Virtual Field Trips

National Parks West - Nevada, California

Grade 4 - Adopted: 2010

**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**
3.1.3. Physical and human characteristics of the school, community, state, and region, and the interactions of people in these places with the environment.

**LEARNING EXPECTATION**
3.1.5. Physical changes in community, state, and region, such as seasons, climate, and weather, and their effects on plants and animals.

Grade 5 - Adopted: 2010

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

Grade 6 - Adopted: 2010

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

**DEFINITION**
SOCIAL STUDIES PROGRAMS SHOULD INCLUDE EXPERIENCES THAT PROVIDE FOR THE STUDY OF PEOPLE, PLACES, AND ENVIRONMENTS.
KNOWLEDGE - Learners will understand:
The concept of regions identifies links between people in different locations according to specific criteria (e.g., physical, economic, social, cultural, or religious).

National Council for the Social Studies (NCSS)
Social Studies

Grade 7 - Adopted: 2010
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:
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 3.1.5.

National Council for the Social Studies (NCSS)
Social Studies

Grade 8 - Adopted: 2010
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:
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 3.1.5.

National Council for the Social Studies (NCSS)
Social Studies

Grade 9 - Adopted: 2010
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:
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 3.1.1.
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.
ESSENTIAL ELEMENT  NGS.PR.  Places and Regions

STANDARD  PR.4.  The physical and human characteristics of places

STRAND  PR.4.2.  The Characteristics of Places: Places have physical and human characteristics

BENCHMARK  PR.4.2.A.  Describe and compare the physical characteristics of places at a variety of scales, local to global, as exemplified by being able to

EXPECTATION  PR.4.2.A.2.  Describe and compare the vegetation in different places in the world (e.g., deserts, mountains, rain forests, plains).

EXPECTATION  PR.4.2.A.3.  Describe and compare the physical environments and landforms of different places in the world (e.g., mountains, islands, valleys or canyons, mesas).

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: There are four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere)

BENCHMARK  PS.7.1.A.  Identify attributes of Earth’s different physical systems, as exemplified by being able to

EXPECTATION  PS.7.1.A.2.  Identify examples of water features on Earth’s surface that comprise the hydrosphere (e.g., oceans, rivers, lakes, water vapor, ground water, different types of precipitation).

EXPECTATION  PS.7.1.A.3.  Identify examples of landforms on Earth’s surface (e.g., mountains, volcanoes, valleys, plains).

ESSENTIAL ELEMENT  NGS.PS.  Physical Systems

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

STRAND  PS.7.3.  Physical Processes: Physical processes shape features on Earth’s surface

BENCHMARK  PS.7.3.B.  Describe how physical processes shape features on Earth’s surface, as exemplified by being able to

EXPECTATION  PS.7.3.B.2.  Describe the physical processes that shaped particular landform features using pictures of landforms such as canyons, mesas, and deltas.

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: The components of ecosystems

BENCHMARK  PS.8.1.A.  Identify the components of different ecosystems, as exemplified by being able to

EXPECTATION  PS.8.1.A.2.  Identify examples of each ecosystem component (e.g., pine trees versus grasslands, low versus high rainfall, clay versus sandy soils).

EXPECTATION  PS.8.1.A.3.  Describe local ecosystems by surveying and recording the properties of their components.

ESSENTIAL ELEMENT  NGS.PS.  Physical Systems
The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

Characteristics and Geographic Distribution of Ecosystems: The characteristics of ecosystems

Identify and describe the characteristics of ecosystems, as exemplified by being able to

Identify and describe the characteristics of an ecosystem (specific types of plants, climate, and soil) in which a favorite or interesting creature lives.

Identify and draw pictures of different plants and animals in various local ecosystems (e.g., a pond, forest, city park).

Compare the characteristics of different ecosystems (e.g., pond, deciduous forest, coral reef).

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

Characteristics and Geographic Distribution of Biomes: The characteristics of biomes

Describe the characteristics of biomes, as exemplified by being able to

Describe the defining characteristics of a biome as a large region of ecosystems with similar climate and vegetation characteristics.

Describe the temperature, precipitation, and vegetation characteristics of various biomes, (e.g., deserts, grasslands, savannahs, temperate forests, tropical forests, arctic tundra).

Identify the characteristics in photographs of different types of vegetation and match them to the appropriate sections of a world climate map (e.g., cacti and succulents on a desert climate region, tropical forest trees on a tropical climate region, coral in shallows, tropical marine waters).

How human actions modify the physical environment

Consequences for People and Environments: The consequences of human modifications of the physical environment

Identify and describe examples of how human activities impact the physical environment, as exemplified by being able to

Identify and describe the changes in local habitats that resulted from human activities.

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

Types and Meanings of Resources: The characteristics of renewable, nonrenewable, and flow resources

Identify and explain the characteristics of renewable, nonrenewable, and flow resources, as exemplified by being able to

Explain the meaning of the term "resource" and then illustrate the idea of renewable, nonrenewable, and flow resources by sorting example photographs into each of the three categories.
The Uses of Geography

How to apply geography to interpret the present and plan for the future

Geographic contexts (the human and physical characteristics of places and environments) are the settings for current events

Analyze geographic contexts in which current events and issues occur, as exemplified by being able to
Analyze a current environmental issue in the region (e.g., building or demolishing a dam, building or expansion of freeway system, creation of parks and open spaces, regulatory legislation on industry to prevent further air, water, and land pollution) and describe ways in which people and the environment interact to affect the issue positively and negatively.

Describe current changes in places, regions, and environments and predict how these locations may be different in the future, as exemplified by being able to
Describe how to plan for the environmental future of a place by completing the following statements: “I will keep....” “I will change....” and “I will remove....”

National Geography Standards (NGS)

Science

Grade 5 - Adopted: 2012

The World in Spatial Terms

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

Spatial Patterns and Processes: Processes shape the spatial patterns of people, places, and environments over time

Describe and compare the processes that influence the distribution of human and physical phenomena, as exemplified by being able to describe and compare changes in natural vegetation zones and land uses on the slopes of a mountain (e.g., vertical zonation, tree lines in middle latitudes).

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 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.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.B. Analyze and explain patterns of physical features resulting from the interactions of Earth’s physical processes, as exemplified by being able to

**EXPECTATION**  PS.7.1.B.1. Analyze maps of tectonic plates to predict the location of physical features (e.g., mountain ranges, volcanoes, rift valleys).

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

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

**STRAND**  PS.7.2. Earth-Sun Relationships: Earth-Sun relationships drives physical processes that follow an annual cycle and create patterns on Earth

**BENCHMARK**  PS.7.2.A. Explain how Earth-Sun relationships drive Earth’s physical processes and create annual patterns, as exemplified by being able to

**EXPECTATION**  PS.7.2.A.1. Explain the occurrences of weather phenomena in different locations due to annual changes in the Earth-Sun relationship (e.g., hurricanes in the fall in subtropical areas, monsoon rainfall, tornadoes in the mid-latitudes during the spring and summer).

**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.1. Describe the rain shadow effect of orographic precipitation and identify the different ecosystems on the windward and leeward side of a mountain range or island (e.g., temperate rain forest on the windward side and high desert on the leeward side of the Cascade Mountain Range).

**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

**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.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
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.16.3. 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
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.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.3.2. Spatial Patterns and Processes: Processes shape the spatial patterns of people, places, and environments over time
BENCHMARK WST.3.2.A. Describe and compare the processes that influence the distribution of human and physical phenomena, as exemplified by being able to
EXPECTATION WST.3.2.A.3. Describe and compare changes in natural vegetation zones and land uses on the slopes of a mountain (e.g., vertical zonation, tree lines in middle latitudes).

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.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.B. Analyze and explain patterns of physical features resulting from the interactions of Earth’s physical processes, as exemplified by being able to
EXPECTATION PS.7.1.B.1. Analyze maps of tectonic plates to predict the location of physical features (e.g., mountain ranges, volcanoes, rift valleys).

ESSENTIAL ELEMENT NGS.PS. Physical Systems
STANDARD PS.7. Earth-Sun Relationships: Earth-Sun relationships drives physical processes that follow an annual cycle and create patterns on Earth
STRAND PS.7.2. Explain how Earth-Sun relationships drive Earth’s physical processes and create annual patterns, as exemplified by being able to
BENCHMARK PS.7.2.A. Explain the occurrences of weather phenomena in different locations due to annual changes in the Earth-Sun relationship (e.g., hurricanes in the fall in subtropical areas, monsoon rainfall, tornadoes in the mid-latitudes during the spring and summer).
EXPECTATION PS.7.2.A.1. 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.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.1. Describe the rain shadow effect of orographic precipitation and identify the different ecosystems on the windward and leeward side of a mountain range or island (e.g., temperate rain forest on the windward side and high desert on the leeward side of the Cascade Mountain Range).
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. Characteristics and Geographic Distribution of Biomes: Climate primarily determines the characteristics and geographic distribution of biomes
STRAND PS.8.3. Describe and explain how climate (temperature and rainfall) primarily determines the characteristics and geographic distribution of biomes, as exemplified by being able to
BENCHMARK PS.8.3.A. 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. Environment and Society
How human actions modify the physical environment

The physical environment can both accommodate and be endangered by human activities

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

Humans can manage resources to sustain or prolong their use

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).

The World in Spatial Terms

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

Spatial Patterns and Processes: Processes shape the spatial patterns of people, places, and environments over time

Describe and compare the processes that influence the distribution of human and physical phenomena, as exemplified by being able to... 

Describe and compare changes in natural vegetation zones and land uses on the slopes of a mountain (e.g., vertical zonation, tree lines in middle latitudes).

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).
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| ESSENTIAL ELEMENT | NGS.PS. | Physical Systems |

| STANDARD        | PS.7.2. |       | Earth-Sun Relationships: Earth-Sun relationships drives physical processes that follow an annual cycle and create patterns on Earth |
| BENCHMARK       | PS.7.2.A.|       | Explain how Earth-Sun relationships drive Earth’s physical processes and create annual patterns, as exemplified by being able to |
| EXPECTATION     | PS.7.2.A.1|      | Explain the occurrences of weather phenomena in different locations due to annual changes in the Earth-Sun relationship (e.g., hurricanes in the fall in subtropical areas, monsoon rainfall, tornadoes in the mid-latitudes during the spring and summer). |

| ESSENTIAL ELEMENT | NGS.PS. | Physical Systems |

| STANDARD        | PS.8. |       | The characteristics and spatial distribution of ecosystems and biomes on Earth's surface |
| 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.1|      | Describe the rain shadow effect of orographic precipitation and identify the different ecosystems on the windward and leeward side of a mountain range or island (e.g., temperate rain forest on the windward side and high desert on the leeward side of the Cascade Mountain Range). |
| 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.8.3. |       | 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.ES. | Environment and Society |
### National Geography Standards (NGS)

#### Science

**Grade 8** - Adopted: 2012

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<td>STRAND</td>
<td>ES.14.3.</td>
<td>Consequences for People and Environments: The physical environment</td>
<td></td>
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</tr>
</tbody>
</table>
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.16.3.  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.  

**National Geography Standards (NGS)**

**Science**

**Grade 9** - Adopted: 2012

<table>
<thead>
<tr>
<th>ESSENTIAL ELEMENT</th>
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<td><strong>STANDARD</strong></td>
<td>PS.7.</td>
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<tr>
<td><strong>STRAND</strong></td>
<td>PS.7.1.</td>
<td>Components of Earth’s Physical Systems: The interactions of Earth's physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) vary across space and time</td>
</tr>
<tr>
<td><strong>BENCHMARK</strong></td>
<td>PS.7.1.A.</td>
<td>Explain how the effects of physical processes vary across regions of the world and over time, as exemplified by being able to</td>
</tr>
<tr>
<td><strong>EXPECTATION</strong></td>
<td>PS.7.1.A.3.</td>
<td>Analyze and explain the relationships between physical processes and the location of land features (e.g., river valleys, canyons, deltas, glaciated lakes and moraines, limestone deposits, caves, alluvial fans, canyons).</td>
</tr>
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<td><strong>STRAND</strong></td>
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<td>Components of Ecosystems: Ecosystems are dynamic and respond to changes in environmental conditions</td>
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<tr>
<td><strong>BENCHMARK</strong></td>
<td>PS.8.1.A.</td>
<td>Explain how there are short-term and long-term changes in ecosystems, as exemplified by being able to</td>
</tr>
<tr>
<td><strong>EXPECTATION</strong></td>
<td>PS.8.1.A.2.</td>
<td>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).</td>
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<tr>
<td><strong>STRAND</strong></td>
<td>PS.8.2.</td>
<td>Characteristics and Geographic Distribution of Ecosystems: The</td>
</tr>
</tbody>
</table>
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 Evaluate ecosystems for their level of biodiversity and productivity (e.g., the low productivity of deserts and the high productivity of estuaries and tropical forests).

**EXPECTATION** PS.8.2.B.1. Compare the biodiversity and productivity in an ecosystem that is experiencing some form of stress with a similar healthy ecosystem.

**EXPECTATION** PS.8.2.B.2. Compare the biodiversity and productivity in an ecosystem that is experiencing some form of stress with a similar healthy ecosystem.

**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.16.2. 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 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).

**EXPECTATION** ES.16.2.B.1. 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.18.1. 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 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).

**EXPECTATION** UG.18.1.B.1.
Grade 4 - Adopted: 2012

ESSENTIAL ELEMENT NGS.PR. Places and Regions
STANDARD PR.4. The physical and human characteristics of places
STRAND PR.4.1. The Concept of Place: Places are locations having distinctive characteristics that give them meaning and distinguish them from other locations
BENCHMARK PR.4.1.A. Describe the distinguishing characteristics and meanings of several different places, as exemplified by being able to
EXPECTATION PR.4.1.A.3. Describe how certain places may have meanings that distinguish them from other places (e.g., cemetery, historical park or battlefield, religious shrines or temples, state or national parks).

ESSENTIAL ELEMENT NGS.PR. Places and Regions
STANDARD PR.4. The physical and human characteristics of places
STRAND PR.4.2. The Characteristics of Places: Places have physical and human characteristics
BENCHMARK PR.4.2.A. Describe and compare the physical characteristics of places at a variety of scales, local to global, as exemplified by being able to
EXPECTATION PR.4.2.A.3. Describe and compare the physical environments and landforms of different places in the world (e.g., mountains, islands, valleys or canyons, mesas).

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: Regions are areas of Earth’s surface with unifying physical and/or human characteristics
BENCHMARK PR.5.1.A. Describe the distinguishing characteristics and meanings of several different regions, as exemplified by being able to
EXPECTATION PR.5.1.A.3. Describe the characteristics that define a physical region in the state (e.g., Front Range in Colorado, Sand Hills in Nebraska, Hill Country in Texas).

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: There are four components of Earth's physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere)
BENCHMARK PS.7.1.A. Identify attributes of Earth's different physical systems, as exemplified by being able to
EXPECTATION PS.7.1.A.1. Identify different attributes of physical systems in photographs (e.g., sky, clouds, plants, soil, oceans, lakes, mountains).
EXPECTATION PS.7.1.A.3. Identify examples of landforms on Earth's surface (e.g., mountains, volcanoes, valleys, plains).

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: The components of ecosystems
BENCHMARK PS.8.1.A. Identify the components of different ecosystems, as exemplified by being able to
EXPECTATION PS.8.1.A.1. Identify the three major components of an ecosystem (i.e., biomass, climate, and soil).

EXPECTATION PS.8.1.A.2. Identify examples of each ecosystem component (e.g., pine trees versus grasslands, low versus high rainfall, clay versus sandy soils).

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 of ecosystems

BENCHMARK PS.8.2.A. Identify and describe the characteristics of ecosystems, as exemplified by being able to

EXPECTATION PS.8.2.A.1. Identify and describe the characteristics of an ecosystem (specific types of plants, climate, and soil) in which a favorite or interesting creature lives.

EXPECTATION PS.8.2.A.3. Compare the characteristics of different ecosystems (e.g., pond, deciduous forest, coral reef).

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: The characteristics of biomes

BENCHMARK PS.8.3.A. Identify and describe the characteristics of an ecosystem (specific types of plants, climate, and soil) in which a favorite or interesting creature lives.

EXPECTATION PS.8.3.A.1. Describe the defining characteristics of a biome as a large region of ecosystems with similar climate and vegetation characteristics.

EXPECTATION PS.8.3.A.2. Describe the temperature, precipitation, and vegetation characteristics of various biomes, (e.g., deserts, grasslands, savannahs, temperate forests, tropical forests, arctic tundra).

EXPECTATION PS.8.3.A.3. Identify the characteristics in photographs of different types of vegetation and match them to the appropriate sections of a world climate map (e.g., cacti and succulents on a desert climate region, tropical forest trees on a tropical climate region, coral in shallow, tropical marine waters).

National Geography Standards (NGS)

Social Studies

Grade 5 - Adopted: 2012

ESSENTIAL ELEMENT NGS.WST. The World in Spatial Terms

STANDARD WST.2. How to use mental maps to organize information about people, places, and environments in a spatial context

STRAND WST.2.3. Using Mental Maps: Mental maps are used to answer geographic questions about locations, characteristics, and patterns of places and regions

BENCHMARK WST.2.3.A. Identify from memory and describe the locations, characteristics, and patterns of places and regions to answer geographic questions, as exemplified by being able to

EXPECTATION WST.2.3.A.3. Identify from memory the distribution, pattern, and characteristics of major world deserts and mountain ranges that can be barriers to travel or settlement.
<table>
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<td>Components of Earth’s Physical Systems: The four components of Earth’s physical systems (the atmosphere, biosphere, hydrosphere, and lithosphere) are interdependent</td>
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<tr>
<td>BENCHMARK</td>
<td>PS.7.1.A.</td>
<td>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).</td>
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<tr>
<td>STRAND</td>
<td>PS.8.2.</td>
<td>Characteristics and Geographic Distribution of Ecosystems: Physical processes determine the characteristics of ecosystems</td>
</tr>
<tr>
<td>BENCHMARK</td>
<td>PS.8.2.A.</td>
<td>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.</td>
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<tr>
<td>EXPECTATION</td>
<td>PS.8.2.A.2.</td>
<td>Identify from memory and describe the locations, characteristics, and patterns of places and regions to answer geographic questions, as exemplified by being able to identify from memory the distribution, pattern, and characteristics of major world deserts and mountain ranges that can be barriers to travel or settlement.</td>
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**National Geography Standards (NGS)**

**Social Studies**

**Grade 6 - Adopted: 2012**

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<tr>
<td>STRAND</td>
<td>WST.2.3.</td>
<td>Using Mental Maps: Mental maps are used to answer geographic questions about locations, characteristics, and patterns of places and regions</td>
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<tr>
<td>BENCHMARK</td>
<td>WST.2.3.A.</td>
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<td>EXPECTATION</td>
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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.

**EXPECTATION**

**PS.8.2.A.2.**

**National Geography Standards (NGS)**

**Social Studies**

**Grade 7 - Adopted: 2012**

**ESSENTIAL ELEMENT**

**NGS.WST.** The World in Spatial Terms

**STANDARD**

**WST.2.** How to use mental maps to organize information about people, places, and environments in a spatial context

**STRAND**

**WST.2.3.** Using Mental Maps: Mental maps are used to answer geographic questions about locations, characteristics, and patterns of places and regions

**BENCHMARK**

**WST.2.3.A.** Identify from memory and describe the locations, characteristics, and patterns of places and regions to answer geographic questions, as exemplified by being able to identify from memory the distribution, pattern, and characteristics of major world deserts and mountain ranges that can be barriers to travel or settlement.

**EXPECTATION**

**WST.2.3.A.3.**

**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.8.2.** 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.

**National Geography Standards (NGS)**

**Social Studies**

**Grade 8** - Adopted: 2012

**ESSENTIAL ELEMENT** NGS.WST. The World in Spatial Terms

**STANDARD** WST.2. How to use mental maps to organize information about people, places, and environments in a spatial context

**STRAND** WST.2.3. Using Mental Maps: Mental maps are used to answer geographic questions about locations, characteristics, and patterns of places and regions

**BENCHMARK** WST.2.3.A. Identify from memory and describe the locations, characteristics, and patterns of places and regions to answer geographic questions, as exemplified by being able to

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**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

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**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

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**National Geography Standards (NGS)**

**Social Studies**

**Grade 9** - Adopted: 2012
ESSENTIAL ELEMENT  NGS.PS.  Physical Systems
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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).
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).

Next Generation Science Standards (NGSS)

Science

Grade 5 - Adopted: 2013

STRAND  NGSS.5-ESS.  EARTH AND SPACE SCIENCE
TITLE   5-ESS2.  Earth’s Systems
PERFORMANCE 5-ESS2-2.  Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

STRAND  NGSS.5-ESS.  EARTH AND SPACE SCIENCE
TITLE   5-ESS3.  Earth and Human Activity
PERFORMANCE 5-ESS3-1.  Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.

Grade 6 - Adopted: 2013

STRAND  NGSS.MS-LS.  LIFE SCIENCE
TITLE   MS-LS2.  Ecosystems: Interactions, Energy, and Dynamics
PERFORMANCE MS-LS2-4.  Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
PERFORMANCE MS-LS2-5.  Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
STRAND  NGSS.MS-ESS.  EARTH AND SPACE SCIENCE
**MS-ESS2. Earth’s Systems**

Students who demonstrate understanding can:

**PERFORMANCE EXPECTATION 2.** Construct an explanation based on evidence for how geoscience processes have changed Earth’s surface at varying time and spatial scales.

**PERFORMANCE EXPECTATION 3.** Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

**MS-ESS3. Earth and Human Activity**

Students who demonstrate understanding can:

**PERFORMANCE EXPECTATION 1.** Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.

**Next Generation Science Standards (NGSS)**

**Science**

**Grade 7 - Adopted: 2013**

**LS. LIFE SCIENCE**

**MS-LS2. Ecosystems: Interactions, Energy, and Dynamics**

Students who demonstrate understanding can:

**PERFORMANCE EXPECTATION MS-LS2-4.** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

**PERFORMANCE EXPECTATION MS-LS2-5.** Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

**ESS. EARTH AND SPACE SCIENCE**

**MS-ESS2. Earth’s Systems**

Students who demonstrate understanding can:

**PERFORMANCE EXPECTATION 2.** Construct an explanation based on evidence for how geoscience processes have changed Earth’s surface at varying time and spatial scales.

**PERFORMANCE EXPECTATION 3.** Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

**MS-ESS3. Earth and Human Activity**

Students who demonstrate understanding can:

**PERFORMANCE EXPECTATION 1.** Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.
Grade 8 - Adopted: 2013

**STRAND**  
NGSS.MS-LS.  
**TITLE**  
MS-LS2. Ecosystems: Interactions, Energy, and Dynamics

Students who demonstrate understanding can:

**PERFORMANCE EXPECTATION**  
MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

**PERFORMANCE EXPECTATION**  
MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

**STRAND**  
NGSS.MS-ESS.  
**TITLE**  
MS-ESS2. Earth’s Systems

Students who demonstrate understanding can:

**PERFORMANCE EXPECTATION**  
MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth’s surface at varying time and spatial scales.

**PERFORMANCE EXPECTATION**  
MS-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

**STRAND**  
NGSS.MS-ESS.  
**TITLE**  
MS-ESS3. Earth and Human Activity

Students who demonstrate understanding can:

**PERFORMANCE EXPECTATION**  
MS-ESS3-1. Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.

Next Generation Science Standards (NGSS)

Science

Grade 9 - Adopted: 2013

**STRAND**  
NGSS.HS-LS.  
**TITLE**  
HS-LS1. From Molecules to Organisms: Structures and Processes

Students who demonstrate understanding can:

**PERFORMANCE EXPECTATION**  
HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

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

Students who demonstrate understanding can:

**PERFORMANCE EXPECTATION**  
HS-LS2-2. 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-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

**STRAND**  
NGSS.HS-LS.  
**TITLE**  
LIFE SCIENCE
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<th>STRAND</th>
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<tbody>
<tr>
<td>HS-LS4.</td>
<td>HS-LS4-6.</td>
<td>EARTH AND SPACE SCIENCE</td>
<td></td>
<td>Biological Evolution: Unity and Diversity</td>
</tr>
<tr>
<td>Students who demonstrate understanding can:</td>
<td>Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>HS-ESS1.</td>
<td>HS-ESS1-5.</td>
<td>EARTH AND SPACE SCIENCE</td>
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<td>Earth’s Place in the Universe</td>
</tr>
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<td>Students who demonstrate understanding can:</td>
<td>Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.</td>
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<td>HS-ESS2.</td>
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<tr>
<td>Students who demonstrate understanding can:</td>
<td>Develop a model to illustrate how Earth’s internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.</td>
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<tr>
<td>HS-ESS2-2.</td>
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<td></td>
<td>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.</td>
</tr>
<tr>
<td>HS-ESS3.</td>
<td>HS-ESS3-2.</td>
<td>EARTH AND SPACE SCIENCE</td>
<td></td>
<td>Earth and Human Activity</td>
</tr>
<tr>
<td>Students who demonstrate understanding can:</td>
<td>Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.</td>
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<tr>
<td>HS-ESS3-3.</td>
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<td>Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.</td>
</tr>
<tr>
<td>HS-ESS3-6.</td>
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<td></td>
<td>Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.</td>
</tr>
</tbody>
</table>

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