PROJECT LEARNING TREE'S PREK-8 ACTIVITY GUIDE

AND

ENERGY & SOCIETY KIT TO NH FRAMEWORKS FOR SCIENCE LITERACY (K-12)

New Hampshire Project Learning Tree

March 1998
Revised September 2006

This handbook is a project of New Hampshire Project Learning Tree, a private non-profit organization committed to the environmental education of our youth. The handbook is dedicated to the hundreds of school teachers and administrators who are responding to the state's move to standards-based education. Yours is not an easy job; we hope this handbook helps to lighten the load.

We would like to hear from our readers about how you have used the handbook and whether you find it accurate and clear. You can reach NH Project Learning Tree at

54 Portsmouth St., Concord, NH 03301
Phone: 603-226-0160 or 800-677-1499.
Fax: 603-228-0423.
Email: info@nhplt.org.
Website: http://www.nhplt.org

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TABLE OF CONTENTS

METHODOLOGY
2006 Correlation Revision (Science)

NH's curriculum standards have undergone substantial change in response to the federal No Child Left Behind Act. The former state standards were written for the end of grades three, six and ten. To meet new formalized assessment requirements, the NH Frameworks for Science Literacy (K-12), approved in June 2006, address content and skills, and are divided into grade spans for K-2, 3-4, 5-6, 7-8, 9-11 (basic literacy) and 11-12 (advanced literacy).

The NH Frameworks for Science Literacy (K-12) contain the following components:

- Domain: There are four domains within the science curriculum frameworks: Earth Space Science (ESS), Life Science (LS), Physical Science (PS), and Science Process Skills (SPS).
- Strand: There are five strands, or enduring knowledge statements, in LS and four each in domains of PS and ESS. Strands are the SAME for each grade span although not all components may be seen in each grade span. (Example: LS1 – All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species.))
- Stem: These are the categories of ideas. Stems are common throughout all grade spans. (Example: 1. Classification)
- Grade-span Expectations (Proficiencies): These are what all students should know and be able to do within a specific grade range. The ranges include: K-2, 3-4, 5-6, 7-8, 9-11 (basic literacy level) 11-12 (advanced level).

For each strand, the associated proficiencies were consulted to help inform the degree of correlation of the broader strand with each activity; a match of at least one proficiency was required to indicate a correlation. Three elements of each activity will help focus the correlation process.

- The subject identifier in the sidebar determined whether the activity was correlated to the science frameworks; if science is not listed the activity was not be addressed.
- The grade levels noted in the sidebar determined which grade span proficiencies were examined.
- The description of activity objectives in the sidebar informed which curriculum and proficiency standard(s) are related to the activity.

Note: Any attempt to correlate universal curriculum standards and a single curriculum program involves subjectivity. Two important steps were taken to limit bias. First, the author applied this rigorous methodology to determine correlation. Second, drafts were peer-reviewed by PLT-trained elementary, middle, and high school teachers. Reviewers most common finding was that PLT activities lend themselves to modification, and in so doing, would meet many more standards than indicated. NHPLT chose, however, to correlate based on a strict interpretation of the activities, as they are written.

HOW TO USE THIS HANDBOOK

The purpose of this handbook is to assist educators who are reviewing and revising their science curricula. The primary audience is classroom teachers, curriculum specialists, and curriculum committees.

The handbook is divided into three sections, as follows:

- **<u>PART I</u> lists each PLT activity in the *PreK-8 Activity Guide* and *Energy & Society Kit* followed by the standards from the NH Frameworks for Science Literacy (K-12) with which it is aligned.**

  Use Part I if you have a particular PLT activity in mind and want to know how it correlates with the state curriculum standards. Or, to find an appropriate activity to meet your needs, use PLT's "Topic Index" to select several potential activities to supplement your unit. To determine which state standards correlate with these activities, find the number and name of each activity in this handbook. Select an activity based on your objectives for your unit and the degree to which the activity correlates with appropriate standards. Each PLT activity is indicated by activity number and name and is followed by the strand and stem for each framework that is correlated to that activity.

- **<u>PART II</u> lists individual state curriculum standards from the NH Frameworks for Science Literacy (K-12), followed by the PLT activities that meet the individual standards.**

  Use Part II if you have a particular curriculum standard in mind and want to find an activity that meets this standard. Then read about the activities in your PLT guide to determine the one most suitable for your particular situation.

  All science domains (i.e. Life Science), strands (i.e. All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species) and stems (i.e. 1- Classification) are listed. Following each standard, the PLT activities aligned with that standard are identified by number and name.

- **<u>Part III</u> is a chart that lists each PLT activity in the *PreK-8 Activity Guide* and *Energy & Society Kit* and the standards from the NH Frameworks for Science Literacy (K-12) with which each activity is aligned.**

Note: Throughout this handbook, the domains are abbreviated as follows:

ESS – Earth Space Science
LS – Life Science
PS – Physical Science
SPS – Science Process Skills

NH Frameworks for Science Literacy (K-12)

Earth Space Science

ESS1 - The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes.

1. Atmosphere, Climate, & Weather
   44: Water Wonders
   84: The Global Climate

2. Composition & Features
   70: Soil Stories
   92: A Look at Lifestyles

3. Fossils
   None

4. Observation of the Earth from Space
   None

5. Processes & Rates of Change
   None

6. Rock Cycle
   70: Soil Stories

7. Water
   44: Water Wonders

ESS2 - The Earth is part of a solar system, made up of distinct parts, which have temporal and spatial interrelationships.

1. Earth, Sun and Moon
   None

2. Energy
   None

3. Solar System
   None

4. View from Earth
   None

ESS3 - The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time.

1. Size and Scale
   None

2. Stars and Galaxies
   None

3. Universe
   None

ESS4 - The growth of scientific knowledge in Earth Space Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues.

1. Design Technology
   None

2. Tools
   48: Field, Forest, and Stream

3. Social Issues (Local and Global)
   35: Loving It Too Much
   36: Pollution Search
   37: Reduce, Reuse, Recycle
   38: Every Drop Counts
   40: Then and Now
   52: A Look At Aluminum
   71: Watch on Wetlands
   81: Living with Fire
   82: Resource-Go-Round
   85: In the Driver's Seat
   86: Our Changing World
   87: Earth Manners
   89: Trees for Many Reasons
   92: A Look at Lifestyles

4. Career Technical Education Connections
   34: Who Works In This Forest?
   83: A Peek at Packaging

Life Science

LS1 - All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species).

1. Classification
   - 4: Sounds Around
   - 7: Habitat Pen Pals
   - 9: Planet Diversity
   - 10: Charting Diversity
   - 11: Can It Be Real?
   - 12: Invasive Species
   - 13: We All Need Trees
   - 23: Fallen Log (The)
   - 43: Have Seeds, Will Travel
   - 64: Looking at Leaves
   - 68: Name That Tree

2. Living Things and Organization
   - 4: Sounds Around
   - 6: Picture This!
   - 7: Habitat Pen Pals
   - 8: The Forest of S.T. Shrew
   - 10: Charting Diversity
   - 12: Invasive Species
   - 23: Fallen Log (The)
   - 25: Birds and Worms
   - 27: Every Tree for Itself
   - 41: How Plants Grow
   - 42: Sunlight and Shades of Green
   - 43: Have Seeds, Will Travel
   - 45: Web of Life
   - 46: School Yard Safari
   - 61: The Closer You Look
   - 62: To Be A Tree
   - 63: Tree Factory
   - 65: Bursting Buds
   - 66: Germinating Giants
   - 88: Life on the Edge

3. Reproduction
   - 79: Tree Lifecycle

LS2 - Energy flows and matter recycles through an ecosystem.

1. Environment
   - 2: Get In Touch With Trees
   - 3: Peppermint Beetle
   - 6: Picture This!
   - 8: The Forest of S.T. Shrew
   - 12: Invasive Species
   - 20: Environmental Exchange Box
   - 22: Trees as Habitats
   - 23: The Fallen Log
   - 24: Nature's Recyclers
   - 26: Dynamic Duos
   - 27: Every Tree for Itself
   - 29: Rain Reasons
   - 32: A Forest of Many Uses
   - 33: Forest Consequences
   - 41: How Plants Grow
   - 42: Sunlight and Shades of Green
   - 46: School Yard Safari
   - 47: Are Vacant Lots Vacant?
   - 48: Field, Forest, and Stream
   - 76: Tree Cookies
   - 77: Trees in Trouble
   - 78: Signs of Fall
   - 80: Nothing Succeeds Like Succession
   - 84: The Global Climate

2. Flow of Energy
   - 23: The Fallen Log
   - 24: Nature's Recyclers
   - 27: Every Tree for Itself
   - 28: Air Plants
   - 42: Sunlight and Shades of Green
   - 45: Web of Life
   - 46: School Yard Safari

3. Recycling of Materials
   - 8: The Forest of S.T. Shrew
   - 21: Adopt a Tree
   - 22: Trees as Habitats
   - 23: The Fallen Log
   - 24: Nature's Recyclers
   - 26: Dynamic Duos
   - 45: Web of Life
   - 47: Are Vacant Lots Vacant?
   - 48: Field, Forest, and Stream

LS3 - Groups of organisms show evidence of change over time (e.g. evolution, natural selection, structures, behaviors, and biochemistry).

1. Change
   - 12: Invasive Species
   - 17: People of the Forest
   - 18: Tale of the Sun
   - 23: The Fallen Log
   - 32: A Forest of Many Uses
   - 33: Forest Consequences
   - 34: Who Works In This Forest?
   - 35: Loving It Too Much
   - 36: Pollution Search
   - 40: Then and Now
   - 41: How Plants Grow
   - 42: Sunlight and Shades of Green
   - 48: Field, Forest, and Stream
   - 50: 400-Acre Wood
   - 69: Forest for the Trees
   - 72: Air We Breathe
   - 76: Tree Cookies
   - 77: Trees in Trouble
   - 80: Nothing Succeeds Like Succession
   - 81: Living with Fire
   - 84: The Global Climate
   - 86: Our Changing World
   - 89: Trees for Many Reasons
   - 94: By the Rivers of Babylon

2. Evolution
   - 11: Can It Be Real?

3. Natural Selection
   - 12: Invasive Species
   - 20: Environmental Exchange Box
   - 23: Fallen Log (The)
   - 29: Rain Reasons
   - 48: Field, Forest, and Stream

LS4 - Humans are similar to other species in many ways, and yet are unique among Earth's life forms.

1. Behavior
   - 4: Sounds Around
   - 18: Tale of the Sun
   - 19: Viewpoints on the Line
   - 78: Signs of Fall
   - 91: In the Good Old Days

2. Disease
   - *None*

3. Human Identity
   - 16: Pass the Plants, Please

LS5 - The growth of scientific knowledge in Life Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues.

1. Design Technology
   - 13: We All Need Trees
   - 15: A Few of My Favorite Things
   - 17: People of the Forest
   - 18: Tale of the Sun
   - 51: Make Your Own Paper
   - 67: How Big Is Your Tree?
   - 72: Air We Breathe
   - 92: A Look at Lifestyles

2. Tools
   - 4: Sounds Around
   - 48: Field, Forest, and Stream
   - 66: Germinating Giants
   - 67: How Big Is Your Tree?

3. Social Issues (Local and Global)
   - 72: Air We Breathe

4. Career Technical Education Connections
   - 31: Plant a Tree
   - 32: A Forest of Many Uses
   - 34: Who Works In This Forest?
   - 67: How Big Is Your Tree?
   - 69: Forest for the Trees

Physical Science

PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size/amount of substance).

1. Composition
   15:A Few of My Favorite Things

2. Properties
   None

PS 2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred and transformed, but cannot be destroyed.

1. Change
   None

2. Conservation
   None

3. Energy
   39: Energy Sleuths

PS 3 - The motion of an object is affected by force.

1. Forces
   None

2. Motion
   None

PS4 - The growth of scientific knowledge in Physical Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues.

1. Design Technology
   15: A Few of My Favorite Things
   51: Make Your Own Paper

2. Tools
   51: Make Your Own Paper

PS4 - The growth of scientific knowledge in Physical Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues. (cont.)

3. Social Issues (Local and Global)
   - 14: Renewable or Not?
   - 15: A Few of My Favorite Things
   - 39: Energy Sleuths
   - 51: Make Your Own Paper
   - 52: A Look At Aluminum
   - 53: On the Move
   - 82: Resource-Go-Round

4. Career Technical Education Connections
   None

Science Process Skills

SPS1: Scientific Inquiry and Critical Thinking Skills

1. Making Observations and Asking Questions
   - 1: The Shape of Things
   - 2: Get In Touch With Trees
   - 3: Peppermint Beetle
   - 4: Sounds Around
   - 5: Poet-Tree
   - 6: Picture This!
   - 7: Habitat Pen Pals
   - 8: The Forest of S.T. Shrew
   - 9: Planet Diversity
   - 10: Charting Diversity
   - 11: Can It Be Real?
   - 13: We All Need Trees
   - 15: A Few of My Favorite Things
   - 20: Environmental Exchange Box
   - 21: Adopt a Tree
   - 22: Trees as Habitats
   - 23: The Fallen Log
   - 24: Nature's Recyclers
   - 25: Birds and Worms
   - 36: Pollution Search
   - 37: Reduce, Reuse, Recycle
   - 38: Every Drop Counts
   - 39: Energy Sleuths
   - 40: Then and Now
   - 41: How Plants Grow
   - 42: Sunlight and Shades of Green
   - 43: Have Seeds, Will Travel
   - 46: School Yard Safari
   - 47: Are Vacant Lots Vacant?
   - 48: Field, Forest, and Stream
   - 54: I'd Like to Visit a Place Where…
   - 61: The Closer You Look
   - 64: Looking at Leaves
   - 65: Bursting Buds
   - 66: Germinating Giants
   - 67: How Big Is Your Tree?
   - 68: Name That Tree
   - 70: Soil Stories
   - 71: Watch on Wetlands
   - 72: Air We Breathe
   - 73: Waste Watchers
   - 76: Tree Cookies
   - 77: Trees in Trouble
   - 78: Signs of Fall
   - 80: Nothing Succeeds Like Succession
   - 81: Living with Fire
   - 82: Resource-Go-Round
   - 83: A Peek at Packaging
   - 84: The Global Climate
   - 96: Improve Your Place

2. Designing Scientific Investigations
   - 41: How Plants Grow

3. Conducting Scientific Investigations
   - 4: Sounds Around
   - 9: Planet Diversity
   - 24: Nature's Recyclers
   - 41: How Plants Grow
   - 42: Sunlight and Shades of Green
   - 47: Are Vacant Lots Vacant?
   - 48: Field, Forest, and Stream
   - 51: Make Your Own Paper
   - 66: Germinating Giants
   - 67: How Big Is Your Tree?
   - 70: Soil Stories
   - 71: Watch on Wetlands
   - 72: Air We Breathe
   - 73: Waste Watchers
   - 77: Trees in Trouble
   - 85: In the Driver's Seat
   - 96: Improve Your Place

SPS1: Scientific Inquiry and Critical Thinking Skills (cont.)

4. Representing and Understanding Results of Investigations
   - 9: Planet Diversity
   - 24: Nature's Recyclers
   - 25: Birds and Worms
   - 37: Reduce, Reuse, Recycle
   - 41: How Plants Grow
   - 47: Are Vacant Lots Vacant?
   - 48: Field, Forest, and Stream
   - 67: How Big Is Your Tree?
   - 70: Soil Stories
   - 71: Watch on Wetlands
   - 73: Waste Watchers
   - 77: Trees in Trouble

5. Evaluating Scientific Explanations
   - 9: Planet Diversity
   - 42: Sunlight and Shades of Green
   - 48: Field, Forest, and Stream
   - 71: Watch on Wetlands

SPS2: Unifying Concepts of Science.

1. Nature of Science
   - 37: Reduce, Reuse, Recycle
   - 81: Living with Fire
   - 91: In the Good Old Days

2. Systems and Energy
   - 33: Forest Consequences
   - 37: Reduce, Reuse, Recycle
   - 45: Web of Life

3. Models and Scale
   - 44: Water Wonders
   - 62: To Be A Tree
   - 63: Tree Factory

4. Patterns of Change
   - 23: The Fallen Log
   - 40: Then and Now
   - 65: Bursting Buds
   - 80: Nothing Succeeds Like Succession
   - 84: The Global Climate

5. Form and Function
   - 65: Bursting Buds
   - 66: Germinating Giants
   - 86: Our Changing World

SPS3: Personal, Social, and Technological Perspectives

1. Collaboration in Scientific Endeavors
   - 2: Get In Touch With Trees
   - 3: Peppermint Beetle
   - 4: Sounds Around
   - 9: Planet Diversity
   - 13: We All Need Trees
   - 17: People of the Forest
   - 20: Environmental Exchange Box
   - 24: Nature's Recyclers
   - 31: Plant a Tree
   - 33: Forest Consequences
   - 35: Loving It Too Much
   - 41: How Plants Grow
   - 47: Are Vacant Lots Vacant?
   - 48: Field, Forest, and Stream
   - 50: 400-Acre Wood
   - 53: On the Move
   - 54: I'd Like to Visit a Place Where…
   - 60: Publicize It!
   - 63: Tree Factory
   - 67: How Big Is Your Tree?
   - 68: Name That Tree
   - 70: Soil Stories
   - 71: Watch on Wetlands
   - 77: Trees in Trouble
   - 83: A Peek at Packaging
   - 84: The Global Climate
   - 86: Our Changing World
   - 91: In the Good Old Days
   - 92: A Look at Lifestyles
   - 94: By the Rivers of Babylon
   - 96: Improve Your Place

2. Common Environmental Issues, Natural Resources Management and Conservation
   - 4: Sounds Around
   - 9: Planet Diversity
   - 10: Charting Diversity
   - 11: Can It Be Real?
   - 12: Invasive Species
   - 14: Renewable or Not?
   - 18: Tale of the Sun
   - 21: Adopt a Tree
   - 22: Trees as Habitats
   - 23: The Fallen Log
   - 31: Plant a Tree
   - 33: Forest Consequences
   - 35: Loving It Too Much
   - 36: Pollution Search
   - 37: Reduce, Reuse, Recycle
   - 38: Every Drop Counts
   - 39: Energy Sleuths
   - 40: Then and Now
   - 46: School Yard Safari
   - 50: 400-Acre Wood
   - 54: I'd Like to Visit a Place Where…
   - 60: Publicize It!
   - 71: Watch on Wetlands
   - 72: Air We Breathe
   - 73: Waste Watchers
   - 77: Trees in Trouble
   - 78: Signs of Fall
   - 79: Tree Lifecycle
   - 80: Nothing Succeeds Like Succession
   - 81: Living with Fire
   - 83: A Peek at Packaging
   - 84: The Global Climate
   - 85: In the Driver's Seat
   - 87: Earth Manners
   - 88: Life on the Edge
   - 89: Trees for Many Reasons
   - 90: Native Ways
   - 91: In the Good Old Days
   - 92: A Look at Lifestyles
   - 94: By the Rivers of Babylon
   - 96: Improve Your Place

3. Science and Technology; Technological Design and Application
   - 4: Sounds Around
   - 18: Tale of the Sun
   - 33: Forest Consequences

SPS4: Science Skills for Information, Communication and Media Literacy

1. Information and Media Literacy
   - 12: Invasive Species
   - 17: People of the Forest
   - 37: Reduce, Reuse, Recycle
   - 39: Energy Sleuths
   - 45: Web of Life
   - 49: Tropical Treehouse
   - 82: Resource-Go-Round
   - 84: The Global Climate
   - 88: Life on the Edge
   - 91: In the Good Old Days
   - 92: A Look at Lifestyles
   - 94: By the Rivers of Babylon

2. Communication Skills
   - 1: The Shape of Things
   - 2: Get In Touch With Trees
   - 5: Poet-Tree
   - 6: Picture This!
   - 7: Habitat Pen Pals
   - 9: Planet Diversity
   - 10: Charting Diversity
   - 11: Can It Be Real?
   - 12: Invasive Species
   - 15: A Few of My Favorite Things
   - 21: Adopt a Tree
   - 22: Trees as Habitats
   - 24: Nature's Recyclers
   - 38: Every Drop Counts
   - 39: Energy Sleuths
   - 44: Water Wonders
   - 46: School Yard Safari
   - 47: Are Vacant Lots Vacant?
   - 49: Tropical Treehouse
   - 50: 400-Acre Wood
   - 60: Publicize It!
   - 61: The Closer You Look
   - 71: Watch on Wetlands
   - 72: Air We Breathe
   - 79: Tree Lifecycle
   - 80: Nothing Succeeds Like Succession
   - 82: Resource-Go-Round
   - 86: Our Changing World
   - 87: Earth Manners
   - 88: Life on the Edge
   - 90: Native Ways
   - 91: In the Good Old Days
   - 94: By the Rivers of Babylon

3. Critical Thinking and Systems Thinking
   - 8: The Forest of S.T. Shrew
   - 15: A Few of My Favorite Things
   - 21: Adopt a Tree
   - 25: Birds and Worms
   - 36: Pollution Search
   - 50: 400-Acre Wood
   - 53: On the Move
   - 60: Publicize It!
   - 71: Watch on Wetlands
   - 75: Tipi Talk
   - 86: Our Changing World
   - 96: Improve Your Place

4. Problem Identification, Formulation, and Solution
   - 4: Sounds Around
   - 24: Nature's Recyclers
   - 38: Every Drop Counts
   - 73: Waste Watchers
   - 96: Improve Your Place

5. Creativity and Intellectual Curiosity
   - 71: Watch on Wetlands
   - 72: Air We Breathe
   - 88: Life on the Edge
   - 91: In the Good Old Days
   - 94: By the Rivers of Babylon

6. Interpersonal and Collaborative Skills
   - 4: Sounds Around
   - 13: We All Need Trees
   - 24: Nature's Recyclers
   - 35: Loving It Too Much
   - 41: How Plants Grow
   - 48: Field, Forest, and Stream
   - 50: 400-Acre Wood
   - 54: I'd Like to Visit a Place Where…
   - 60: Publicize It!
   - 63: Tree Factory
   - 64: Looking at Leaves
   - 67: How Big Is Your Tree?
   - 68: Name That Tree
   - 69: Forest for the Trees
   - 71: Watch on Wetlands
   - 77: Trees in Trouble
   - 83: A Peek at Packaging
   - 87: Earth Manners
   - 88: Life on the Edge
   - 92: A Look at Lifestyles
   - 94: By the Rivers of Babylon
   - 96: Improve Your Place

7. Self Direction
   - 21: Adopt a Tree
   - 38: Every Drop Counts
   - 65: Bursting Buds
   - 73: Waste Watchers
   - 80: Nothing Succeeds Like Succession
   - 85: In the Driver's Seat

8. Accountability and Adaptability
   - 20: Environmental Exchange Box

9. Social Responsibility
   - 20: Environmental Exchange Box
   - 71: Watch on Wetlands

Earth Space Science

ESS1 - The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes.

1. Atmosphere, Climate, & Weather
   None

2. Composition & Features
   2: May The Source Be With You

3. Fossils
   None

4. Observation of the Earth from Space
   None

5. Processes & Rates of Change
   None

6. Rock Cycle
   None

7. Water
   None

ESS2 - The Earth is part of a solar system, made up of distinct parts, which have temporal and spatial interrelationships.

1. Earth, Sun and Moon
   None

2. Energy
   None

3. Solar System
   None

4. View from Earth
   None

ESS3 - The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time.

1. Size and Scale
   None

2. Stars and Galaxies
   None

3. Universe
   None

ESS4 - The growth of scientific knowledge in Earth Space Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues.

1. Design Technology
   None

2. Tools
   None

3. Social Issues (Local and Global)
   5: In the Driver's Seat

4. Career Technical Education Connections
   None

Life Science

LS1 - All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, & species).

None

LS2 - Energy flows and matter recycles through an ecosystem.

None

LS3 - Groups of organisms show evidence of change over time (e.g. evolution, natural selection, structures, behaviors, and biochemistry).

None

LS4 - Humans are similar to other species in many ways, and yet are unique among Earth's life forms.

None

LS5 - The growth of scientific knowledge in Life Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues.

None

Physical Science

PS1 - All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another (independent of size/amount of substance).

1. Composition
   None
2. Properties
   None

PS 2 - Energy is necessary for change to occur in matter. Energy can be stored, transferred and transformed, but cannot be destroyed.

1. Change
   None

2. Conservation
   3: Energy Chains

3. Energy
   1: Energy Detectives
   2: May The Source Be With You
   3: Energy Chains

PS 3 - The motion of an object is affected by force.

1. Forces
   None
2. Motion
   None

PS4 - The growth of scientific knowledge in Physical Science has been advanced through the development of technology and is used (alone or in combination with other sciences) to identify, understand and solve local and global issues.

1. Design Technology
   None

2. Tools
   None

3. Social Issues (Local and Global)
   1: Energy Detectives
   3: Energy Chains

4. Career Technical Education Connections
   None

Science Process Skills

SPS1: Scientific Inquiry and Critical Thinking Skills

1. Making Observations and Asking Questions
   5: In the Driver's Seat

2. Designing Scientific Investigations
   None

3. Conducting Scientific Investigations
   None

4. Representing and Understanding Results of Investigations
   None

5. Evaluating Scientific Explanations
   None

SPS2: Unifying Concepts of Science.

1. Nature of Science
   None

2. Systems and Energy
   None

3. Models and Scale
   None

4. Patterns of Change
   None

5. Form and Function
   None

SPS3: Personal, Social, and Technological Perspectives

1. Collaboration in Scientific Endeavors
   2: May The Source Be With You
   3: Energy Chains

SPS3: Personal, Social, and Technological Perspectives (cont.)

2. Common Environmental Issues, Natural Resources Management and Conservation
   1: Energy Detectives
   2: May The Source Be With You
   3: Energy Chains
   5: In the Driver's Seat

3. Science and Technology; Technological Design and Application
   None

SPS4: Science Skills for Information, Communication and Media Literacy

1. Information and Media Literacy
   None

2. Communication Skills
   1: Energy Detectives
   2: May The Source Be With You
   6: Energy Challenge Game

3. Critical Thinking and Systems Thinking
   3: Energy Chains

4. Problem Identification, Formulation, and Solution
   None

5. Creativity and Intellectual Curiosity
   2: May The Source Be With You

6. Interpersonal and Collaborative Skills
   2: May The Source Be With You
   3: Energy Chains
   6: Energy Challenge Game

7. Self Direction
   1: Energy Detectives
   5: In the Driver's Seat

8. Accountability and Adaptability
   None

9. Social Responsibility
   None