

# GLOBE Protocols Correlated to Virginia Science Standards of Learning 2010 Table of Contents

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(Updated February 2013)

**Direct:** Standard Addressed within the Basic Components of the Protocol **Indirect:** Standard Addressed through Further Investigations Incorporating a Systems Based Approach

### Kindergarten

Atmosphere GLOBE Protocols	Standards
Cloud Cover and Contrail Cover Protocol	K.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	K.2 The student will investigate and understand that humans have senses that allow them to seek, find, take in, and react or respond to information in order to learn about their surroundings. (Indirect)
	K.4 The student will investigate and understand that the position, motion, and physical properties of an object can be described.  (Indirect)
	K.8 The student will investigate and understand that shadows occur when light is blocked by an object. (Indirect)
	K.9 The student will investigate and understand that there are simple repeating patterns in his/her daily life. (Direct)
Precipitation Protocol	K.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	K.2 The student will investigate and understand that humans have senses that allow them to seek, find, take in, and react or respond to information in order to learn about their surroundings. (Indirect)
	K.4 The student will investigate and understand that the position, motion, and physical properties of an object can be described. (Indirect)
	K.5 The student will investigate and understand that water flows and has properties that can be observed and tested. (Direct)
	K.9 The student will investigate and understand that there are simple repeating patterns in his/her daily life. <b>(Direct)</b>
Current Temperature Protocol	K.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)

	K.2 The student will investigate and understand
	that humans have senses that allow them to
	seek, find, take in, and react or respond to
	information in order to learn about their
	surroundings. (Indirect)
	K.9 The student will investigate and understand
	that there are simple repeating patterns in
	his/her daily life. (Direct)
	K.10 The student will investigate and understand
	that change occurs over time and rates may be
Hardwale and CLODE Bureto and	fast or slow. (Indirect) Standards
Hydrology GLOBE Protocols	Standards
Water Temperature Protocol	K.1 The student will demonstrate an
•	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	K.2 The student will investigate and understand
	that humans have senses that allow them to
	seek, find, take in, and react or respond to
	information in order to learn about their
	surroundings. (Indirect)
	K.5 The student will investigate and understand
	that water flows and has properties that can be
	observed and tested. (Direct)
	K.9 The student will investigate and understand
	that there are simple repeating patterns in
	his/her daily life. (Indirect)
	K.10 The student will investigate and understand
	that change occurs over time and rates may be
	that change occurs over time and rates may be fast or slow. (Indirect)
Earth as a System GLOBE Protocols	that change occurs over time and rates may be fast or slow. (Indirect)  Standards
	fast or slow. (Indirect) Standards
Earth as a System GLOBE Protocols  Budburst Protocol	fast or slow. (Indirect) Standards  K.1 The student will demonstrate an
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	fast or slow. (Indirect)  Standards  K.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
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Ruby-throated Hummingbird Protocol	K.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	K.2 The student will investigate and understand that humans have senses that allow them to seek, find, take in, and react or respond to information in order to learn about their surroundings. (Indirect)
	K.6 The student will investigate and understand the differences between living and nonliving objects. (Indirect)
	K.7 The student will investigate and understand the basic needs and life processes of plants and animals. (Indirect)
	K.9 The student will investigate and understand that there are simple repeating patterns in his/her daily life. (Direct)

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### **Grade One**

Atmosphere GLOBE Protocols	Standards
Cloud Cover and Contrail Cover Protocol	1.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	1.7 The student will investigate and understand weather and seasonal changes. (Direct)
Precipitation Protocol	1.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	1.7 The student will investigate and understand weather and seasonal changes. (Direct)
Current Temperature Protocol	1.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	1.5 The student will investigate and understand that animals, including humans, have basic needs and certain distinguishing characteristics. (Indirect)
	1.6 The student will investigate and understand the basic relationships between the sun and Earth. (Indirect)
	1.7 The student will investigate and understand weather and seasonal changes. (Direct)
Hydrology GLOBE Protocols	Standards
Water Temperature Protocol	1.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	1.5 The student will investigate and understand that animals, including humans, have basic needs and certain distinguishing characteristics. (Indirect)
	1.6 The student will investigate and understand the basic relationships between the sun and Earth. (Indirect)

	1.8 The student will investigate and understand that natural resources are limited. (Indirect)
Earth as a System GLOBE Protocols	Standards
Budburst Protocol	1.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	1.4 The student will investigate and understand that plants have basic life needs and functional parts and can be classified according to certain characteristics. (Direct)
	1.7 The student will investigate and understand weather and seasonal changes. (Direct)
Ruby-throated Hummingbird Protocol	1.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	1.5 The student will investigate and understand that animals, including humans, have basic needs and certain distinguishing characteristics. (Direct)
	1.7 The student will investigate and understand weather and seasonal changes. (Direct)

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### **Grade Two**

Atmosphere GLOBE Protocols	Standards
Cloud Cover and Contrail Cover Protocol	2.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	2.6 The student will investigate and understand basic types, changes, and patterns of weather. (Direct)
Precipitation Protocol	2.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	2.3 The student will investigate and understand basic properties of solids, liquids, and gases. (Indirect)
	2.6 The student will investigate and understand basic types, changes, and patterns of weather. (Direct)
	2.7 The student will investigate and understand that weather and seasonal changes affect plants, animals and their surroundings. (Indirect)
Digital Mulit-Day Max/Min and Current Air and Soil Temperature Protocol	2.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	2.5 The student will investigate and understand that living things are part of a system. (Indirect)
	2.6 The student will investigate and understand basic types, changes, and patterns of weather. (Direct)
	2.7 The student will investigate and understand that weather and seasonal changes affect plants, animals and their surroundings. <b>(Indirect)</b>
Digital Max/Min Current Air and Soil Temperature Protocol	2.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	2.5 The student will investigate and understand that living things are part of a system. (Indirect)
	2.6 The student will investigate and understand basic types, changes, and patterns of weather. ( <b>Direct</b> )

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	2.7 The student will investigate and understand that
	weather and seasonal changes affect plants, animals and
	their surroundings. (Indirect)
Current Temperature Protocol	2.1 The student will demonstrate an understanding of
	scientific reasoning, logic, and the nature of science by
	planning and conducting investigations. (Direct)
	2.5 The student will investigate and understand that
	living things are part of a system. (Indirect)
	2.6 The student will investigate and understand basic
	types, changes, and patterns of weather. (Direct)
	2.7 The student will investigate and understand that
	weather and seasonal changes affect plants, animals and
	their surroundings. (Indirect)
Barometric Pressure Protocol	2.1 The student will demonstrate an understanding of
But officer to resource 1 rotocor	scientific reasoning, logic, and the nature of science by
	planning and conducting investigations. ( <b>Direct</b> )
Hydrology CLODE Drotogolo	Standards
Hydrology GLOBE Protocols	Standards
Water Temperature Protocol	2.1 The student will demonstrate an understanding of
	scientific reasoning, logic, and the nature of science by
	planning and conducting investigations. (Direct)
	2.5 The student will investigate and understand that
	living things are part of a system. (Indirect)
	2.6 The student will investigate and understand basic
	types, changes, and patterns of weather. <b>(Indirect)</b>
	2.7 The student will investigate and understand that
	weather and seasonal changes affect plants, animals and
	their surroundings. (Indirect)
Earth as a System GLOBE Protocols	Standards
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Budburst Protocol	2.1 The student will demonstrate an understanding of
	scientific reasoning, logic, and the nature of science by
	planning and conducting investigations. (Direct)
	2.4 The student will investigate and understand that
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	2.4 The student will investigate and understand that plants and animals undergo a series of orderly changes
	2.4 The student will investigate and understand that plants and animals undergo a series of orderly changes as they mature and grow. (Direct)
	<ul> <li>2.4 The student will investigate and understand that plants and animals undergo a series of orderly changes as they mature and grow. (Direct)</li> <li>2.5 The student will investigate and understand that</li> </ul>
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Ruby-throated Hummingbird Protocol	<ul> <li>2.4 The student will investigate and understand that plants and animals undergo a series of orderly changes as they mature and grow. (Direct)</li> <li>2.5 The student will investigate and understand that living things are part of a system. (Indirect)</li> <li>2.6 The student will investigate and understand basic types, changes, and patterns of weather. (Indirect)</li> <li>2.7 The student will investigate and understand that weather and seasonal changes affect plants, animals and their surroundings. (Direct)</li> <li>2.1 The student will demonstrate an understanding of</li> </ul>
Ruby-throated Hummingbird Protocol	<ul> <li>2.4 The student will investigate and understand that plants and animals undergo a series of orderly changes as they mature and grow. (Direct)</li> <li>2.5 The student will investigate and understand that living things are part of a system. (Indirect)</li> <li>2.6 The student will investigate and understand basic types, changes, and patterns of weather. (Indirect)</li> <li>2.7 The student will investigate and understand that weather and seasonal changes affect plants, animals and their surroundings. (Direct)</li> <li>2.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by</li> </ul>
Ruby-throated Hummingbird Protocol	<ul> <li>2.4 The student will investigate and understand that plants and animals undergo a series of orderly changes as they mature and grow. (Direct)</li> <li>2.5 The student will investigate and understand that living things are part of a system. (Indirect)</li> <li>2.6 The student will investigate and understand basic types, changes, and patterns of weather. (Indirect)</li> <li>2.7 The student will investigate and understand that weather and seasonal changes affect plants, animals and their surroundings. (Direct)</li> <li>2.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)</li> </ul>
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### **Grade Three**

Atmosphere GLOBE Protocols	Standards
Cloud Cover and Contrail Cover Protocol	3.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  3.8 The student will investigate and understand basic patterns and cycles in nature.
Precipitation Protocol	3.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	3.8 The student will investigate and understand basic patterns and cycles in nature. (Indirect)
	3.9 The student will investigate and understand the water cycle and its relationship to life on Earth. (Indirect)
	3.10 The student will investigate and understand that natural events and human influences can affect the survival of species. (Indirect)
Digital Multi-Day Max/Min and Current Air and Soil Temperature Protocol	3.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	3.7 The student will investigate and understand the major components of soil, its origin, and its importance to plants and animals including humans. (Indirect)
	3.8 The student will investigate and understand basic patterns and cycles in nature. (Indirect) 3.11 The student will investigate and understand different sources of energy. (Indirect)
Digital Max/Min and Current Air and Soil Temperature Protocol	3.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	3.7 The student will investigate and understand the major components of soil, its origin, and its importance to plants and animals including humans. (Indirect)
	3.8 The student will investigate and understand basic patterns and cycles in nature. (Indirect)

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	3.11 The student will investigate and understand
	different sources of energy. (Indirect)
Current Temperature Protocol	3.1 The student will demonstrate an
•	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	3.8 The student will investigate and understand
	basic patterns and cycles in nature. (Indirect)
Barometric Pressure Protocol	3.1 The student will demonstrate an
barometric i ressure i rotocor	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Indirect)
	3.8 The student will investigate and understand
w l l graph . l	basic patterns and cycles in nature. (Indirect)
Hydrology GLOBE Protocols	Standards
Water Transparency Protocol: Secchi Disk and	3.1 The student will demonstrate an
Transparency Tube	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	3.6 The student will investigate and understand
	that ecosystems support a diversity of plants and
	animals that share limited resources. (Indirect)
	3.8 The student will investigate and understand
	basic patterns and cycles in nature. (Indirect)
	3.9 The student will investigate and understand
	the water cycle and its relationship to life on
	Earth. (Indirect)
	3.10 The student will investigate and understand
	that natural events and human influences can
	affect the survival of species. (Indirect)
Water Temperature Protocol	3.1 The student will demonstrate an
water remperature riotocor	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	3.6 The student will investigate and understand
	that ecosystems support a diversity of plants and
	animals that share limited resources. (Indirect)
	3.8 The student will investigate and understand
	basic patterns and cycles in nature. (Indirect)
	3.9 The student will investigate and understand
	the water cycle and its relationship to life on
	Earth. (Indirect)
	3.10 The student will investigate and understand
	that natural events and human influences can
	affect the survival of species. (Indirect)
Soil GLOBE Protocols	Standards
Soil Characterization Protocol	3.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	3.3 The student will investigate and understand
	that objects are made of materials that can be
	that objects are made of materials that can be described by their physical properties.
	that objects are made of materials that can be described by their physical properties.  (Indirect)

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	3.7 The student will investigate and understand the major components of soil, its origin, and its importance to plants and animals including humans. (Indirect)
Soil Temperature Protocol	3.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	3.3 The student will investigate and understand that objects are made of materials that can be described by their physical properties.  (Indirect)
	3.7 The student will investigate and understand the major components of soil, its origin, and its importance to plants and animals including humans. (Indirect)
Earth as a System GLOBE Protocols	Standards
Budburst Protocol	3.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	3.6 The student will investigate and understand that ecosystems support a diversity of plants and animals that share limited resources. (Indirect)  3.8 The student will investigate and understand
Ruby-throated Hummingbird Protocol	basic patterns and cycles in nature. (Indirect)  3.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	3.4 The student will investigate and understand that adaptations allow animals to satisfy life needs and respond to their environment.  (Direct)
	3.6 The student will investigate and understand that ecosystems support a diversity of plants and animals that share limited resources. <b>(Indirect)</b>
	3.8 The student will investigate and understand basic patterns and cycles in nature. (Indirect)
	3.10 The student will investigate and understand that natural events and human influences can affect the survival of species. (Indirect)

**Direct:** Standard Addressed within the Basic Components of the Protocol **Indirect:** Standard Addressed through Further Investigations Incorporating a Systems Based Approach

### **Grade Four**

Atmosphere GLOBE Investigations	Standards
Cloud Cover and Contrail Cover Protocol	4.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	4.6 The student will investigate and understand
	how weather conditions and phenomena occur
	and can be predicted. (Indirect)
Relative Humidity Protocol	4.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	4.6 The student will investigate and understand
	how weather conditions and phenomena occur
	and can be predicted. (Indirect)
Precipitation Protocol	4.1 The student will demonstrate an
1 recipitation 1 rotocol	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	4.6 The student will investigate and understand
	how weather conditions and phenomena occur
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Distribution of Marchines of Comment Aircond	and can be predicted. (Indirect) 4.1 The student will demonstrate an
Digital Multi-Day Max/Min and Current Air and	
Soil Temperature Protocol	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	4.6 The student will investigate and understand
	how weather conditions and phenomena occur
	and can be predicted. (Indirect)
Digital Max/Min and Current Air and Soil	4.1 The student will demonstrate an
Temperature Protocol	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	4.6 The student will investigate and understand
	how weather conditions and phenomena occur
	and can be predicted. (Indirect)
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Current Temperature Protocol	4.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	4.6 The student will investigate and understand
	how weather conditions and phenomena occur
	and can be predicted. (Indirect)
	and can be predicted. (munet)

Surface Temperature Protocol  4.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  4.6 The student will investigate and understand how weather conditions and phenomena occur and can be predicted. (Indirect)  4.8 The student will investigate and understand the relationship among Earth, the moon, and the sun. (Indirect)  4.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  4.6 The student will investigate and understand how weather conditions and phenomena occur and can be predicted. (Indirect)  4.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  4.6 The student will investigate and understand how weather conditions and phenomena occur and can be predicted. (Indirect)  4.6 The student will investigate and understand how weather conditions and phenomena occur and can be predicted. (Indirect)  4.6 The student will investigate and understand how weather conditions and phenomena occur and can be predicted. (Indirect)  4.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  4.5 The student will investigate and understand how plants and animals, including humans, in an ecosystem interact with one another and with the nonliving components of the ecosystem. (Indirect)  4.5 The student will investigate and understand important Virginia natural resources. (Indirect)  4.5 The student will investigate and understand important Virginia natural resources. (Indirect)  4.5 The student will investigate and understand important Virginia natural resources. (Indirect)  4.7 The student will investigate and understand important Virginia natural resources. (Indirect)  4.7 The student will investigate and understan		14
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	4.9 The student will investigate and understand important Virginia natural resources. (Indirect)
Salinity Protocol	4.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	4.5 The student will investigate and understand how plants and animals, including humans, in an ecosystem interact with one another and with the nonliving components of the ecosystem.  (Indirect)
	4.9 The student will investigate and understand important Virginia natural resources. (Indirect)
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	4.5 The student will investigate and understand how plants and animals, including humans, in an ecosystem interact with one another and with the nonliving components of the ecosystem.  (Indirect)
	4.9 The student will investigate and understand important Virginia natural resources. (Indirect)
Soil GLOBE Investigations	Standards
Soil Characterization Protocol	4.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	4.9 The student will investigate and understand important Virginia natural resources. (Indirect)
Soil Temperature Protocol	<ul> <li>4.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)</li> <li>4.9 The student will investigate and understand</li> </ul>
Earth as a System GLOBE Investigations	important Virginia natural resources. (Indirect) Standards
Budburst Protocol	4.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	4.4 The student will investigate and understand basic plant anatomy and life processes. (Direct)
	4.6 The student will investigate and understand how weather conditions and phenomena occur and can be predicted. (Indirect)

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Green-up Protocol	4.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	4.4 The student will investigate and understand
	basic plant anatomy and life processes. (Direct)
	4.6 The student will investigate and understand
	how weather conditions and phenomena occur
	and can be predicted. (Indirect)
Green-down Protocol	4.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	4.4 The student will investigate and understand
	basic plant anatomy and life processes. (Direct)
	4.6 The student will investigate and understand
	how weather conditions and phenomena occur
	and can be predicted. (Indirect)
Ruby-throated Hummingbird Protocol	4.1 The student will demonstrate an
-	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	4.5 The student will investigate and understand
	how plants and animals, including humans, in an
	ecosystem interact with one another and with
	the nonliving components in the ecosystem.
	(Indirect)
	4.6 The student will investigate and understand
	how weather conditions and phenomena occur
	and can be predicted. (Indirect)
Clonal and Common Lilac Protocol	4.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	4.4 The student will investigate and understand
	basic plant anatomy and life processes. ( <b>Direct</b> )
	4.5 The student will investigate and understand
	how plants and animals, including humans, in an
	ecosystem interact with one another and with
	the nonliving components in the ecosystem.
	(Indirect)
Phenological Gardens Protocol	4.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	4.4 The student will investigate and understand
	basic plant anatomy and life processes. ( <b>Direct</b> )
	4.5 The student will investigate and understand
	how plants and animals, including humans, in an
	ecosystem interact with one another and with
	the nonliving components in the ecosystem.
	(Indirect)

**Direct:** Standard Addressed within the Basic Components of the Protocol **Indirect:** Standard Addressed through Further Investigations Incorporating a Systems Based Approach

### **Grade Five**

Atmosphere GLOBE Investigations	Standards
Cloud Cover and Contrail Cover Protocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	5.3 The student will investigate and understand basic characteristics of visible light and how it behaves. (Indirect)
Relative Humidity Protocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Precipitation Protocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	5.4 The student will investigate and understand that matter is anything that has mass and takes up space; and occurs as a solid, liquid, or gas. (Indirect)
Digital Mulit-Day Max/Min and Current Air and Soil Temperature Protocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Digital Max/Min and Current Air and Soil Temperature Protocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Current Temperature Protocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Surface Temperature Protocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Surface Ozone Protocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	5.4 The student will investigate and understand that matter is anything that has mass and takes up space; and occurs as a solid, liquid, or gas. (Indirect)

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Barometric Pressure Protocol	5.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
AMICIAL II D. D. I	investigations. (Direct)
AWS Weather Bug Protocol	5.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
Hydrology GLOBE Investigations	investigations. (Direct) Standards
Hydrology GLODE investigations	Standards
Water Transparency Protocol: Secchi Disk and	5.1 The student will demonstrate an
Transparency Tube	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	5.3 The student will investigate and understand
	basic characteristics of visible light and how it
	behaves. (Indirect)
	5.4 The student will investigate and understand
	that matter is anything that has mass and takes
	up space; and occurs as a solid, liquid, or gas.
TV	(Indirect)
Water Temperature Protocol	5.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
Electrical Conductivity Protocol	investigations. (Direct) 5.1 The student will demonstrate an
Electrical Colluctivity Frotocol	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
Salinity Protocol	5.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	5.6 The student will investigate and understand
	characteristics of the ocean environment.
W.D	(Indirect)
pH Protocol	5.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting investigations. (Direct)
Alkalinity Protocol	5.1 The student will demonstrate an
mailiney i rococor	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
Nitrate Protocol	5.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
Soil GLOBE Investigations	Standards
Soil Characterization Protocol	5.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	5.7 The student will investigate and understand
	how Earth's surface is constantly changing.
	(Indirect)

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Soil Temperature Protocol	5.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
Gravimetric Soil Moisture Protocol	5.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	5.7 The student will investigate and understand
	how Earth's surface is constantly changing.
	(Indirect)
Soil pH Protocol	5.1 The student will demonstrate an
•	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	5.7 The student will investigate and understand
	how Earth's surface is constantly changing.
	(Indirect)
GPS GLOBE Investigations	Standards
GPS Measurement Protocol	5.1 The student will demonstrate an
di 5 Measurement i rotocor	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
Farth as a System CLODE Investigations	Standards
Earth as a System GLOBE Investigations Budburst Protocol	5.1 The student will demonstrate an
Budburst Protocor	
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	5.5 The student will investigate and understand
	that organisms are made of one or more cells and
	have distinguishing characteristics that play a
	vital role in the organism's ability to survive and
	thrive in its environment. (Indirect)
Green-up Protocol	5.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	5.5 The student will investigate and understand
	that organisms are made of one or more cells and
	have distinguishing characteristics that play a
	vital role in the organism's ability to survive and
	thrive in its environment. (Indirect)
Croon down Protocol	
Green-down Protocol	5.1 The student will demonstrate an
Green-down Frotocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and
Green-down Frodocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting
Green-down Frodocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
GIEEH-GOWH FIOLOCOI	<ul> <li>5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)</li> <li>5.5 The student will investigate and understand</li> </ul>
Green-down Frotocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  5.5 The student will investigate and understand that organisms are made of one or more cells and
Green-down Frotocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  5.5 The student will investigate and understand that organisms are made of one or more cells and have distinguishing characteristics that play a
Green-down Frotocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  5.5 The student will investigate and understand that organisms are made of one or more cells and
Green-down Frotocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  5.5 The student will investigate and understand that organisms are made of one or more cells and have distinguishing characteristics that play a
Ruby-throated Hummingbird Protocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  5.5 The student will investigate and understand that organisms are made of one or more cells and have distinguishing characteristics that play a vital role in the organism's ability to survive and
	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  5.5 The student will investigate and understand that organisms are made of one or more cells and have distinguishing characteristics that play a vital role in the organism's ability to survive and thrive in its environment. (Indirect)
	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  5.5 The student will investigate and understand that organisms are made of one or more cells and have distinguishing characteristics that play a vital role in the organism's ability to survive and thrive in its environment. (Indirect)  5.1 The student will demonstrate an
	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  5.5 The student will investigate and understand that organisms are made of one or more cells and have distinguishing characteristics that play a vital role in the organism's ability to survive and thrive in its environment. (Indirect)  5.1 The student will demonstrate an understanding of scientific reasoning, logic, and
	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  5.5 The student will investigate and understand that organisms are made of one or more cells and have distinguishing characteristics that play a vital role in the organism's ability to survive and thrive in its environment. (Indirect)  5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting

	5.5 The student will investigate and understand that organisms are made of one or more cells and have distinguishing characteristics that play a vital role in the organism's ability to survive and thrive in its environment. (Indirect)
Clonal and Common Lilac Protocol	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	5.5 The student will investigate and understand that organisms are made of one or more cells and have distinguishing characteristics that play a vital role in the organism's ability to survive and thrive in its environment. (Indirect)
Phenological Gardens Protocols	5.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	5.5 The student will investigate and understand that organisms are made of one or more cells and have distinguishing characteristics that play a vital role in the organism's ability to survive and thrive in its environment. (Indirect)

**Direct:** Standard Addressed within the Basic Components of the Protocol **Indirect:** Standard Addressed through Further Investigations Incorporating a Systems Based Approach

### **Grade Six**

Atmosphere GLOBE Investigations	Standards
Cloud Cover and Contrail Cover Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  6.3 The student will investigate and understand
	the role of solar energy in driving most natural processes within the atmosphere, the hydrosphere, and on Earth's surface. (Indirect)
	6.6 The student will investigate and understand the properties of air and the structure and dynamics of Earth's atmosphere. <b>Indirect)</b>
Aerosols Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	6.3 The student will investigate and understand the role of solar energy in driving most natural processes within the atmosphere, the hydrosphere, and on Earth's surface. (Indirect)
	6.4 The student will investigate and understand that all matter is made up of atoms. ( <b>Indirect</b> )
	6.6 The student will investigate and understand the properties of air and the structure and dynamics of Earth's atmosphere. (Indirect)
	6.9 The student will investigate and understand public policy decisions relating to the environment. (Indirect)
Water Vapor Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	6.2 The student will investigate and understand basic sources of energy, their origins, transformations, and uses. (Indirect)
	6.3 The student will investigate and understand the role of solar energy in driving most natural processes within the atmosphere, the hydrosphere, and on Earth's surface. (Indirect)
	6.5 The student will investigate and understand the unique properties and characteristics of water and its role in the natural and humanmade environment. (Indirect)

	6.6 The student will investigate and understand
	the properties of air and the structure and
	dynamics of Earth's atmosphere. (Indirect)
Relative Humidity	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.2 The student will investigate and understand
	basic sources of energy, their origins,
	transformations, and uses. (Indirect)
	6.3 The student will investigate and understand
	the role of solar energy in driving most natural
	processes within the atmosphere, the
	hydrosphere, and on Earth's surface. (Indirect)
	6.5 The student will investigate and understand
	the unique properties and characteristics of
	water and its role in the natural and human-
	made environment. (Indirect)
	6.6 The student will investigate and understand
	the properties of air and the structure and
	dynamics of Earth's atmosphere. (Indirect)
Precipitation Protocol	6.1 The student will demonstrate an
-	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.3 The student will investigate and understand
	the role of solar energy in driving most natural
	processes within the atmosphere, the
	hydrosphere, and on Earth's surface. (Indirect)
	6.5 The student will investigate and understand
	the unique properties and characteristics of
	water and its role in the natural and human-
	made environment. (Direct)
	6.6 The student will investigate and understand
	the properties of air and the structure and
	dynamics of Earth's atmosphere. (Indirect)
Digital Multi-Day Max/Min and Current Air and	6.1 The student will demonstrate an
Soil Temperature Protocol	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.2 The student will investigate and understand
	basic sources of energy, their origins,
	transformations, and uses. (Indirect)
	6.3 The student will investigate and understand
	the role of solar energy in driving most natural
	processes within the atmosphere, the
	hydrosphere, and on Earth's surface. (Indirect)
	6.6 The student will investigate and understand
	the properties of air and the structure and
	dynamics of Earth's atmosphere. (Indirect)
	(4 m)
Digital Max/Min and Current Air and Soil	6.1 The student will demonstrate an
Temperature	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)

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	6.2 The student will investigate and understand
	basic sources of energy, their origins,
	transformations, and uses. (Indirect)
	6.3 The student will investigate and understand
	the role of solar energy in driving most natural
	processes within the atmosphere, the
	hydrosphere, and on Earth's surface.(Indirect)
	6.6 The student will investigate and understand
	the properties of air and the structure and
	dynamics of Earth's atmosphere. (Indirect)
Current Temperature Protocol	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.3 The student will investigate and understand
	the role of solar energy in driving most natural
	processes within the atmosphere, the
	hydrosphere, and on Earth's surface. (Indirect)
	6.6 The student will investigate and understand
	the properties of air and the structure and
	dynamics of Earth's atmosphere. (Indirect)
Surface Temperature Protocol	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.3 The student will investigate and understand
	the role of solar energy in driving most natural
	processes within the atmosphere, the
Surface Ozone Protocol	hydrosphere, and on Earth's surface. (Indirect) 6.1 The student will demonstrate an
Surface Ozoffe Protocol	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. ( <b>Direct</b> )
	6.4 The student will investigate and understand
	that all matter is made up of atoms. ( <b>Indirect</b> )
	6.6 The student will investigate and understand
	the properties of air and the structure and
	dynamics of Earth's atmosphere. ( <b>Indirect</b> )
	6.9 The student will investigate and understand
	public policy decisions relating to the
	environment. ( <b>Indirect</b> )
Barometric Pressure Protocol	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.3 The student will investigate and understand
	the role of solar energy in driving most natural
	processes within the atmosphere, the
	hydrosphere, and on Earth's surface. (Indirect)
	6.6 The student will investigate and understand
	the properties of air and the structure and
	dynamics of Earth's atmosphere. (Indirect)

AWS WeatherBug	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.2 The student will investigate and understand
	basic sources of energy, their origins,
	transformations, and uses. (Indirect)
	6.3 The student will investigate and understand
	the role of solar energy in driving most natural
	processes within the atmosphere, the
	hydrosphere, and on Earth's surface. (Indirect)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. (Indirect)
	6.5 The student will investigate and understand
	the unique properties and characteristics of
	water and its role in the natural and human-
	made environment. (Indirect)
	6.6 The student will investigate and understand
	the properties of air and the structure and
	dynamics of Earth's atmosphere. (Indirect)
Davis, Weatherhawk, Rainwise Weather Station,	6.1 The student will demonstrate an
and Automated Soil and Air Temperature	understanding of scientific reasoning, logic, and
Monitoring Protocols	the nature of science by planning and conducting
	investigations. (Direct)
	6.2 The student will investigate and understand
	basic sources of energy, their origins,
	transformations, and uses. (Indirect)
	6.3 The student will investigate and understand
	the role of solar energy in driving most natural
	processes within the atmosphere, the
	hydrosphere, and on Earth's surface. (Indirect)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. (Indirect)
	6.5 The student will investigate and understand
	the unique properties and characteristics of
	water and its role in the natural and human-
	made environment. (Indirect)
	6.6 The student will investigate and understand
	the properties of air and the structure and
	dynamics of Earth's atmosphere. (Indirect)
Hydrology GLOBE Investigations	Standards
	6.1 The student will demonstrate an
Water Transparency Protocol: Secchi Disk ad	understanding of scientific reasoning, logic, and
Transparency Tube	
	the nature of science by planning and conducting
	investigations. (Direct)
	6.5 The student will investigate and understand
	the unique properties and characteristics of
	water and its role in the natural and human-
	made environment. (Indirect)
	6.7 The student will investigate and understand
	the natural processes and human interactions
TAY I M	that affect watershed systems. (Indirect)
Water Temperature Protocol	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)

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	6.5 The student will investigate and understand
	the unique properties and characteristics of
	water and its role in the natural and human-
	made environment. (Indirect)
	6.7 The student will investigate and understand
	the natural processes and human interactions
	that affect watershed systems. (Indirect)
Dissolved Oxygen Protocol	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. (Indirect)
	6.5 The student will investigate and understand
	the unique properties and characteristics of
	water and its role in the natural and human-
	made environment. (Indirect)
	6.7 The student will investigate and understand
	the natural processes and human interactions
	that affect watershed systems. (Indirect)
Electrical Conductivity Protocol	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. (Indirect)
	6.5 The student will investigate and understand
	the unique properties and characteristics of
	water and its role in the natural and human-
	made environment. (Indirect)
	6.7 The student will investigate and understand
	the natural processes and human interactions
	that affect watershed systems. (Indirect)
Salinity Protocol	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. <b>(Indirect)</b>
	6.5 The student will investigate and understand
	S S
	the unique properties and characteristics of
	water and its role in the natural and human-
	made environment. (Indirect)
	6.7 The student will investigate and understand
	the natural processes and human interactions
	that affect watershed systems. (Indirect)
pH Protocol	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. (Indirect)
	6.5 The student will investigate and understand
	the unique properties and characteristics of
	water and its role in the natural and human-
	made environment. (Indirect)
	made environment. (man ett)

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	6.7 The student will investigate and understand
	the natural processes and human interactions
	that affect watershed systems. (Indirect)
Alkalinity Protocol	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. (Indirect)
	6.5 The student will investigate and understand
	the unique properties and characteristics of
	water and its role in the natural and human-
	made environment. (Indirect)
	6.7 The student will investigate and understand
	the natural processes and human interactions
	that affect watershed systems. (Indirect)
Nitrate Protocol	6.1 The student will demonstrate an
Nitiate Frotocoi	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. (Indirect)
	6.5 The student will investigate and understand
	the unique properties and characteristics of
	water and its role in the natural and human-
	made environment. (Indirect)
	6.7 The student will investigate and understand
	the natural processes and human interactions
	that affect watershed systems. (Indirect)
Soil GLOBE Investigations	that affect watershed systems. (Indirect) Standards
-	Standards
Soil GLOBE Investigations  Soil Characterization Protocol	Standards  6.1 The student will demonstrate an
	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and
	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting
	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  6.4 The student will investigate and understand
	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
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Soil Characterization Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect)  6.1 The student will demonstrate an
Soil Characterization Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Soil Characterization Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Soil Characterization Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand
Soil Characterization Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Soil Characterization Protocol  Soil Temperature Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an
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Soil Characterization Protocol  Soil Temperature Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and
Soil Characterization Protocol  Soil Temperature Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting
Soil Characterization Protocol  Soil Temperature Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect)  6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect)  6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Soil Characterization Protocol  Soil Temperature Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect)
Soil Characterization Protocol  Soil Temperature Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.5 The student will investigate and understand
Soil Characterization Protocol  Soil Temperature Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.5 The student will investigate and understand that all matter is made up of atoms. (Indirect)
Soil Characterization Protocol  Soil Temperature Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.5 The student will investigate and understand that all matter is made up of atoms. (Indirect)
Soil Characterization Protocol  Soil Temperature Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct) 6.4 The student will investigate and understand that all matter is made up of atoms. (Indirect) 6.5 The student will investigate and understand that all matter is made up of atoms. (Indirect)

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Bulk Density Protocol	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. (Indirect)
Soil Particle Density	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. (Indirect)
Particle Size Distribution Protocol	6.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. (Indirect)
Soil pH Protocol	6.1 The student will demonstrate an
•	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. (Indirect)
Soil Fertility Protocol	6.1 The student will demonstrate an
•	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. (Indirect)
Davis Soil Moisture and Temperature Station	6.1 The student will demonstrate an
Protocol	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	6.4 The student will investigate and understand
	that all matter is made up of atoms. (Indirect)
	6.5 The student will investigate and understand
	the unique properties and characteristics of
	water and its roles in the natural and human-
	made environment. (Indirect)
Land Cover/Biology GLOBE Investigations	Standards
Land Cover/ Biology allow Investigations	Stantarus
Land Cover Sample Site Protocol	6.1 The student will demonstrate an
F F	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
Biometry Protocol	6.1 The student will demonstrate an
2.0	understanding of scientific reasoning, logic and
	and to the state of the state o
	the nature of science by planning and conducting
	the nature of science by planning and conducting investigations. <b>(Direct)</b>
Manual Land Cover Manning Protects	investigations. (Direct)
Manual Land Cover Mapping Protocol	investigations. (Direct)  6.1 The student will demonstrate an
Manual Land Cover Mapping Protocol	investigations. (Direct)  6.1 The student will demonstrate an understanding of scientific reasoning, logic and
Manual Land Cover Mapping Protocol	investigations. (Direct)  6.1 The student will demonstrate an

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Fire Fuel Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
	6.2 The student will investigate and understand basic sources of energy, their origins, transformations, and uses. (Indirect)
GPS GLOBE Investigations	Standards
GPS Measurement Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
Earth as a System GLOBE Investigations	Standards
Budburst Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
Green-Up Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
Green-down Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
Ruby-throated Hummingbird Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
Clonal and Common Lilac Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
Phenological Gardens Protocol	6.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)

**Direct:** Standard Addressed within the Basic Components of the Protocol **Indirect:** Standard Addressed through Further Investigations Incorporating a Systems Based Approach

### Biology

Atmosphere GLOBE Investigations	Standards
Cloud Cover and Contrail Cover Protocol	BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. ( <b>Direct</b> )
Aerosols Protocol	BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
Water Vapor Protocol	BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)  BIO.2 The student will investigate and understand the chemical and biochemical principles essential for life. (Indirect)
Relative Humidity Protocol	BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
Digital Mulit-Day Max/Min and Current Air and Soil Temperature Protocol	BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
Digital Max/Min and Current Air and Soil Temperature Protocol	BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
Current Temperature Protocol	BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
Surface Temperature Protocol	BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
Surface Ozone Protocol	BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
Barometric Pressure Protocol	BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)

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AWS WeatherBug	BIO.1 The student will demonstrate an
	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations.(Direct)
	BIO.2 The student will investigate and
	understand the chemical and biochemical
	principles essential for life. (Indirect)
Davis, Weatherhawk, Rainwise Weather Station,	BIO.1 The student will demonstrate an
and Automated Soil and Air Temperature	understanding of scientific reasoning, logic and
Monitoring Protocols	the nature of science by planning and conducting
Fromcoring Frococois	investigations. (Direct)
	BIO.2 The student will investigate and
	understand the chemical and biochemical
	principles essential for life. (Indirect)
Hydrology GLOBE Investigations	Standards
Water Transparency Protocol: Secchi Disk and	BIO.1 The student will demonstrate an
Transparency Tube	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.2 The student will investigate and
	understand the chemical and biochemical
	principles essential for life. (Indirect)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Water Temperature Protocol	BIO.1 The student will demonstrate an
······································	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.2 The student will investigate and
	understand the chemical and biochemical
	principles essential for life. (Indirect)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems. (Indirect)
Dissolved Oxygen Protocol	BIO.1 The student will demonstrate an
Dissolved Oxygen Flotocol	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.2 The student will investigate and
	understand the chemical and biochemical
	principles essential for life. (Indirect)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Electrical Conductivity Protocol	BIO.1 The student will demonstrate an
	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.2 The student will investigate and
	understand the chemical and biochemical
	principles essential for life. (Indirect)

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	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems. (Indirect)
Salinity Protocol	BIO.1 The student will demonstrate an
	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.2 The student will investigate and
	understand the chemical and biochemical
	principles essential for life. (Indirect)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
pH Protocol	BIO.1 The student will demonstrate an
pii i iotocoi	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.2 The student will investigate and understand the chemical and biochemical
	principles essential for life. (Indirect)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Alkalinity Protocol	BIO.1 The student will demonstrate an
	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.2 The student will investigate and
	understand the chemical and biochemical
	principles essential for life. (Indirect)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Nitrate Protocol	BIO.1 The student will demonstrate an
	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.2 The student will investigate and
	understand the chemical and biochemical
	principles essential for life. (Indirect)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Soil GLOBE Investigations	Standards
Soil Characterization Protocol	BIO.1 The student will demonstrate an
	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
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	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Soil Temperature Protocol	BIO.1 The student will demonstrate an
•	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations.(Direct)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Gravimetric Soil Moisture Protocol	BIO.1 The student will demonstrate an
diavillieti ic 3011 Moisture Frotocol	
	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Bulk Density Protocol	BIO.1 The student will demonstrate an
	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Soil Particle Density Protocol	BIO.1 The student will demonstrate an
Soil I article Delisity I Totocol	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Particle Size Distribution Protocol	BIO.1 The student will demonstrate an
	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Soil pH Protocol	BIO.1 The student will demonstrate an
4	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	i and matare of belefied by planning and conducting
	investigations. (Direct)
	investigations. <b>(Direct)</b> BIO.8 The student will investigate and
	investigations. (Direct) BIO.8 The student will investigate and understand dynamic equilibria within
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	investigations. (Direct)  BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect)
Soil Fertility	investigations. (Direct)  BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect)  BIO.1 The student will demonstrate an
Soil Fertility	investigations. (Direct)  BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect)  BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and
Soil Fertility	investigations. (Direct)  BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect)  BIO.1 The student will demonstrate an

BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect)  BiO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations.  BIO.2 The student will investigate and understand the chemical and biochemical principles essential for life. (Indirect)  BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect)  Land Cover/Biology GLOBE Investigations  Land Cover Sample Site Protocol  BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. Direct)  BIO.2 The student will investigate and understand the chemical and biochemical principles essential for life. (Indirect)  BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect)  BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. Direct)  BIO.1 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect)  BIO.2 The student will investigate and understand the chemical and biochemical principles essential for life. (Indirect)  BIO.6 The student will investigate and understand bases for modern classification systems. (Indirect)  BIO.8 The student will investigate and understand bases for modern classification systems. (Indirect)		
Davis Soil Moisture and Temperature Station Protocol  BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations.  BIO.2 The student will investigate and understand the chemical and biochemical principles essential for life. (Indirect) BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect)  Land Cover Sample Site Protocol  BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. Direct) BIO.2 The student will investigate and understand the chemical and biochemical principles essential for life. (Indirect) BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect) BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. Direct) BIO.1 The student will investigate and understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. Direct) BIO.2 The student will investigate and understand the chemical and biochemical principles essential for life. (Indirect) BIO.3 The student will investigate and understand the chemical and biochemical principles essential for life. (Indirect) BIO.5 The student will investigate and understand bases for modern classification systems. (Indirect) BIO.6 The student will investigate and understand bases for modern classification systems. (Indirect) BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect) BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect)		BIO.8 The student will investigate and
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	erstand bases for modern classification
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unde	rstand dynamic equilibria within
рорі	llations, communities, and ecosystems.
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GPS GLOBE Investigations Stan	dards
GPS Measurement Protocol BIO.	The student will demonstrate an
	erstanding of scientific reasoning, logic and
	ature of science by planning and conducting
	stigations. (Direct)
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	erstanding of scientific reasoning, logic and
	ature of science by planning and conducting
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	erstand the chemical and biochemical

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	BIO.6 The student will investigate and
	understand bases for modern classification
	systems. (Indirect)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Green-up Protocol	BIO.1 The student will demonstrate an
	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.2 The student will investigate and
	understand the chemical and biochemical
	principles essential for life. (Indirect)
	BIO.6 The student will investigate and
	understand bases for modern classification
	systems. (Indirect)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Green-down Protocol	BIO.1 The student will demonstrate an
	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.2 The student will investigate and
	understand the chemical and biochemical
	principles essential for life. (Indirect)
	BIO.6 The student will investigate and
	understand bases for modern classification
	systems. (Indirect)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Ruby-throated Hummingbird Protocol	BIO.1 The student will demonstrate an
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	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.2 The student will investigate and
	understand the chemical and biochemical
	principles essential for life. (Indirect)
	BIO.6 The student will investigate and
	understand bases for modern classification
	systems. (Indirect)
	BIO.8 The student will investigate and
	understand dynamic equilibria within
	populations, communities, and ecosystems.
	(Indirect)
Clonal and Common Lilac Protocol	BIO.1 The student will demonstrate an
	understanding of scientific reasoning, logic and
	the nature of science by planning and conducting
	investigations. (Direct)
	BIO.2 The student will investigate and
	understand the chemical and biochemical
	principles essential for life. (Indirect)

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	BIO.6 The student will investigate and understand bases for modern classification systems. (Indirect)
	BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect)
Phenological Gardens Protocol	BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
	BIO.2 The student will investigate and understand the chemical and biochemical principles essential for life. (Indirect)
	BIO.6 The student will investigate and understand bases for modern classification systems. (Indirect)
	BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect)
Seaweed Reproductive Phenology Protocol	BIO.1 The student will demonstrate an understanding of scientific reasoning, logic and the nature of science by planning and conducting investigations. (Direct)
	BIO.2 The student will investigate and understand the chemical and biochemical principles essential for life. (Indirect)
	BIO.5 The student will investigate and understand common mechanisms of inheritance and protein synthesis. (Indirect)
	BIO.6 The student will investigate and understand bases for modern classification systems. (Indirect)
	BIO.8 The student will investigate and understand dynamic equilibria within populations, communities, and ecosystems. (Indirect)

**Direct:** Standard Addressed within the Basic Components of the Protocol **Indirect:** Standard Addressed through Further Investigations Incorporating a Systems Based Approach

### Chemistry

Atmosphere GLOBE Investigations	Standards
Cloud Cover and Contrail Cover Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.5 The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles. (Indirect)
Aerosols Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.5 The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles. (Indirect)
Water Vapor Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.5 The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles. (Indirect)
Relative Humidity Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.5 The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles.(Indirect)
Precipitation Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.5 The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles. (Indirect)
Digital Multi-Day Max/Min and Current Air and Soil Temperature Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)

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	CH.5 The student will investigate and understand
	that the phases of matter are explained by kinetic
	theory and forces of attraction between particles. (Indirect)
Digital Max/Min and Current Air and Soil	CH.1 The student will investigate and understand
Temperature Protocol	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
	CH.5 The student will investigate and understand
	that the phases of matter are explained by kinetic
	theory and forces of attraction between particles.
	(Indirect)
Current Temperature Protocol	CH.1 The student will investigate and understand
P	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
	CH.5 The student will investigate and understand
	that the phases of matter are explained by kinetic
	theory and forces of attraction between particles.
	(Indirect)
Surface Temperature Protocol	CH.1 The student will investigate and understand
Surface remperature riotocor	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. ( <b>Direct</b> )
	CH.5 The student will investigate and understand
	that the phases of matter are explained by kinetic
	theory and forces of attraction between particles. (Indirect)
Surface Ozone Protocol	` ,
Surface Ozone Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
	CH.5 The student will investigate and understand
	that the phases of matter are explained by kinetic
	theory and forces of attraction between particles. (Indirect)
Barometric Pressure Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
	CH.5 The student will investigate and understand
	that the phases of matter are explained by kinetic
	theory and forces of attraction between
	particles.(Indirect)
AWS WeatherBug	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
	CH.5 The student will investigate and understand
	that the phases of matter are explained by kinetic
	theory and forces of attraction between particles.
	(Indirect)
Davis, Weatherhawk, Rainwise Weather Station,	CH.1 The student will investigate and understand
and Automted Soil and Air Temperature	that experiments in which variables are
Monitoring Protocols	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
	(Bilett)

	CH.5 The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles.
Hydrology GLOBE Investigations	(Indirect) Standards
Water Transparency Protocol: Secchi Disk an Transparency Tube	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)
Water Temperature Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.5 The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles. (Indirect)
Dissolved Oxygen Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.4 The student will investigate and understand that chemical quantities are based on molar relationships. (Indirect)  CH.5 The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles. (Indirect)
Electrical Conductivity Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.4 The student will investigate and understand that chemical quantities are based on molar relationships. (Indirect)  CH.5 The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles. (Indirect)
Salinity Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.4 The student will investigate and understand that chemical quantities are based on molar relationships. (Indirect)  CH.5 The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles. (Indirect)
pH Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)

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	CH.4 The student will investigate and understand
	that chemical quantities are based on molar
	relationships. (Indirect)
	CH.5 The student will investigate and understand
	that the phases of matter are explained by kinetic
	theory and forces of attraction between particles.
	(Indirect)
Alkalinity Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data.
	CH.4 The student will investigate and understand
	that chemical quantities are based on molar
	relationships. (Indirect)
	CH.5 The student will investigate and understand
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	that the phases of matter are explained by kinetic
	theory and forces of attraction between particles.
	(Indirect)
Nitrate Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
	CH.4 The student will investigate and understand
	that chemical quantities are based on molar
	•
	relationships. (Indirect)
	CH.5 The student will investigate and understand
	that the phases of matter are explained by kinetic
	theory and forces of attraction between particles.
	(Indirect)
Soil CLODE Investigations	Create 1
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Soil GLOBE Investigations	Standards
Soil Characterization Protocol	CH.1 The student will investigate and understand
	CH.1 The student will investigate and understand that experiments in which variables are
	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce
Soil Characterization Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)
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Soil Characterization Protocol  Soil Temperature Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand
Soil Characterization Protocol  Soil Temperature Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are
Soil Characterization Protocol  Soil Temperature Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce
Soil Characterization Protocol  Soil Temperature Protocol  Gravimetric Soil Moisture Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)
Soil Characterization Protocol  Soil Temperature Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand
Soil Characterization Protocol  Soil Temperature Protocol  Gravimetric Soil Moisture Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are
Soil Characterization Protocol  Soil Temperature Protocol  Gravimetric Soil Moisture Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce
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Soil Characterization Protocol  Soil Temperature Protocol  Gravimetric Soil Moisture Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.4 The student will investigate and understand conservations and verifiable data. (Direct)
Soil Characterization Protocol  Soil Temperature Protocol  Gravimetric Soil Moisture Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.4 The student will investigate and understand that chemical quantities are based on molar
Soil Characterization Protocol  Soil Temperature Protocol  Gravimetric Soil Moisture Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.4 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)
Soil Characterization Protocol  Soil Temperature Protocol  Gravimetric Soil Moisture Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.4 The student will investigate and understand that chemical quantities are based on molar relationships. (Indirect)
Soil Characterization Protocol  Soil Temperature Protocol  Gravimetric Soil Moisture Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.4 The student will investigate and understand that chemical quantities are based on molar relationships. (Indirect)
Soil Characterization Protocol  Soil Temperature Protocol  Gravimetric Soil Moisture Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.4 The student will investigate and understand that chemical quantities are based on molar relationships. (Indirect)  CH.5 The student will investigate and understand that the phases of matter are explained by kinetic
Soil Characterization Protocol  Soil Temperature Protocol  Gravimetric Soil Moisture Protocol	CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed and evaluated produce observations and verifiable data. (Direct)  CH.4 The student will investigate and understand that chemical quantities are based on molar relationships. (Indirect)

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Soil Particle Density Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
	CH.4 The student will investigate and understand
	that chemical quantities are based on molar
	relationships. (Indirect)
	CH.5 The student will investigate and understand
	that the phases of matter are explained by kinetic
	theory and forces of attraction between particles. (Indirect)
Particle Size Distribution Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
	CH.4 The student will investigate and understand
	that chemical quantities are based on molar
	relationships. (Indirect)
	CH.5 The student will investigate and understand
	that the phases of matter are explained by kinetic
	theory and forces of attraction between
	particles.(Indirect)
Soil pH Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
	CH.4 The student will investigate and understand
	that chemical quantities are based on molar
	relationships. (Indirect)
Soil Fertility Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
	CH.4 The student will investigate and understand
	that chemical quantities are based on molar relationships. (Indirect)
	CH.5 The student will investigate and understand
	that the phases of matter are explained by kinetic
	theory and forces of attraction between particles.
	(Indirect)
Davis Soil Moisture and Temperature Station	CH.1 The student will investigate and understand
Protocol	that experiments in which variables are
11000001	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
Land Cover/Biology GLOBE Investigations	Standards
Land Cover Sample Site Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
Biometry Protocol	CH.1 The student will investigate and understand
Biometry Protocol	that experiments in which variables are
Biometry Protocol	=

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Manual Land Cover Mapping Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
Computer-aided Land Cover Mapping Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
Land Cover Change Detection Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
Fire Fuel Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
	CH.5 The student will investigate and understand
	that the phases of matter are explained by kinetic
	theory and forces of attraction between particles.
GPS GLOBE Investigations	Standards
GPS Measurement Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
Earth as a System GLOBE Investigations	Standards
Budburst Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
Green-up Protocol	CH.1 The student will investigate and understand
T. P. C.	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
Green-down Protocol	CH.1 The student will investigate and understand
4.00m 40 m 1.1000001	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
Ruby-throated Hummingbird Protocol	CH.1 The student will investigate and understand
	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
Clonal and Common Lilac Protocol	CH.1 The student will investigate and understand
Some and common blace i lococoi	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)
Phenological Gardens Protocol	CH.1 The student will investigate and understand
Thenological daracilo i lotocol	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. ( <b>Direct</b> )
Seaweed Reproductive Phenology Protocol	CH.1 The student will investigate and understand
Jean cea Reproductive I henology Flotocol	that experiments in which variables are
	measured, analyzed and evaluated produce
	observations and verifiable data. (Direct)

**Direct:** Standard Addressed within the Basic Components of the Protocol **Indirect:** Standard Addressed through Further Investigations Incorporating a Systems Based Approach

#### **Earth Science**

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	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S.12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
Digital Multi-Day Max/Min and Current Air and	E.S.1 The student will plan and conduct
Soil Temperature Protocol	investigations. (Direct)
•	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. ( <b>Direct</b> )
	E.S.12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
Digital Max/Min and Current Air and Soil	E.S.1 The student will plan and conduct
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Temperature Protocol	investigations. ( <b>Direct</b> )  E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S.12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
Current Temperature Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S.12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
Surface Temperature Protocol	E.S.1 The student will plan and conduct
Provide Provid	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. ( <b>Direct</b> )
	E.S.12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
Surface Ozone Protocol	and climate on Earth. (Indirect)
Surface Ozone Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
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	E.S.11 The student will investigate and
	understand the origin and evolution of the
	atmosphere and the interrelationship of geologic
	processes, biologic processes, and human
	activities on its composition and dynamics.
	(Indirect)

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	E.S.12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
Barometric Pressure Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S.12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
AWS WeatherBug	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S.12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
Davis, Weatherhawk, Rainwise Weather Station,	E.S.1 The student will plan and conduct
	•
and Automated Soil an Air Temperature	investigations. (Direct)
Monitoring Protocols	D 0 0 ml
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S.12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
Hydrology GLOBE Investigations	Standards
Water Transparency Protocol: Secchi Disk and	E.S.1 The student will plan and conduct
Transparency Tube	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S 8 The student will investigate and
	understand how freshwater resources are
	influenced by geologic processes and the
	activities of humans. (Indirect)
Water Temperature Protocol	E.S.1 The student will plan and conduct
water remperature rrotocor	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	i unuci stanunie di tiie natui e di Stiente anu
	scientific reasoning and logic. (Direct)
	scientific reasoning and logic. (Direct)  E.S 8 The student will investigate and
	scientific reasoning and logic. (Direct)  E.S 8 The student will investigate and understand how freshwater resources are
	E.S 8 The student will investigate and understand how freshwater resources are influenced by geologic processes and the
	scientific reasoning and logic. (Direct)  E.S 8 The student will investigate and understand how freshwater resources are influenced by geologic processes and the activities of humans. (Indirect)
	scientific reasoning and logic. (Direct)  E.S 8 The student will investigate and understand how freshwater resources are influenced by geologic processes and the activities of humans. (Indirect)  E.S.12 The student will investigate and
	scientific reasoning and logic. (Direct)  E.S 8 The student will investigate and understand how freshwater resources are influenced by geologic processes and the activities of humans. (Indirect)  E.S.12 The student will investigate and understand that energy transfer between the sun
	scientific reasoning and logic. (Direct)  E.S 8 The student will investigate and understand how freshwater resources are influenced by geologic processes and the activities of humans. (Indirect)  E.S.12 The student will investigate and

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Dissolved Oxygen Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S 8 The student will investigate and
	understand how freshwater resources are
	influenced by geologic processes and the
	activities of humans. (Indirect)
Electrical Conductivity Protocol	E.S.1 The student will plan and conduct
Dicetifed dolladelivity 110tocol	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S 8 The student will investigate and
	understand how freshwater resources are
	influenced by geologic processes and the
	activities of humans. (Indirect)
Salinity Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S 8 The student will investigate and
	understand how freshwater resources are
	influenced by geologic processes and the
	activities of humans. (Indirect)
pH Protocol	E.S.1 The student will plan and conduct
r	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S 8 The student will investigate and
	understand how freshwater resources are
	influenced by geologic processes and the
All less Day 1	activities of humans. (Indirect)
Alkalinity Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S 8 The student will investigate and
	understand how freshwater resources are
	influenced by geologic processes and the
	activities of humans. (Indirect)
Nitrate Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S 8 The student will investigate and
	understand how freshwater resources are
	influenced by geologic processes and the
	I minucineda by geologie processes and the
	activities of humans (Indiract)
Soil GLOBE Investigations	activities of humans. (Indirect) Standards

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Soil Characterization Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S. 4 The student will investigate and
	understand how to identify major rock-forming
	and ore minerals based on physical and chemical
0.11	properties. (Indirect)
Soil Temperature Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)  E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)  E.S. 4 The student will investigate and
	understand how to identify major rock-forming
	and ore minerals based on physical and chemical
	properties. (Indirect)
	E.S.12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
Gravimetric Soil Moisture Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S. 4 The student will investigate and
	understand how to identify major rock-forming
	and ore minerals based on physical and chemical
	properties. (Indirect)
	E.S 8 The student will investigate and
	understand how freshwater resources are
	influenced by geologic processes and the
	activities of humans. (Indirect)
	E.S.12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
Bulk Density Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S. 4 The student will investigate and
	understand how to identify major rock-forming
	and ore minerals based on physical and chemical
	properties. (Indirect)
Sail Particle Density Protocol	E S 1 The student will plan and conduct
Soil Particle Density Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	Scientific reasoning and togic. (Diffect)

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	E.S. 4 The student will investigate and
	understand how to identify major rock-forming
	and ore minerals based on physical and chemical
	properties. (Indirect)
Particle Size Distribution Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S. 4 The student will investigate and
	understand how to identify major rock-forming
	and ore minerals based on physical and chemical
	properties. (Indirect)
Soil pH Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S. 4 The student will investigate and
	understand how to identify major rock-forming
	and ore minerals based on physical and chemical
	properties. (Indirect)
Soil Fertility	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S. 4 The student will investigate and
	understand how to identify major rock-forming
	and ore minerals based on physical and chemical
D 1 G 111 ( ) 1 m	properties. (Indirect)
Davis Soil Moisture and Temperature Station	E.S.1 The student will plan and conduct
Protocol	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S. 4 The student will investigate and
	understand how to identify major rock-forming
	and ore minerals based on physical and chemical
	properties. (Indirect)  E.C. 9. The student will investigate and
	E.S. 8 The student will investigate and understand how freshwater resources are
	influenced by geologic processes and the
	activities of humans. (Indirect)  E.S. 12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
Land Cover/Riology CLORE Investigations	Standards
Land Cover/Biology GLOBE Investigations  Land Cover Sample Site Protocol	
Land Cover Sample Site Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)  E.S. 2 The student will demonstrate an
	understanding of the nature of science and
Riomatry Protocol	scientific reasoning and logic. (Direct)
Biometry Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)

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	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
Manual Land Cover Mapping Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
Computer-aided Land Cover Mapping Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
Land Cover Change Detection Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
Fire Fuel Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Di
GPS GLOBE Investigations	Standards
GPS Measurement Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
Earth as a System GLOBE Investigations	Standards
_	
Budburst Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	E.S. 2 The student will demonstrate an understanding of the nature of science and
	understanding of the nature of science and
	understanding of the nature of science and scientific reasoning and logic. (Direct)
	understanding of the nature of science and
	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and
	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun
Green-up Protocol	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)
Green-up Protocol	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S.1 The student will plan and conduct
Green-up Protocol	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)
Green-up Protocol	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S.1 The student will plan and conduct investigations. (Direct)
Green-up Protocol	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S.1 The student will plan and conduct investigations. (Direct)  E.S. 2 The student will demonstrate an
Green-up Protocol	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S.1 The student will plan and conduct investigations. (Direct)  E.S. 2 The student will demonstrate an understanding of the nature of science and
Green-up Protocol	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S.1 The student will plan and conduct investigations. (Direct)  E.S. 2 The student will demonstrate an understanding of the nature of science and scientific reasoning and logic. (Direct)
Green-up Protocol	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S.1 The student will plan and conduct investigations. (Direct)  E.S. 2 The student will demonstrate an understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and
Green-up Protocol	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S.1 The student will plan and conduct investigations. (Direct)  E.S. 2 The student will demonstrate an understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun
Green-up Protocol  Green-down Protocol	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S. 1 The student will plan and conduct investigations. (Direct)  E.S. 2 The student will demonstrate an understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)
	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S.1 The student will plan and conduct investigations. (Direct)  E.S. 2 The student will demonstrate an understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S.1 The student will plan and conduct
	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S. 1 The student will plan and conduct investigations. (Direct)  E.S. 2 The student will demonstrate an understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)
	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S.1 The student will plan and conduct investigations. (Direct)  E.S. 2 The student will demonstrate an understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S.1 The student will plan and conduct
	understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S.1 The student will plan and conduct investigations. (Direct)  E.S. 2 The student will demonstrate an understanding of the nature of science and scientific reasoning and logic. (Direct)  E.S. 12 The student will investigate and understand that energy transfer between the sun and Earth and its atmosphere drives weather and climate on Earth. (Indirect)  E.S.1 The student will plan and conduct investigations. (Direct)
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	E.S. 12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth.(Indirect)
Ruby-throated Hummingbird Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S. 12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
Clonal an Common Lilac Protocol	E.S.1 The student will plan and conduct
	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S. 12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
Phenological Gardens Protocol	E.S.1 The student will plan and conduct
Thomas grown durations Troubles	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S. 12 The student will investigate and
	understand that energy transfer between the sun
	and Earth and its atmosphere drives weather
	and climate on Earth. (Indirect)
Seaweed Reproductive Phenology Protocol	E.S.1 The student will plan and conduct
seam our neproductive i nemotogy i rottocol	investigations. (Direct)
	E.S. 2 The student will demonstrate an
	understanding of the nature of science and
	scientific reasoning and logic. (Direct)
	E.S. 10 The student will investigate and
	understand that oceans are complex, interactive
	physical, chemical and biological systems and are
	subject to long- and short-term variations.
	(Indirect)
	(mun ccc)

**Direct:** Standard Addressed within the Basic Components of the Protocol **Indirect:** Standard Addressed through Further Investigations Incorporating a Systems Based Approach

#### **Life Science**

Atmosphere GLOBE Investigations	Standards
Cloud Cover and Contrail Cover Protocol	L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. ( <b>Direct</b> )
	L.S.6 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic factors. (Indirect)
	L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment.  (Indirect)
	L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)
Aerosols Protocol	L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations.(Direct)
	L.S.6 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of their environment. (Indirect)
	L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)
	L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment.  (Indirect)
	L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)
Water Vapor Protocol	L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)

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	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
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	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Relative Humidity Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Precipitation Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
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	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
	uynamics and numan activity. (Indirect)

Disital Malti Dan Mara/Min and Communit Aire and	I C 1 The student will down an attract on
Digital Multi-Day Max/Min and Current Air and	L.S.1 The student will demonstrate an
Soil Temperature Protocol	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity.(Indirect)
	dynamics and numan activity.(Indirect)
Digital May /Min and Course t Air and Call	L C 1 The strudent will do
Digital Max/Min and Current Air and Soil	L.S.1 The student will demonstrate an
Temperature Protocol	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	nactors. (marrect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
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	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity.(Indirect)
Current Temperature Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	components of their environment. (munect)

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	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Surface Temperature Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
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	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity.(Indirect)
Surface Ozone Protocol	L.S.1 The student will demonstrate an
Surface Ozoffe Frotocol	
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Barometric Pressure Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
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	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
AWS WeatherBug	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Davis, Weatherhawk, Rainwise Weather Station,	L.S.1 The student will demonstrate an
and Automated Soil and Air Temperature	understanding of scientific reasoning, logic, and
Monitoring Protocols	the nature of science by planning and conducting
Fromtoring Protocols	investigations. ( <b>Direct</b> )
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	L.S.11 The student will investigate and understand the relationships between ecosystem
	understand the relationships between ecosystem dynamics and human activity. (Indirect)

Hydrology GLOBE Investigations	Standards
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Water Transparency Protocol: Secchi Disk and Transparency Tube	L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment.  (Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Water Temperature Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and the nature of science by planning and conducting
	investigations. ( <b>Direct</b> )
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect) L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Dissolved Oxygen Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)  L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic factors. (Indirect)

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	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Electrical Conductivity Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. ( <b>Indirect</b> )
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S. 11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Salinity Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
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	that arganisms within an acceptant are
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	dependent on one another and on nonliving components of their environment. (Indirect)
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	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)
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	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities,
	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change
	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and
	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment.
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	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment.
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	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment. (Indirect)  L.S.11 The student will investigate and
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pH Protocol	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment. (Indirect)  L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)  L.S.1 The student will demonstrate an
pH Protocol	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment. (Indirect)  L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)  L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and
pH Protocol	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment. (Indirect)  L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)  L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting
pH Protocol	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment. (Indirect)  L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)  L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and
pH Protocol	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment. (Indirect)  L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)  L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting

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	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Alkalinity Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	The student will investigate and understand the
	relationships between ecosystem dynamics and
	human activity. (Indirect)
Nitrate Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	dependent on one another and on nonliving components of their environment. (Indirect)
	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand
	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic
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	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and
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	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change
	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and
	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment.
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	dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment. (Indirect)

Soil GLOBE Investigations	Standards 59
2011 GEODE HISCORIS	Stanual us
Soil Characterization Protocol	L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	L.S.6 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of their environment. (Indirect)
	L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)
	L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment.  (Indirect)
	L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)
Soil Temperature Protocol	L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. ( <b>Direct</b> )
	L.S.6 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic factors. (Indirect)
	L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment.  (Indirect)
	L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)
Gravimetric Soil Moisture Protocol	L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	L.S.6 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic factors. (Indirect)

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	L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment.  (Indirect)
	L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)
Bulk Density Protocol	L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	L.S.6 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of their environment. (Indirect)  L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic factors. (Indirect)  L.S.10 The student will investigate and
	understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment.  (Indirect)
	L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)
Soil Particle Density Protocol	L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	L.S.6 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of their environment. (Indirect)
	L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. (Indirect)
	L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment.  (Indirect)
	L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)
Particle Size Distribution Protocol	L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)

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	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
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	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
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	the nature of science by planning and conducting
	investigations. (Direct)
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	dependent on one another and on nonliving
	components of their environment. (Indirect)
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	factors. (Indirect)
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	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Soil Fertility	L.S.1 The student will demonstrate an
John Tertificy	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
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	over time, and respond to daily, seasonal, and long-term changes in their environment.  (Indirect)  L.S.11 The student will investigate and
	over time, and respond to daily, seasonal, and long-term changes in their environment.  (Indirect)

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Davis Soil Moisture and Temperature Station	L.S.1 The student will demonstrate an
Protocol	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Land Cover/Biology GLOBE Investigations	Standards
Land Cover Sample Site Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Direct)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Biometry Protocol	L.S.1 The student will demonstrate an
Dionically i lococor	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	mivesugations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
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	how organisms adapt to biotic and abiotic
	factors. (Indirect)

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	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Indirect)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Manual Land Cover Mapping Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Direct)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. (Indirect)
Computer-aided Land Cover Mapping Protocol	L.S.1 The student will demonstrate an
Computer-aided Land Cover Mapping Frotocor	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
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	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
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Land Cover Change Detection Protocol	long-term changes in their environment. (Direct)  L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)  L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and
Land Cover Change Detection Protocol	long-term changes in their environment. (Direct)  L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)  L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting
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Green-down Protocol	L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations.( <b>Direct</b> )
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Ruby-throated Hummingbird Protocol	L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)

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Clonal and Common Lilac Protocol	L.S.1 The student will demonstrate an
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	the nature of science by planning and conducting
	investigations. (Direct)
	I.C.C.The aturdant will investigate and understand
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. ( <b>Indirect)</b>
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Direct)
	L.S.11 The student will investigate and
	understand the relationships between ecosystem
	dynamics and human activity. ( <b>Indirect</b> )
Phenological Gardens Protocol	L.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	L.S.6 The student will investigate and understand
	that organisms within an ecosystem are
	dependent on one another and on nonliving
	components of their environment. (Indirect)
	L.S.9 The student will investigate and understand
	how organisms adapt to biotic and abiotic
	factors. (Indirect)
	L.S.10 The student will investigate and
	understand that ecosystems, communities,
	populations, and organisms are dynamic, change
	over time, and respond to daily, seasonal, and
	long-term changes in their environment.
	(Direct)
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	L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)
Seaweed Reproductive Phenology Protocol	L.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	L.S.6 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of their environment. (Indirect)
	L.S.9 The student will investigate and understand how organisms adapt to biotic and abiotic factors. ( <b>Indirect</b> )
	L.S.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment. (Indirect)
	L.S.11 The student will investigate and understand the relationships between ecosystem dynamics and human activity. (Indirect)
	L.S12 The student will investigate and understand that organisms reproduce and transmit genetic information to new generations. (Direct)

**Direct:** Standard Addressed within the Basic Components of the Protocol **Indirect:** Standard Addressed through Further Investigations Incorporating a Systems Based Approach

### **Physical Science**

Atmosphere GLOBE Investigations	Standards
Cloud Cover and Contrail Cover Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Aerosols Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Water Vapor Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  P.S.2 The student will investigate and understand the nature of matter. (Indirect)  P.S. 6 The student will investigate and understand forms of energy and how energy is transferred and transformed. (Indirect)  P.S. 7 The student will investigate and
	understand temperature scales, heat, and thermal energy transfer. (Indirect)
Relative Humidity Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  P.S. 7 The student will investigate and understand temperature scales, heat, and thermal energy transfer. (Indirect)
Precipitation Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	P.S.2 The student will investigate and understand the nature of matter. (Indirect)
	P.S.5 the student will investigate and understand changes in matter and the relationship of these changes to the Law of Conservation of Matter and Energy. (Indirect)
Digital Multi-Day Max/Min and Current Air and Soil Temperature Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)

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	P.S. 7 The student will investigate and
	understand temperature scales, heat, and
	thermal energy transfer. (Direct)
Digital Max/Min and Current Air and Soil	P.S.1 The student will demonstrate an
Temperature	understanding of scientific reasoning, logic, and
•	the nature of science by planning and conducting
	investigations. (Direct)
	P.S. 7 The student will investigate and
	understand temperature scales, heat, and
	thermal energy transfer. ( <b>Direct</b> )
Current Temperature Protocol	P.S.1 The student will demonstrate an
current remperature rrotocor	understanding of scientific reasoning, logic, and
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	the nature of science by planning and conducting
	investigations. (Direct)
	P.S. 7 The student will investigate and
	understand temperature scales, heat, and
	thermal energy transfer. (Direct)
Surface Temperature Protocol	P.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	P.S. 6 The student will investigate and
	understand forms of energy and how energy is
	transferred and transformed. (Direct)
	P.S. 7 The student will investigate and
	understand temperature scales, heat, and
	thermal energy transfer. ( <b>Direct</b> )
Surface Ozone Protocol	P.S.1 The student will demonstrate an
Surface Ozoffe i rotocor	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
Barometric Pressure Protocol	P.S.1 The student will demonstrate an
barometric Pressure Protocol	
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
AMOUNT OF THE PROPERTY OF THE	investigations. (Direct)
AWS WeatherBug	P.S.1 The student will demonstrate an
	understanding of scientific reasoning, logic, and
	the nature of science by planning and conducting
	investigations. (Direct)
	P.S. 6 The student will investigate and
	understand forms of energy and how energy is
	transferred and transformed. (Indirect)
	P.S. 7 The student will investigate and
	understand temperature scales, heat, and
	thermal energy transfer. (Direct)
Davis, Weatherhawk, Rainwise Weather Station,	P.S.1 The student will demonstrate an
and Automated Soil and Air Temperature	understanding of scientific reasoning, logic, and
Monitoring Protocols	the nature of science by planning and conducting
1.101111011116 1 1 0 0 0 0 13	investigations. (Direct)
	P.S. 6 The student will investigate and
	understand forms of energy and how energy is
	transferred and transformed. (Indirect)
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	P.S. 7 The student will investigate and
	understand temperature scales, heat, and thermal energy transfer.(Direct)

Hydrology GLOBE Investigations	Standards
Water Transparency Protocol: Secchi Disk and Transparency Tube	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Water Temperature Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)  P.S. 7 The student will investigate and
	understand temperature scales, heat, and thermal energy transfer. (Direct)
Dissolved Oxygen Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Electrical Conductivity Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	P.S. 6 The student will investigate and understand forms of energy and how energy is transferred and transformed. (Indirect)
	P.S.11 The student will investigate and understand basic principles of electricity and magnetism. (Direct)
Salinity Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
pH Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Alkalinity Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Nitrate Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Soil GLOBE Investigations	Standards
Soil Characterization Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Soil Temperature Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
	P.S. 6 The student will investigate and understand forms of energy and how energy is transferred and transformed. (Direct)

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Fire Fuel Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. <b>(Direct)</b>
GPS GLOBE Investigations	Standards
GPS Measurement Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Earth as a System GLOBE Investigations	Standards
Budburst Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Green-up Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Green-down Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Ruby-throated Hummingbird Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Clonal and Common Lilac Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Phenological Gardens Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)
Seaweed Reproductive Phenology Protocol	P.S.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations. (Direct)

**Direct:** Standard Addressed within the Basic Components of the Protocol **Indirect:** Standard Addressed through Further Investigations Incorporating a Systems Based Approach

### **Physics**

Atmosphere GLOBE Investigations	Standards
Cloud Cover and Contrail Cover Protocol	PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. ( <b>Direct</b> )
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
	PH.4 The student will investigate and understand
	how applications of physics affect the world.
	(Indirect)
Aerosols Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
	PH.4 The student will investigate and understand
	how applications of physics affect the world.
	(Indirect)
	PH.8 The student will investigate and understand
	wave phenomena. (Indirect)
	PH.9 The student will investigate and understand
	that different frequencies and wavelengths in the
	electromagnetic spectrum are phenomena
	ranging from radio through visible light to
	gamma radiation. (Indirect)
	PH.12 The student will investigate and
	understand that extremely large and extremely
	small quantities are not necessarily describe by the same laws as those studied in Newtonian
	physics. (Indirect)
Water Vapor Protocol	PH.1 The student will plan and conduct
water vapor Protocor	investigations using experimental design and
	product design processes. ( <b>Direct</b> )
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)

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Relative Humidity	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
Precipitation Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
Digital Multi-Day Max/Min and Current Air and	PH.1 The student will plan and conduct
Soil Temperature Protocol	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
Digital Max/Min and Current Air and Soil	PH.1 The student will plan and conduct
Temperature Protocol	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
Comment Transcondense Produced	science, scientific reasoning and logic. (Direct)
Current Temperature Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
Surface Temperature Protocol	PH.1 The student will plan and conduct
Surface reinperature rrotocor	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. ( <b>Direct</b> )
	PH.3 The student will investigate and0
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
Surface Ozone Protocol	PH.1 The student will plan and conduct
Juliace Ozolic i lotocol	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. ( <b>Direct</b> )
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic.(Direct)

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Barometric Pressure Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
AWS WeatherBug	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
Davis, Weatherhawk, Rainwise Weather Station,	PH.1 The student will plan and conduct
and Automated Soil and Air Temperature	investigations using experimental design and
Monitoring Protocols	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic.(Direct)
Hydrology GLOBE Investigations	Standards
Water Transparency Protocol: Secchi Disk and	PH.1 The student will plan and conduct
Transparency Tube	investigations using experimental design and
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	product design processes. (Direct)
	product design processes. (Direct)
	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct)
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	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct)
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Water Temperature Protocol	PH.2 The student will investigate and understand how to analyze and interpret data. <b>(Direct)</b> PH.3 The student will investigate and demonstrate an understanding of the nature of
Water Temperature Protocol	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct)
Water Temperature Protocol	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct
Water Temperature Protocol	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and
Water Temperature Protocol	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct)
Water Temperature Protocol	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct) PH.2 The student will investigate and understand
Water Temperature Protocol	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct) PH.2 The student will investigate and understand how to analyze and interpret data. (Direct)
Water Temperature Protocol	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct) PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct)
Water Temperature Protocol  Dissolved Oxygen Protocol	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct) PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of
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	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct) PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct
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Dissolved Oxygen Protocol	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct) PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct) PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct)
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Dissolved Oxygen Protocol	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct) PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct) PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and
Dissolved Oxygen Protocol	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct) PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct) PH.2 The student will investigate and understand how to analyze and interpret data. (Direct) PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct) PH.1 The student will plan and conduct

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	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
Salinity Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
pH Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
All It is D	science, scientific reasoning and logic.(Direct)
Alkalinity Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. <b>(Direct)</b> PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. ( <b>Direct</b> )
Nitrate Protocol	PH.1 The student will plan and conduct
With atc 1 Totocol	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
Soil GLOBE Investigations	Standards
Soil Characterization Protocol	PH.1 The student will plan and conduct
Son Characterization Protocol	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. ( <b>Direct</b> )
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
Soil Temperature Protocol	PH.1 The student will plan and conduct
r	investigations using experimental design and
	product design processes.(Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)

Cravimatria Sail Maiatura Dratagal	DU 1 The student will plan and conduct
Gravimetric Soil Moisture Protocol	PH.1 The student will plan and conduct investigations using experimental design and
	product design processes. (Direct)
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
Bulk Density Protocol	PH.1 The student will plan and conduct
•	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic.(Direct)
Soil Particle Density Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes.(Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic.(Direct)
Particle Size Distribution Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes.(Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and demonstrate an understanding of the nature of
	science, scientific reasoning and logic.( <b>Direct</b> )
Soil pH Protocol	PH.1 The student will plan and conduct
Son pir i rotocor	investigations using experimental design and
	product design processes.(Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic.(Direct)
Soil Fertility Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes.(Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic.(Direct)
Davis Soil Moisture and Temperature Station	PH.1 The student will plan and conduct
Protocol	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)

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	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic.(Direct)
Land Cover/Biology GLOBE Investigations	Standards
Land Cover Sample Site Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes.(Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic.(Direct)
Biometry Protocol	PH.1 The student will plan and conduct
Biometry Froteeor	investigations using experimental design and
	product design processes.(Direct)
	PH.2 The student will investigate and understand
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	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic.(Direct)
Manual Land Cover Mapping Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes.(Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic.(Direct)
Computer-aided Land Cover Mapping Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes. (Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic.(Direct)
Land Cover Change Detection Protocol	PH.1 The student will plan and conduct
Land Cover Change Detection Frotocor	investigations using experimental design and
	product design processes. ( <b>Direct</b> )
	PH.2 The student will investigate and understand
	S
	how to analyze and interpret data.
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic.(Direct)
Fire Fuel Protocol	PH.1 The student will plan and conduct
	investigations using experimental design and
	product design processes.(Direct)
	PH.2 The student will investigate and understand
	how to analyze and interpret data. (Direct)
	(2.000)
	PH.3 The student will investigate and
	demonstrate an understanding of the nature of
	science, scientific reasoning and logic. (Direct)
	selence, selencine reasoning and logic. (Direct)

GPS GLOBE Investigations	Standards
GPS Measurement Protocol	PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct)  PH.2 The student will investigate and understand how to analyze and interpret data. (Direct)  PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic.(Direct)
Earth as a System GLOBE Investigations	Standards
Budburst Protocol	PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct)
	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct)
Green-up Protocol	PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct)
	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct)
Green-down Protocol	PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct)
	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct)
Ruby-throated Hummingbird Protocol	PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct)
	PH.2 The student will investigate and understand how to analyze and interpret data. <b>(Direct)</b>
	PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct)

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Clonal and Common Lilac Protocol	PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct)
	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct)
Phenological Gardens Protocol	PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct)
	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct)
Seaweed Reproductive Phenology Protocol	PH.1 The student will plan and conduct investigations using experimental design and product design processes. (Direct)
	PH.2 The student will investigate and understand how to analyze and interpret data. (Direct)
	PH.3 The student will investigate and demonstrate an understanding of the nature of science, scientific reasoning and logic. (Direct)