.

CATEGORY 3.1. KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION 3.1.2. Concepts such as: location, region, place, and migration, as well as human and physical systems.
LEARNING EXPECTATION 3.1.5. The concept of regions identifies links between people in different locations according to specific criteria (e.g., physical, economic, social, cultural, or religious).
LEARNING EXPECTATION 3.1.6. Patterns of demographic and political change, and cultural diffusion in the past and present (e.g., changing national boundaries, migration, and settlement, and the diffusion of and changes in customs and ideas).
LEARNING EXPECTATION 3.1.7. Human modifications of the environment.

THEME NCSS.3. PEOPLE, PLACES, AND ENVIRONMENTS

DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.

CATEGORY 3.2. PROCESSES - Learners will be able to:
LEARNING EXPECTATION 3.2.1. Ask and find answers to geographic questions related to regions, nations, and the world in the past and present.
Acquire, organize, and analyze information and use geographic tools to draw conclusions about historic or current national and global environmental change.

### Theme: NCSS.5. Individuals, Groups, and Institutions

**Definition**

Social Studies programs should include experiences that provide for the study of interactions among individuals, groups, and institutions.

**Category** 5.1. Knowledge

Learners will understand:

- Concepts such as: mores, norms, status, role, socialization, ethnocentrism, cultural diffusion, competition, cooperation, conflict, race, ethnicity, and gender.

**Learning Expectation** 5.1.9.

That groups and institutions influence culture in a variety of ways.

### Theme: NCSS.9. Global Connections

**Definition**

Social Studies programs should include experiences that provide for the study of global connections and interdependence.

**Category** 9.2. Processes

Learners will be able to:

- Investigate and explain the ways in which aspects of culture, such as language, beliefs, and traditions, may facilitate understanding, or lead to misunderstanding between cultures.

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**National Council for the Social Studies (NCSS)**

**Social Studies**

**Grade 7 - Adopted: 2010**

### Theme: NCSS.1. Culture

**Definition**

Social Studies programs should include experiences that provide for the study of culture and cultural diversity.

**Category** 1.1. Knowledge

Learners will understand:

- 'Culture' refers to the socially transmitted behaviors, beliefs, values, traditions, institutions, and ways of living together of a group of people.

**Learning Expectation** 1.1.1.

How culture influences the ways in which human groups solve the problems of daily living.

**Learning Expectation** 1.1.3.

That culture may change in response to changing needs, concerns, social, political, and geographic conditions.

**Learning Expectation** 1.1.6.

How people from different cultures develop different values and ways of interpreting experience.

### Theme: NCSS.1. Culture

**Definition**

Social Studies programs should include experiences that provide for the study of culture and cultural diversity.

**Category** 1.2. Processes

Learners will be able to:

- Ask and find answers to questions related to culture.

**Learning Expectation** 1.2.7.

Draw inferences from data about the ways in which given cultures respond to
persistent human issues, and how culture influences those responses.

The theme is NCSS.2. TIME, CONTINUITY, AND CHANGE.

The definition is SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF THE PAST AND ITS LEGACY.

The category is 2.1. KNOWLEDGE - Learners will understand:

Learning expectation 2.1.6. The origins and influences of social, cultural, political, and economic systems.

The theme is NCSS.3. PEOPLE, PLACES, AND ENVIRONMENTS.

The definition is SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.

The category is 3.1. KNOWLEDGE - Learners will understand:

Learning expectation 3.1.2. Concepts such as: location, region, place, and migration, as well as human and physical systems.

Learning expectation 3.1.5. The concept of regions identifies links between people in different locations according to specific criteria (e.g., physical, economic, social, cultural, or religious).

Learning expectation 3.1.6. Patterns of demographic and political change, and cultural diffusion in the past and present (e.g., changing national boundaries, migration, and settlement, and the diffusion of and changes in customs and ideas).

Learning expectation 3.1.7. Human modifications of the environment.

The theme is NCSS.3. PEOPLE, PLACES, AND ENVIRONMENTS.

The definition is SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.

The category is 3.2. PROCESSES - Learners will be able to:

Learning expectation 3.2.1. Ask and find answers to geographic questions related to regions, nations, and the world in the past and present.

Learning expectation 3.2.3. Acquire, organize, and analyze information and use geographic tools to draw conclusions about historic or current national and global environmental change.

The theme is NCSS.5. INDIVIDUALS, GROUPS, AND INSTITUTIONS.

The definition is SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF INTERACTIONS AMONG INDIVIDUALS, GROUPS, AND INSTITUTIONS.

The category is 5.1. KNOWLEDGE - Learners will understand:

Learning expectation 5.1.2. Concepts such as: mores, norms, status, role, socialization, ethnocentrism, cultural diffusion, competition, cooperation, conflict, race, ethnicity, and gender.

Learning expectation 5.1.9. That groups and institutions influence culture in a variety of ways.

The theme is NCSS.9. GLOBAL CONNECTIONS.

The definition is SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF GLOBAL CONNECTIONS AND INTERDEPENDENCE.

The category is 9.2. PROCESSES - Learners will be able to:

Learning expectation 9.2.3. Investigate and explain the ways in which aspects of culture, such as
language, beliefs, and traditions, may facilitate understanding, or lead to misunderstanding between cultures.

National Council for the Social Studies (NCSS)

Social Studies

Grade 8 - Adopted: 2010

THEME NCSS.1. CULTURE  
DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF CULTURE AND CULTURAL DIVERSITY.

CATEGORY 1.1. KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION 1.1.1. 'Culture' refers to the socially transmitted behaviors, beliefs, values, traditions, institutions, and ways of living together of a group of people.
LEARNING EXPECTATION 1.1.3. How culture influences the ways in which human groups solve the problems of daily living.
LEARNING EXPECTATION 1.1.6. That culture may change in response to changing needs, concerns, social, political, and geographic conditions.
LEARNING EXPECTATION 1.1.7. How people from different cultures develop different values and ways of interpreting experience.

THEME NCSS.1. CULTURE  
DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF CULTURE AND CULTURAL DIVERSITY.

CATEGORY 1.2. PROCESSES - Learners will be able to:
LEARNING EXPECTATION 1.2.1. Ask and find answers to questions related to culture.
LEARNING EXPECTATION 1.2.7. Draw inferences from data about the ways in which given cultures respond to persistent human issues, and how culture influences those responses.

THEME NCSS.2. TIME, CONTINUITY, AND CHANGE  
DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF THE PAST AND ITS LEGACY.

CATEGORY 2.1. KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION 2.1.6. The origins and influences of social, cultural, political, and economic systems.

THEME NCSS.3. PEOPLE, PLACES, AND ENVIRONMENTS  
DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.

CATEGORY 3.1. KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION 3.1.2. Concernts such as: location, region, place, and migration, as well as human and physical systems.
LEARNING EXPECTATION 3.1.5. The concept of regions identifies links between people in different locations according to specific criteria (e.g., physical, economic, social, cultural, or religious).
LEARNING EXPECTATION 3.1.6. Patterns of demographic and political change, and cultural diffusion in the past and present (e.g., changing national boundaries, migration, and settlement, and the diffusion of and changes in customs and ideas).
LEARNING EXPECTATION 3.1.7. Human modifications of the environment.

THEME NCSS.3. PEOPLE, PLACES, AND ENVIRONMENTS
DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.
CATEGORY 3.2. PROCESSES - Learners will be able to:
LEARNING EXPECTATION 3.2.1. Ask and find answers to geographic questions related to regions, nations, and the world in the past and present.
LEARNING EXPECTATION 3.2.3. Acquire, organize, and analyze information and use geographic tools to draw conclusions about historic or current national and global environmental change.

THEME NCSS.5. INDIVIDUALS, GROUPS, AND INSTITUTIONS
DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF INTERACTIONS AMONG INDIVIDUALS, GROUPS, AND INSTITUTIONS.
CATEGORY 5.1. KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION 5.1.2. Concepts such as: mores, norms, status, role, socialization, ethnocentrism, cultural diffusion, competition, cooperation, conflict, race, ethnicity, and gender.
LEARNING EXPECTATION 5.1.9. That groups and institutions influence culture in a variety of ways.

THEME NCSS.9. GLOBAL CONNECTIONS
DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF GLOBAL CONNECTIONS AND INTERDEPENDENCE.
CATEGORY 9.2. PROCESSES - Learners will be able to:
LEARNING EXPECTATION 9.2.3. Investigate and explain the ways in which aspects of culture, such as language, beliefs, and traditions, may facilitate understanding, or lead to misunderstanding between cultures.

National Council for the Social Studies (NCSS)
Social Studies

Grade 9 - Adopted: 2010
THEME NCSS.1. CULTURE
DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF CULTURE AND CULTURAL DIVERSITY.
CATEGORY 1.1. KNOWLEDGE - Learners will understand:
LEARNING EXPECTATION 1.1.1. 'Culture'' refers to the socially transmitted behaviors, beliefs, values, traditions, institutions, and ways of living together of a group of people.
LEARNING EXPECTATION 1.1.4. How culture develops and changes in ways that allow human societies to address their needs and concerns.
LEARNING EXPECTATION 1.1.6. How people from different cultures develop diverse cultural perspectives and frames of reference.
THEME NCSS.1. CULTURE
DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES
THAT PROVIDE FOR THE STUDY OF CULTURE AND CULTURAL DIVERSITY.

**CATEGORY 1.2.**

**LEARNING EXPECTATION 1.2.1.**
Ask questions related to culture and find, select, organize, and interpret data from research to address research questions.

**LEARNING EXPECTATION 1.2.4.**
Evaluate how data and experiences may be interpreted by people from diverse cultural perspectives and frames of reference.

**LEARNING EXPECTATION 1.2.5.**
Analyze data from various cultural perspectives and evaluate the consequences of interpretations associated with the world views of different cultures.

**LEARNING EXPECTATION 1.2.7.**
Construct reasoned judgments about specific cultural responses to persistent human issues.

**LEARNING EXPECTATION 1.2.8.**
Analyze historic and current issues to determine the role that culture has played.

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**THEME NCSS.3. PEOPLE, PLACES, AND ENVIRONMENTS**

**DEFINITION**
SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.

**CATEGORY 3.1.**

**LEARNING EXPECTATION 3.1.1.**
The theme of people, places, and environments involves the study of the relationships between human populations in different locations and regional and global geographic phenomena, such as landforms, soils, climate, vegetation, and natural resources.

**LEARNING EXPECTATION 3.1.2.**
Concepts such as: location, physical and human characteristics of national and global regions in the past and present, and the interactions of humans with the environment.

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**THEME NCSS.3. PEOPLE, PLACES, AND ENVIRONMENTS**

**DEFINITION**
SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.

**CATEGORY 3.2.**

**LEARNING EXPECTATION 3.2.1.**
Ask and find answers to geographic questions related to regions, nations, and the world in the past and present.

**LEARNING EXPECTATION 3.2.6.**
Evaluate the consequences of human actions in environmental terms.

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**THEME NCSS.4. INDIVIDUAL DEVELOPMENT AND IDENTITY**

**DEFINITION**
SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF INDIVIDUAL DEVELOPMENT AND IDENTITY.

**CATEGORY 4.3.**

**LEARNING EXPECTATION 4.3.3.**
Analyzing the similarities demonstrate understanding by:

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**THEME NCSS.5. INDIVIDUALS, GROUPS, AND INSTITUTIONS**

**DEFINITION**
SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF INTERACTIONS AMONG INDIVIDUALS, GROUPS, AND INSTITUTIONS.

**CATEGORY 5.1.**

**KNOWLEDGE - Learners will understand:**
LEARNING EXPECTATION 5.1.2. Concepts such as: mores, norms, ritual, status, role, socialization, ethnocentrism, cultural diffusion, competition, cooperation, conflict, assimilation, race, ethnicity, and gender.

THEME NCSS.9. GLOBAL CONNECTIONS

DEFINITION SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF GLOBAL CONNECTIONS AND INTERDEPENDENCE.

CATEGORY 9.2. PROCESSES - Learners will be able to:

LEARNING EXPECTATION 9.2.3. Explain how language, belief systems, and other cultural elements can facilitate global understanding or cause misunderstanding.

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National Geography Standards (NGS)

Science

Grade 5 - Adopted: 2012

ESSENTIAL ELEMENT NGS.PS. Physical Systems

STANDARD PS.7. The physical processes that shape the patterns of Earth's surface

STRAND PS.7.1. Components of Earth's Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent

BENCHMARK PS.7.1.A. Identify and describe patterns in the environment that result from the interaction of Earth’s physical processes, as exemplified by being able to identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and biomes).

EXPECTATION PS.7.1.A.2.

ESSENTIAL ELEMENT NGS.PS. Physical Systems

STANDARD PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

STRAND PS.8.1. Components of Ecosystems: Components of ecosystems are interdependent

BENCHMARK PS.8.1.A. Describe how the components of ecosystems are connected and contribute to the energy of their own cycles, as exemplified by being able to describe the flow of energy and the cycling of matter through an ecosystem (e.g., the food chain, photosynthesis).

EXPECTATION PS.8.1.A.1.

ESSENTIAL ELEMENT NGS.PS. Physical Systems

STANDARD PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

STRAND PS.8.1. Components of Ecosystems: Components of ecosystems are interdependent

BENCHMARK PS.8.1.B. Construct a model to explain how an ecosystem works, as exemplified by being able to construct a flow chart to explain the interactions of components within an ecosystem (e.g., water cycle, oxygen and carbon dioxide exchange, producers, consumers, and decomposers).
**ESSENTIAL ELEMENT**  NGS.PS.  Physical Systems

**STANDARD**  PS.8.  The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

**STRAND**  PS.8.2.  Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems

**BENCHMARK**  PS.8.2.A.  Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.

**EXPECTATION**  PS.8.2.A.2.  Explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.

**ESSENTIAL ELEMENT**  NGS.PS.  Physical Systems

**STANDARD**  PS.8.  The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

**STRAND**  PS.8.3.  Characteristics and Geographic Distribution of Biomes: Climate primarily determines the characteristics and geographic distribution of biomes

**BENCHMARK**  PS.8.3.A.  Describe and explain how climate (temperature and rainfall) primarily determines the characteristics and geographic distribution of biomes, as exemplified by being able to explain how biomes do not always follow lines of latitude by identifying the influences of oceans and mountain ranges on the distribution of climate and vegetation.

**EXPECTATION**  PS.8.3.A.3.  Explain how biomes do not always follow lines of latitude by identifying the influences of oceans and mountain ranges on the distribution of climate and vegetation.

**ESSENTIAL ELEMENT**  NGS.HS.  Human Systems

**STANDARD**  HS.11.  The patterns and networks of economic interdependence on Earth's surface

**STRAND**  HS.11.1.  Economic Activities: The functions of different types of economic activities

**BENCHMARK**  HS.11.1.A.  Describe and analyze the functions of economic activities in the primary, secondary, tertiary, and quaternary sectors, as exemplified by being able to describe the sequence of activities that occur in the manufacture of products (e.g., in the production of a computerized sewing machine, the iron-ore mining is primary, smelting iron and steel are secondary, selling of the steel sewing machines is tertiary, and advertising is quaternary).

**EXPECTATION**  HS.11.1.A.2.  Describe the sequence of activities that occur in the manufacture of products (e.g., in the production of a computerized sewing machine, the iron-ore mining is primary, smelting iron and steel are secondary, selling of the steel sewing machines is tertiary, and advertising is quaternary).

**ESSENTIAL ELEMENT**  NGS.HS.  Human Systems

**STANDARD**  HS.12.  The processes, patterns, and functions of human settlement

**STRAND**  HS.12.4.  Urban Forms and Functions: Land uses in urban areas are systematically arranged

**BENCHMARK**  HS.12.4.A.  Describe and analyze the spatial patterns of land use in cities, as exemplified by being able to identify and describe a controversial land-use issue in the community and analyze the advantages and disadvantages of making the change in use (e.g., widening a street for more lanes of traffic, tearing down an old building for a new park, converting green space into a new building complex).

**EXPECTATION**  HS.12.4.A.3.  Identify and describe a controversial land-use issue in the community and analyze the advantages and disadvantages of making the change in use (e.g., widening a street for more lanes of traffic, tearing down an old building for a new park, converting green space into a new building complex).

**ESSENTIAL ELEMENT**  NGS.ES.  Environment and Society
ELEMENT
STANDARD ES.14. How human actions modify the physical environment
STRAND ES.14.1. Modification of the Physical Environment: Human modifications of the physical environment in one place often lead to changes in other places
BENCHMARK ES.14.1.A. Describe and explain how human-induced changes in one place can affect the physical environment in other places, as exemplified by being able to Describe how human actions to land cover can have negative impacts on other areas (e.g., deforestation and downstream flooding, siltation, soil erosion).
EXPECTATION ES.14.1.A.2. Describe how human changes to land cover can have negative impacts on other areas (e.g., deforestation and downstream flooding, siltation, soil erosion).

ESSENTIAL ELEMENT NGS.ES. Environment and Society
STANDARD ES.14. How human actions modify the physical environment
STRAND ES.14.3. Consequences for People and Environments: The physical environment can both accommodate and be endangered by human activities
BENCHMARK ES.14.3.A. Analyze the positive and negative consequences of humans changing the physical environment, as exemplified by being able to Analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).
EXPECTATION ES.14.3.A.3. Analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).

ESSENTIAL ELEMENT NGS.ES. Environment and Society
STANDARD ES.16. The changes that occur in the meaning, use, distribution, and importance of resources
STRAND ES.16.1. Types and Meanings of Resources: People can have different viewpoints regarding the meaning and use of resources
BENCHMARK ES.16.1.A. Describe examples of how cultures differ in their definition and use of resources, as exemplified by being able to Describe differences in the types of resources used in different geographic contexts in various parts of the world (e.g., the use of wood or animal dung versus electricity or natural gas as a cooking fuel, the use of electrical appliances versus doing household chores by hand).
EXPECTATION ES.16.1.A.1. Describe differences in the types of resources used in different geographic contexts in various parts of the world (e.g., the use of wood or animal dung versus electricity or natural gas as a cooking fuel, the use of electrical appliances versus doing household chores by hand).

ESSENTIAL ELEMENT NGS.ES. Environment and Society
STANDARD ES.16. The changes that occur in the meaning, use, distribution, and importance of resources
STRAND ES.16.3. Sustainable Resource Use and Management: Humans can manage resources to sustain or prolong their use
BENCHMARK ES.16.3.A. Explain how renewable resources can be continuously replenished through sustainable use, as exemplified by being able to Describe and explain how sustainable management techniques can be applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).
EXPECTATION ES.16.3.A.1. Describe and explain how sustainable management techniques can be applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).

National Geography Standards (NGS)

Science

Grade 6 - Adopted: 2012

ESSENTIAL ELEMENT NGS.PS. Physical Systems
The physical processes that shape the patterns of Earth's surface Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent

Identify and describe patterns in the environment that result from the interaction of Earth’s physical processes, as exemplified by being able to Identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and biomes).

The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface

Components of Ecosystems: Components of ecosystems are interdependent Describe how the components of ecosystems are connected and contribute to the energy of their own cycles, as exemplified by being able to Describe the flow of energy and the cycling of matter through an ecosystem (e.g., the food chain, photosynthesis).

Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to Explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.
Expectation: PS.8.3.A.3. Explain how biomes do not always follow lines of latitude by identifying the influences of oceans and mountain ranges on the distribution of climate and vegetation.

Essential Element: NGS.HS. Human Systems

Standard: HS.11. The patterns and networks of economic interdependence on Earth's surface

Strand: HS.11.1. Economic Activities: The functions of different types of economic activities

Benchmark: HS.11.1.A. Describe and analyze the functions of economic activities in the primary, secondary, tertiary, and quaternary sectors, as exemplified by being able to describe the sequence of activities that occur in the manufacture of products (e.g., in the production of a computerized sewing machine, iron-ore mining is primary, smelting iron and steel are secondary, selling the steel sewing machines is tertiary, and advertising is quaternary).

Expectation: HS.11.1.A.2. Describe the sequence of activities that occur in the manufacture of products (e.g., in the production of a computerized sewing machine, iron-ore mining is primary, smelting iron and steel are secondary, selling the steel sewing machines is tertiary, and advertising is quaternary).

Essential Element: NGS.HS. Human Systems

Standard: HS.12. The processes, patterns, and functions of human settlement

Strand: HS.12.4. Urban Forms and Functions: Land uses in urban areas are systematically arranged

Benchmark: HS.12.4.A. Describe and analyze the spatial patterns of land use in cities, as exemplified by being able to identify and describe a controversial land-use issue in the community and analyze the advantages and disadvantages of making the change in use (e.g., widening a street for more lanes of traffic, tearing down an old building for a new park, converting green space into a new building complex).

Expectation: HS.12.4.A.3. Describe how human changes to land cover can have negative impacts on other areas (e.g., deforestation and downstream flooding, siltation, soil erosion).

Essential Element: NGS.ES. Environment and Society

Standard: ES.14. How human actions modify the physical environment

Strand: ES.14.1. Modification of the Physical Environment: Human modifications of the physical environment in one place often lead to changes in other places

Benchmark: ES.14.1.A. Describe and explain how human-induced changes in one place can affect the physical environment in other places, as exemplified by being able to describe how human changes to land cover can have negative impacts on other areas (e.g., deforestation and downstream flooding, siltation, soil erosion).

Expectation: ES.14.1.A.2. Analyze how human actions modify the physical environment

Essential Element: NGS.ES. Environment and Society

Standard: ES.14. How human actions modify the physical environment

Strand: ES.14.3. Consequences for People and Environments: The physical environment can both accommodate and be endangered by human activities

Benchmark: ES.14.3.A. Analyze the positive and negative consequences of humans changing the physical environment, as exemplified by being able to analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).

The changes that occur in the meaning, use, distribution, and importance of resources

Types and Meanings of Resources: People can have different viewpoints regarding the meaning and use of resources

Describe examples of how cultures differ in their definition and use of resources, as exemplified by being able to

Describe differences in the types of resources used in different geographic contexts in various parts of the world (e.g., the use of wood or animal dung versus electricity or natural gas as a cooking fuel, the use of electrical appliances versus doing household chores by hand).

Describe examples of how cultures differ in their definition and use of resources, as exemplified by being able to

Describe differences in the types of resources used in different geographic contexts in various parts of the world (e.g., the use of wood or animal dung versus electricity or natural gas as a cooking fuel, the use of electrical appliances versus doing household chores by hand).

Describe and explain how sustainable management techniques can be applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).

The physical processes that shape the patterns of Earth’s surface

Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent

Identify and describe patterns in the environment that result from the interaction of Earth’s physical processes, as exemplified by being able to

Identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and biomes).

The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface

Components of Ecosystems: Components of ecosystems are interdependent

Describe how the components of ecosystems are connected and contribute to the energy of their own cycles, as exemplified by being able to

Describe the flow of energy and the cycling of matter through an ecosystem (e.g., the food chain, photosynthesis).

National Geography Standards (NGS)

Science

Grade 7 - Adopted: 2012
ESSENTIAL ELEMENT  NGS.PS.  Physical Systems
STANDARD     PS.8.  The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND        PS.8.1. Components of Ecosystems: Components of ecosystems are interdependent
BENCHMARK     PS.8.1.B. Construct a model to explain how an ecosystem works, as exemplified by being able to
               Construct a flow chart to explain the interactions of components within an ecosystem (e.g., water cycle, oxygen and carbon dioxide exchange, producers, consumers, and decomposers).
EXPECTATION   PS.8.1.B.3. The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

ESSENTIAL ELEMENT  NGS.PS.  Physical Systems
STANDARD     PS.8.  The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND        PS.8.2. Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems
BENCHMARK     PS.8.2.A. Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to
               Explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.
EXPECTATION   PS.8.2.A.2. The characteristics and geographic distribution of ecosystems

ESSENTIAL ELEMENT  NGS.PS.  Physical Systems
STANDARD     PS.8.  The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND        PS.8.3. Characteristics and Geographic Distribution of Biomes: Climate primarily determines the characteristics and geographic distribution of biomes
BENCHMARK     PS.8.3.A. Describe and explain how climate (temperature and rainfall) primarily determines the characteristics and geographic distribution of biomes, as exemplified by being able to
               Explain how biomes do not always follow lines of latitude by identifying the influences of oceans and mountain ranges on the distribution of climate and vegetation.
EXPECTATION   PS.8.3.A.3. The processes, patterns, and functions of human settlement

ESSENTIAL ELEMENT  NGS.HS.  Human Systems
STANDARD     HS.11. The patterns and networks of economic interdependence on Earth's surface
STRAND        HS.11.1. Economic Activities: The functions of different types of economic activities
BENCHMARK     HS.11.1.A. Describe and analyze the functions of economic activities in the primary, secondary, tertiary, and quaternary sectors, as exemplified by being able to
               Describe the sequence of activities that occur in the manufacture of products (e.g., in the production of a computerized sewing machine, the iron-ore mining is primary, smelting iron and steel are secondary, selling of the steel sewing machines is tertiary, and advertising is quaternary).
EXPECTATION   HS.11.1.A.2. The processes, patterns, and functions of human settlement
Urban Forms and Functions: Land uses in urban areas are systematically arranged.

BENCHMARK HS.12.4.A. Describe and analyze the spatial patterns of land use in cities, as exemplified by being able to identify and describe a controversial land-use issue in the community and analyze the advantages and disadvantages of making the change in use (e.g., widening a street for more lanes of traffic, tearing down an old building for a new park, converting green space into a new building complex).

EXPECTATION HS.12.4.A.3. Identify and describe a controversial land-use issue in the community and analyze the advantages and disadvantages of making the change in use (e.g., widening a street for more lanes of traffic, tearing down an old building for a new park, converting green space into a new building complex).

ESSENTIAL ELEMENTS NGS.ES. Environment and Society

STANDARD ES.14. How human actions modify the physical environment

STRAND ES.14.1. Modification of the Physical Environment: Human modifications of the physical environment in one place often lead to changes in other places

BENCHMARK ES.14.1.A. Describe and explain how human-induced changes in one place can affect the physical environment in other places, as exemplified by being able to describe how human changes to land cover can have negative impacts on other areas (e.g., deforestation and downstream flooding, siltation, soil erosion).

EXPECTATION ES.14.1.A.2. Describe how human changes to land cover can have negative impacts on other areas (e.g., deforestation and downstream flooding, siltation, soil erosion).

ESSENTIAL ELEMENTS NGS.ES. Environment and Society

STANDARD ES.14. How human actions modify the physical environment

STRAND ES.14.3. Consequences for People and Environments: The physical environment can both accommodate and be endangered by human activities

BENCHMARK ES.14.3.A. Analyze the positive and negative consequences of humans changing the physical environment, as exemplified by being able to analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).

EXPECTATION ES.14.3.A.3. Analyze the ways humans can have positive effects on the physical environment (e.g., open green space protection, wetland restoration, sustainable forestry).

ESSENTIAL ELEMENTS NGS.ES. Environment and Society

STANDARD ES.16. The changes that occur in the meaning, use, distribution, and importance of resources

STRAND ES.16.1. Types and Meanings of Resources: People can have different viewpoints regarding the meaning and use of resources

BENCHMARK ES.16.1.A. Describe examples of how cultures differ in their definition and use of resources, as exemplified by being able to describe differences in the types of resources used in different geographic contexts in various parts of the world (e.g., the use of wood or animal dung versus electricity or natural gas as a cooking fuel, the use of electrical appliances versus doing household chores by hand).

EXPECTATION ES.16.1.A.1. Describe differences in the types of resources used in different geographic contexts in various parts of the world (e.g., the use of wood or animal dung versus electricity or natural gas as a cooking fuel, the use of electrical appliances versus doing household chores by hand).

ESSENTIAL ELEMENTS NGS.ES. Environment and Society

STANDARD ES.16. The changes that occur in the meaning, use, distribution, and importance of resources

STRAND ES.16.3. Sustainable Resource Use and Management: Humans can manage resources to sustain or prolong their use

BENCHMARK ES.16.3.A. Explain how renewable resources can be continuously replenished through sustainable use, as exemplified by being able to...
Describe and explain how sustainable management techniques can be applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).

National Geography Standards (NGS)

Science

Grade 8 - Adopted: 2012

ESSENTIAL ELEMENT  

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Expectation:  

ES.16.3.A.1. Describe and explain how sustainable management techniques can be applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).
ESSENTIAL ELEMENT NGS.PS. Physical Systems
STANDARD PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth's surface
STRAND PS.8.3. Characteristics and Geographic Distribution of Biomes: Climate primarily determines the characteristics and geographic distribution of biomes
BENCHMARK PS.8.3.A. Describe and explain how climate (temperature and rainfall) primarily determines the characteristics and geographic distribution of biomes, as exemplified by being able to
EXPECTATION PS.8.3.A.3. Explain how biomes do not always follow lines of latitude by identifying the influences of oceans and mountain ranges on the distribution of climate and vegetation.

ESSENTIAL ELEMENT NGS.HS. Human Systems
STANDARD HS.11. The patterns and networks of economic interdependence on Earth's surface
STRAND HS.11.1. Economic Activities: The functions of different types of economic activities
BENCHMARK HS.11.1.A. Describe and analyze the functions of economic activities in the primary, secondary, tertiary, and quaternary sectors, as exemplified by being able to
EXPECTATION HS.11.1.A.2. Describe the sequence of activities that occur in the manufacture of products (e.g., in the production of a computerized sewing machine, the iron-ore mining is primary, smelting iron and steel are secondary, selling of the steel sewing machines is tertiary, and advertising is quaternary).

ESSENTIAL ELEMENT NGS.HS. Human Systems
STANDARD HS.12. The processes, patterns, and functions of human settlement
STRAND HS.12.4. Urban Forms and Functions: Land uses in urban areas are systematically arranged
BENCHMARK HS.12.4.A. Describe and analyze the spatial patterns of land use in cities, as exemplified by being able to
EXPECTATION HS.12.4.A.3. Identify and describe a controversial land-use issue in the community and analyze the advantages and disadvantages of making the change in use (e.g., widening a street for more lanes of traffic, tearing down an old building for a new park, converting green space into a new building complex).

ESSENTIAL ELEMENT NGS.ES. Environment and Society
STANDARD ES.14. How human actions modify the physical environment
STRAND ES.14.1. Modification of the Physical Environment: Human modifications of the physical environment in one place often lead to changes in other places
BENCHMARK ES.14.1.A. Describe and explain how human-induced changes in one place can affect the physical environment in other places, as exemplified by being able to
EXPECTATION ES.14.1.A.2. Describe how human changes to land cover can have negative impacts on other areas (e.g., deforestation and downstream flooding, siltation, soil erosion).

ESSENTIAL ELEMENT NGS.ES. Environment and Society
STANDARD    ES.14. How human actions modify the physical environment
STRAND      ES.14.3. Consequences for People and Environments: The physical environment can both accommodate and be endangered by human activities
BENCHMARK   ES.14.3.A. Analyze the positive and negative consequences of humans changing the physical environment, as exemplified by being able to
            Analyze the ways humans can have positive effects on the physical
EXPECTATION ES.14.3.A.3. environment (e.g., open green space protection, wetland restoration, sustainable forestry).

ESSENTIAL ELEMENT NGS.ES. Environment and Society
STANDARD    ES.16. The changes that occur in the meaning, use, distribution, and importance of resources
STRAND      ES.16.1. Types and Meanings of Resources: People can have different viewpoints regarding the meaning and use of resources
BENCHMARK   ES.16.1.A. Describe examples of how cultures differ in their definition and use of resources, as exemplified by being able to
            Describe differences in the types of resources used in different geographic contexts in various parts of the world (e.g., the use of wood or animal dung versus electricity or natural gas as a cooking fuel, the use of electrical appliances versus doing household chores by hand).
EXPECTATION ES.16.1.A.1. Applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).

ESSENTIAL ELEMENT NGS.ES. Environment and Society
STANDARD    ES.16. The changes that occur in the meaning, use, distribution, and importance of resources
STRAND      ES.16.3. Sustainable Resource Use and Management: Humans can manage resources to sustain or prolong their use
BENCHMARK   ES.16.3.A. Explain how renewable resources can be continuously replenished through sustainable use, as exemplified by being able to
            Describe and explain how sustainable management techniques can be
EXPECTATION ES.16.3.A.1. applied in farming, forestry, and fishing (e.g., soil banks and contour plowing, sustainable timber harvesting practices, aquaculture).

National Geography Standards (NGS)  
Science  
Grade 9 - Adopted: 2012
ESSENTIAL ELEMENT NGS.PS. Physical Systems
STANDARD    PS.7. The physical processes that shape the patterns of Earth's surface
STRAND      PS.7.1. Components of Earth's Physical Systems: The interactions of Earth's physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) vary across space and time
BENCHMARK   PS.7.1.B. Explain the ways in which Earth's physical processes are dynamic and interactive, as exemplified by being able to
EXPECTATION PS.7.1.B.1. Explain how volcanic eruptions and forest fires change atmospheric conditions and disrupt the nitrogen and carbon cycles.
ESSENTIAL ELEMENT NGS.PS. Physical Systems
STANDARD    PS.8. The characteristics and spatial distribution of ecosystems and biomes on
Earth's surface

**STRAND**  PS.8.2. Characteristics and Geographic Distribution of Ecosystems: The characteristics and geographic distribution of ecosystems

**BENCHMARK**  PS.8.2.B. Evaluate ecosystems in terms of their biodiversity and productivity, as exemplified by being able to

**EXPECTATION**  PS.8.2.B.3. Evaluate changes in the biodiversity and productivity of an ecosystem following the loss or introduction of a plant or animal species.

**ESSENTIAL ELEMENT**  NGS.ES. Environment and Society

**STANDARD**  ES.16. The changes that occur in the meaning, use, distribution, and importance of resources

**STRAND**  ES.16. Location and Distribution of Resources: The spatial distribution of resources affects patterns of human settlement and trade

**BENCHMARK**  ES.16.2.B. Analyze and evaluate patterns of trade in resources, as exemplified by being able to

**EXPECTATION**  ES.16.2.B.1. Analyze the positive and negative economic, social, and environmental consequences of extracting and/or using specific resources to trade in foreign markets (e.g., timber, coal, petroleum, uranium).

**ESSENTIAL ELEMENT**  NGS.ES. Environment and Society

**STANDARD**  ES.16. The changes that occur in the meaning, use, distribution, and importance of resources

**STRAND**  ES.16. Sustainable Resource Use and Management: Policies and programs that promote the sustainable use and management of resources impact people and the environment

**BENCHMARK**  ES.16.3.B. Evaluate policy decisions regarding the sustainable use of resources in different regions and at different spatial scales in the world, as exemplified by being able to

**EXPECTATION**  ES.16.3.B.2. Compare government policies and programs to promote sustainability (e.g., reducing fossil-fuel dependency, recycling, conserving water) in developed and developing countries.

**ESSENTIAL ELEMENT**  NGS.UG. The Uses of Geography

**STANDARD**  UG.18. How to apply geography to interpret the present and plan for the future

**STRAND**  UG.18. Using Geography to Interpret the Present and Plan for the Future: Geographic contexts (the human and physical characteristics of places and environments) provide the basis for analyzing current events and making predictions about future issues

**BENCHMARK**  UG.18.1.B. Analyze and evaluate the connections between the geographic contexts of current events and possible future issues, as exemplified by being able to

**EXPECTATION**  UG.18.1.B.1 Evaluate the feasibility and long-range impacts in a series of scenarios for dealing with social and environmental issues (e.g., absorbing and dispersing refugees, responding to threats from global warming, managing the future of Antarctica).
National Geography Standards (NGS)

Social Studies

Grade 5 - Adopted: 2012

ESSENTIAL ELEMENT NGS.WST. The World in Spatial Terms

STANDARD WST.3. How to analyze the spatial organization of people, places, and environments on Earth's surface

STRAND WST.3.3. Spatial Models: Models are used to represent spatial processes that shape human and physical systems

BENCHMARK WST.3.3.A. Describe the processes that shape human and physical systems (e.g., diffusion, migration, and plate tectonics) using models, as exemplified by being able to

EXPECTATION WST.3.3.A.1. Describe a model that illustrates the diffusion of cultural characteristics (e.g., music styles, clothing styles, fast-food preferences).

ESSENTIAL ELEMENT NGS.PR. Places and Regions

STANDARD PR.5. That people create regions to interpret Earth's complexity

STRAND PR.5.1. The Concept of Region: Different types of regions are used to organize and interpret areas of Earth’s surface

BENCHMARK PR.5.1.A. Identify and explain the criteria used to define formal, functional, and perceptual regions, as exemplified by being able to

EXPECTATION PR.5.1.A.1. Identify and explain the bases for the formal region(s), functional region(s), and perceptual region(s) for the community or state where the students live (e.g., for Michigan, the Kalamazoo-Battle Creek Metropolitan Statistical Area is a formal region, the fruit belt in Southwest Michigan is a functional region, Kalamazoo as the snow belt capital of Lake Michigan is a perceptual region).

EXPECTATION PR.5.1.A.3. Analyze collected maps with regional labels as examples of formal, functional, or perceptual regions (e.g., maps of physical regions as formal, weather maps as functional, tourist maps as perceptual).

ESSENTIAL ELEMENT NGS.PS. Physical Systems

STANDARD PS.7. The physical processes that shape the patterns of Earth’s surface

STRAND PS.7.1. Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent

BENCHMARK PS.7.1.A. Identify and describe patterns in the environment that result from the interaction of Earth’s physical processes, as exemplified by being able to

EXPECTATION PS.7.1.A.2. Identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and biomes).

ESSENTIAL ELEMENT NGS.PS. Physical Systems

STANDARD PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface

STRAND PS.8.2. Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems
| BENCHMARK | PS.8.2.A. | Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps. |
| ESSENTIAL ELEMENT | NGS.HS. | Human Systems |
| STANDARD | HS.10. | The characteristics, distribution, and complexity of Earth's cultural mosaics |
| STRAND | HS.10.1. | Characteristics of Culture: There are many different cultures, each with its own distinctive characteristics |
| BENCHMARK | HS.10.1.A. | Compare the cultural characteristics of different cultures, as exemplified by being able to describe and explain the spatial patterns of different cultural characteristics across regions or countries (e.g., the pattern of languages and dialects within a country, the architectural styles predominant in rural areas of European countries, the worldwide distribution of different religions). |
| EXPECTATION | HS.10.1.A.3. | |
| ESSENTIAL ELEMENT | NGS.UG. | The Uses of Geography |
| STANDARD | UG.17. | How to apply geography to interpret the past |
| STRAND | UG.17.1. | Using Geography to Interpret the Past: A historical event is influenced by the geographic context (the human and physical characteristics of places and environments) in which it occurred |
| BENCHMARK | UG.17.1.A. | Analyze and explain the influence of the geographic context on historical events, as exemplified by being able to analyze the significance of physical features that have influenced historical events (e.g., the role of hydrologic features such as the fall line, Cumberland Gap, the Ohio River, the Ogallala Aquifer, or artesian wells of the Great Plains in the settlement of the United States, the role of ocean currents and prevailing winds in exploration by Columbus, the forced transport of Africans to North and South America). |
| EXPECTATION | UG.17.1.A.1. | |

**National Geography Standards (NGS)**

**Social Studies**

**Grade 6 - Adopted: 2012**

| ESSENTIAL ELEMENT | NGS.WST. | The World in Spatial Terms |
| STANDARD | WST.3. | How to analyze the spatial organization of people, places, and environments on Earth's surface |
| STRAND | WST.3.3. | Spatial Models: Models are used to represent spatial processes that shape human and physical systems |
| BENCHMARK | WST.3.3.A. | Describe the processes that shape human and physical systems (e.g., diffusion, migration, and plate tectonics) using models, as exemplified by being able to |
| EXPECTATION | WST.3.3.A.1. | Describe a model that illustrates the diffusion of cultural characteristics (e.g., music styles, clothing styles, fast-food preferences). |
| ESSENTIAL ELEMENT | NGS.PR. | Places and Regions |
STANDARD PR.5. That people create regions to interpret Earth’s complexity

STRAND PR.5.1. The Concept of Region: Different types of regions are used to organize and interpret areas of Earth’s surface

BENCHMARK PR.5.1.A. Identify and explain the criteria used to define formal, functional, and perceptual regions, as exemplified by being able to

EXPECTATION PR.5.1.A.1. Identify and explain the bases for the formal region(s), functional region(s), and perceptual region(s) for the community or state where the students live (e.g., for Michigan, the Kalamazoo-Battle Creek Metropolitan Statistical Area is a formal region, the fruit belt in Southwest Michigan is a functional region, Kalamazoo as the snow belt capital of Lake Michigan is a perceptual region).

EXPECTATION PR.5.1.A.3. Analyze collected maps with regional labels as examples of formal, functional, or perceptual regions (e.g., maps of physical regions as formal, weather maps as functional, tourist maps as perceptual).

ESSENTIAL ELEMENT NGS.PS. Physical Systems

STANDARD PS.7. The physical processes that shape the patterns of Earth’s surface

STRAND PS.7.1. Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent

BENCHMARK PS.7.1.A. Identify and describe patterns in the environment that result from the interaction of Earth’s physical processes, as exemplified by being able to

EXPECTATION PS.7.1.A.2. Identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and biomes).

ESSENTIAL ELEMENT NGS.PS. Physical Systems

STANDARD PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface

STRAND PS.8.2. Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems

BENCHMARK PS.8.2.A. Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to

EXPECTATION PS.8.2.A.2. Explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.

ESSENTIAL ELEMENT NGS.HS. Human Systems

STANDARD HS.10. The characteristics, distribution, and complexity of Earth's cultural mosaics

STRAND HS.10.1. Characteristics of Culture: There are many different cultures, each with its own distinctive characteristics

BENCHMARK HS.10.1.A. Compare the cultural characteristics of different cultures, as exemplified by being able to

EXPECTATION HS.10.1.A.3. Describe and explain the spatial patterns of different cultural characteristics across regions or countries (e.g., the pattern of languages and dialects within a country, the architectural styles predominant in rural areas of European countries, the worldwide distribution of different religions).
ESSENTIAL ELEMENT NGS.UG. The Uses of Geography

STANDARD UG.17. How to apply geography to interpret the past

STRAND UG.17.1. Using Geography to Interpret the Past: A historical event is influenced by the geographic context (the human and physical characteristics of places and environments) in which it occurred

BENCHMARK UG.17.1.A. Analyze and explain the influence of the geographic context on historical events, as exemplified by being able to

- Analyze the significance of physical features that have influenced historical events (e.g., the role of hydrologic features such as the fall line, Cumberland Gap, the Ohio River, the Ogallala Aquifer, or artesian wells of the Great Plains in the settlement of the United States, the role of ocean currents and prevailing winds in exploration by Columbus, the forced transport of Africans to North and South America).

EXPECTATION UG.17.1.A.1. An expectation for analyzing the influence of geographic context on historical events.

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National Geography Standards (NGS)

Social Studies

Grade 7 - Adopted: 2012

ESSENTIAL ELEMENT NGS.WST. The World in Spatial Terms

STANDARD WST.3. How to analyze the spatial organization of people, places, and environments on Earth's surface

STRAND WST.3.3. Spatial Models: Models are used to represent spatial processes that shape human and physical systems

BENCHMARK WST.3.3.A. Describe the processes that shape human and physical systems (e.g., diffusion, migration, and plate tectonics) using models, as exemplified by being able to

EXPECTATION WST.3.3.A.1. Describe a model that illustrates the diffusion of cultural characteristics (e.g., music styles, clothing styles, fast-food preferences).

ESSENTIAL ELEMENT NGS.PR. Places and Regions

STANDARD PR.5. That people create regions to interpret Earth's complexity

STRAND PR.5.1. The Concept of Region: Different types of regions are used to organize and interpret areas of Earth's surface

BENCHMARK PR.5.1.A. Identify and explain the criteria used to define formal, functional, and perceptual regions, as exemplified by being able to

- Identify and explain the bases for the formal region(s), functional region(s), and perceptual region(s) for the community or state where the students live (e.g., for Michigan, the Kalamazoo-Battle Creek Metropolitan Statistical Area is a formal region, the fruit belt in Southwest Michigan is a functional region, Kalamazoo as the snow belt capital of Lake Michigan is a perceptual region).

EXPECTATION PR.5.1.A.1. Analyze collected maps with regional labels as examples of formal, functional, or perceptual regions (e.g., maps of physical regions as formal, weather maps as functional, tourist maps as perceptual).

ESSENTIAL ELEMENT NGS.PS. Physical Systems

STANDARD PS.7. The physical processes that shape the patterns of Earth's surface
Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent.

Identify and describe patterns in the environment that result from the interaction of Earth’s physical processes, as exemplified by being able to identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and biomes).

The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface.

Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs and vegetation maps.

The characteristics, distribution, and complexity of Earth's cultural mosaics.

Compare the cultural characteristics of different cultures, as exemplified by being able to describe and explain the spatial patterns of different cultural characteristics across regions or countries (e.g., the pattern of languages and dialects within a country, the architectural styles predominant in rural areas of European countries, the worldwide distribution of different religions).

How to apply geography to interpret the past.

Using Geography to Interpret the Past: A historical event is influenced by the geographic context (the human and physical characteristics of places and environments) in which it occurred.

Analyze and explain the influence of the geographic context on historical events, as exemplified by being able to analyze the significance of physical features that have influenced historical events (e.g., the role of hydrologic features such as the fall line, Cumberland Gap, the Ohio River, the Ogallala Aquifer, or artesian wells of the Great Plains in the settlement of the United States, the role of ocean currents and prevailing winds in exploration by Columbus, the forced transport of Africans to North and South America).
Grade 8 - Adopted: 2012

ESSENTIAL ELEMENT NGS.WST. The World in Spatial Terms

STANDARD WST.3. How to analyze the spatial organization of people, places, and environments on Earth’s surface

STRAND WST.3.3. Spatial Models: Models are used to represent spatial processes that shape human and physical systems

BENCHMARK WST.3.3.A. Describe the processes that shape human and physical systems (e.g., diffusion, migration, and plate tectonics) using models, as exemplified by being able to

EXPECTATION WST.3.3.A.1 Describe a model that illustrates the diffusion of cultural characteristics (e.g., music styles, clothing styles, fast-food preferences).

ESSENTIAL ELEMENT NGS.PR. Places and Regions

STANDARD PR.5. That people create regions to interpret Earth’s complexity

STRAND PR.5.1. The Concept of Region: Different types of regions are used to organize and interpret areas of Earth’s surface

BENCHMARK PR.5.1.A. Identify and explain the criteria used to define formal, functional, and perceptual regions, as exemplified by being able to

EXPECTATION PR.5.1.A.1 Identify and explain the bases for the formal region(s), functional region(s), and perceptual region(s) for the community or state where the students live (e.g., for Michigan, the Kalamazoo-Battle Creek Metropolitan Statistical Area is a formal region, the fruit belt in Southwest Michigan is a functional region, Kalamazoo as the snow belt capital of Lake Michigan is a perceptual region).

EXPECTATION PR.5.1.A.3. Analyze collected maps with regional labels as examples of formal, functional, or perceptual regions (e.g., maps of physical regions as formal, weather maps as functional, tourist maps as perceptual).

ESSENTIAL ELEMENT NGS.PS. Physical Systems

STANDARD PS.7. The physical processes that shape the patterns of Earth’s surface Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent

STRAND PS.7.1. Identify and describe patterns in the environment that result from the interaction of Earth’s physical processes, as exemplified by being able to

EXPECTATION PS.7.1.A.2 Identify and describe the patterns that result from the connections between climate and vegetation (e.g., examples of patterns of ecosystems and biomes).

ESSENTIAL ELEMENT NGS.PS. Physical Systems

STANDARD PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth’s surface

STRAND PS.8.2. Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems

BENCHMARK PS.8.2.A. Describe and explain how physical processes determine the characteristics of ecosystems, as exemplified by being able to

EXPECTATION PS.8.2.A.2 Explain how different locations can have similar ecosystems as a function of temperature, precipitation, elevation, and latitude by using climographs
and vegetation maps.

**ESSENTIAL ELEMENT** NGS.HS. Human Systems

**STANDARD** HS.10. The characteristics, distribution, and complexity of Earth's cultural mosaics

**STRAND** HS.10.1. Characteristics of Culture: There are many different cultures, each with its own distinctive characteristics

**BENCHMARK** HS.10.1.A. Compare the cultural characteristics of different cultures, as exemplified by being able to Describe and explain the spatial patterns of different cultural characteristics across regions or countries (e.g., the pattern of languages and dialects within a country, the architectural styles predominant in rural areas of European countries, the worldwide distribution of different religions).

**EXPECTATION** HS.10.1.A.3. Describe and explain the spatial patterns of different cultural characteristics across regions or countries (e.g., the pattern of languages and dialects within a country, the architectural styles predominant in rural areas of European countries, the worldwide distribution of different religions).

**ESSENTIAL ELEMENT** NGS.UG. The Uses of Geography

**STANDARD** UG.17. How to apply geography to interpret the past

**STRAND** UG.17.1. Using Geography to Interpret the Past: A historical event is influenced by the geographic context (the human and physical characteristics of places and environments) in which it occurred

**BENCHMARK** UG.17.1.A. Analyze and explain the influence of the geographic context on historical events, as exemplified by being able to Analyze the significance of physical features that have influenced historical events (e.g., the role of hydrologic features such as the fall line, Cumberland Gap, the Ohio River, the Ogallala Aquifer, or artesian wells of the Great Plains in the settlement of the United States, the role of ocean currents and prevailing winds in exploration by Columbus, the forced transport of Africans to North and South America).

**EXPECTATION** UG.17.1.A.1. Analyze the significance of physical features that have influenced historical events (e.g., the role of hydrologic features such as the fall line, Cumberland Gap, the Ohio River, the Ogallala Aquifer, or artesian wells of the Great Plains in the settlement of the United States, the role of ocean currents and prevailing winds in exploration by Columbus, the forced transport of Africans to North and South America).

**EXPECTATION** UG.17.1.A.2. Explain how ecosystems respond to long-term changes in the physical environment (e.g., glacial retreat, volcanic eruptions, sea-level rise, increases in sea temperatures).

**National Geography Standards (NGS)**

Social Studies

**Grade 9 - Adopted: 2012**

**ESSENTIAL ELEMENT** NGS.PS. Physical Systems

**STANDARD** PS.8. The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

**STRAND** PS.8.1. Components of Ecosystems: Ecosystems are dynamic and respond to changes in environmental conditions

**BENCHMARK** PS.8.1.A. Explain how there are short-term and long-term changes in ecosystems, as exemplified by being able to Explain the response of ecosystems to stress caused by physical events in terms of their characteristics and capacity to respond (e.g., changes in mangroves by tsunamis, changes in forest flora and fauna after a fire). Explain how ecosystems respond to long-term changes in the physical environment (e.g., glacial retreat, volcanic eruptions, sea-level rise, increases in sea temperatures).

**EXPECTATION** PS.8.1.A.2. Explain how ecosystems respond to long-term changes in the physical environment (e.g., glacial retreat, volcanic eruptions, sea-level rise, increases in sea temperatures).

**EXPECTATION** PS.8.1.A.3. Human Systems
The characteristics, distribution, and complexity of Earth's cultural mosaics

Characteristics of Culture: Cultural systems provide contexts for living in and viewing the world

Describe and explain the characteristics that constitute any particular cultural system (e.g., Amish, Japanese, Maori), as exemplified by being able to

Explain how local customs can contribute to a group’s culture (e.g., lion hunting by Masai cattle herders in East Africa, outrigger canoe navigation by Pacific Island cultures).

Next Generation Science Standards (NGSS)

Science

Grade 5 - Adopted: 2013

Strand NGSS.5-LS. Life Science

Title 5-LS2. Ecosystems: Interactions, Energy, and Dynamics

Students who demonstrate understanding can:

Performance Expectation 5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Strand NGSS.5-ESS. Earth and Space Science

Title 5-ESS2. Earth’s Systems

Students who demonstrate understanding can:

Performance Expectation 5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

Strand NGSS.5-ESS. Earth and Space Science

Title 5-ESS3. Earth and Human Activity

Students who demonstrate understanding can:

Performance Expectation 5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.

Next Generation Science Standards (NGSS)

Science

Grade 6 - Adopted: 2013

Strand NGSS.MS-PS. Physical Science

Title MS-PS1. Matter and Its Interactions

Students who demonstrate understanding can:

Performance MS-PS1-3. Gather and make sense of information to describe that synthetic materials
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<td>MS-LS2-4.</td>
<td>Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.</td>
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<td>PERFORMANCE EXPECTATION</td>
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<td>Earth’s Systems</td>
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<tr>
<td>PERFORMANCE EXPECTATION</td>
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<tr>
<td>PERFORMANCE EXPECTATION</td>
<td>MS-ESS3-4.</td>
<td>Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth’s systems.</td>
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Next Generation Science Standards (NGSS)

Science

**Grade 7** - Adopted: 2013

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<td>Matter and Its Interactions</td>
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<tr>
<td>PERFORMANCE EXPECTATION</td>
<td>MS-PS1-3.</td>
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**Next Generation Science Standards (NGSS)**

**Science**

**Grade 8 - Adopted: 2013**

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Next Generation Science Standards (NGSS)

Science

Grade 9 - Adopted: 2013

STAND NGSS.HS-LS.
TITLE HS-LS2. Ecosystems: Interactions, Energy, and Dynamics

PERFORMANCE EXPECTATION HS-LS2-2. Students who demonstrate understanding can:
Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

PERFORMANCE EXPECTATION HS-LS2-3. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.

PERFORMANCE EXPECTATION HS-LS2-4. Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.

PERFORMANCE EXPECTATION HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

STAND NGSS.HS-LS.
TITLE HS-LS4. Biological Evolution: Unity and Diversity

PERFORMANCE EXPECTATION HS-LS4-5. Students who demonstrate understanding can:
Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

PERFORMANCE EXPECTATION HS-LS4-6. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.

STAND NGSS.HS-ESS.
TITLE HS-ESS2. Earth’s Systems

PERFORMANCE EXPECTATION HS-ESS2-2. Students who demonstrate understanding can:
Analyze geoscience data to make the claim that one change to Earth’s surface can create feedbacks that cause changes to other Earth’s systems.

PERFORMANCE EXPECTATION HS-ESS2-6. Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.

STAND NGSS.HS-ESS.
TITLE HS-ESS3. Earth and Human Activity

PERFORMANCE EXPECTATION HS-ESS3-1. Students who demonstrate understanding can:
Construct an explanation based on evidence for how increases in human population and per-capita consumption of natural resources impact Earth’s systems.
have influenced human activity.

PERFORMANCE EXPECTATION 2.
Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

PERFORMANCE EXPECTATION 3.
Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.

PERFORMANCE EXPECTATION 6.
Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.

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