



**Standards Connections & Summary**  
**Elementary School: Grades 3-5**

**Human Impact on the Los Angeles River: Past, Present, and Future**

**Lessons Summary: Human Impact**  
(Varies with grade level)

	Lesson #1 In-class, teacher led	Lesson #2 River Rover Visit, FoLAR led	Lesson #3 In-class, teacher led
Objective	<p><b>An Introduction to the LA River</b> Students understand the history of the River, and that humans and nature are interconnected. By understanding the past, humans have the ability to change the present and future of their environment.</p>	<p><b>Past, Present, and Future of the LA River</b> Students will compare the states of the River in the past and the present, learn about the LA Watershed, and design a future River.</p>	<p><b>Biodiversity</b> Students will be able to explain and illustrate the interconnected relationship between living organisms in the River habitat.</p>

<b>Activities</b>	<ul style="list-style-type: none"> <li>• Powerpoint presentation which provides visual aids</li> <li>• Introduction to Indigenous people of LA</li> <li>• Discuss why the concrete was covered in concrete</li> </ul>	<p>River Rover Stations : Each class will rotate through 3 stations/mini-lessons in small groups in and around the River Rover. Stations call on prior knowledge from Lesson 1. Each class takes 1 hour to rotate through all three stations.</p> <p>Lessons discuss:</p> <ul style="list-style-type: none"> <li>• Historic flooding and channelization of the River</li> <li>• Endangered and threatened animals</li> <li>• Human impact on biodiversity</li> <li>• Pollution in the LA River</li> <li>• How the LA River gets water</li> <li>• The LA River watershed -- with interactive 3D model</li> <li>• Future of the River</li> <li>• Art as activism</li> </ul>	<ul style="list-style-type: none"> <li>• Powerpoint presentation which provides visual aids</li> <li>• Native v. non-native plants discussion and game</li> <li>• Biodiversity discussion</li> <li>• Overview of plants and animals found in the River</li> <li>• Overview of food chains and food webs</li> <li>• Discussion of how plants, animals, and humans are all interconnected</li> </ul> <p>Optional activity: Web of Life</p>
-------------------	---	---	--

### Field Trip: Lewis MacAdams Riverfront Park

<b>Objective</b>	<p>Students will be able to apply concepts to real world situations by experiencing investigation of the riparian habitat of the LA River. Students will be offered skills to help them engage with nature and develop wonder and curiosity of their environment in order to help them think like scientists.</p>
------------------	---

<b>Activities</b>	<p>The goal of the activities is to help promote:</p> <ul style="list-style-type: none"> <li>● Investigation of the River through touch, sight, and sound</li> <li>● A curious mindset</li> <li>● Thinking like a scientist by making observations, formulating questions, and collecting and analyzing data</li> <li>● Use of language of the discipline to actively engage with the nature around them</li> <li>● Synthesis of material from lessons #1 - 3</li> </ul> <p>Students rotate through the following learning stations:</p> <p><b>Nature Walk:</b> Students will go on a guided walk along the River and learn naturalist skills. As we explore the River, they will make nature observations that will help them identify the various plants and animals we come across and understand their role in the ecosystem.</p> <p><b>Filtration Station:</b> Students collaborate to construct filtration systems using permeable and impermeable materials. They will test and evaluate the effectiveness of their design and compare it to the filtration occurring in concrete and natural bottom areas.</p> <p><b>Macroinvertebrate Collection:</b> Students will collect water samples and identify the various macroinvertebrates they collect. They will discuss why macroinvertebrates serve as indicator species and how they help determine the water quality of the LA River.</p>
-------------------	---

<b>Optional: Design Challenge Extension</b>	
<b>Objective</b>	<p>Students will be able to design a solution to a current problem in the Los Angeles River.</p> <p>Optional activity: Ss will be able to build a model of a system that solves a current problem in the Los Angeles River.</p>
<b>Activities</b>	<p>Design solutions for factors affecting River habitat health. Solutions can be realistic or fantasy based. Can be specific to Lewis MacAdams Riverfront Park (site of field trip).</p> <p>For example:</p> <ul style="list-style-type: none"> <li>● Air pollution from freeway</li> <li>● Urban/community runoff</li> <li>● Impacts of a concrete city</li> </ul> <p>Optional activity: Classes are encouraged to make models of the solutions out of unconventional, household materials. Students pledge to help the River.</p>

## Standards Abbreviations Key

<p><b>California State Standards Abbreviations</b></p> <ul style="list-style-type: none"> <li>● SS: Social Studies</li> <li>● LS: Life Sciences</li> <li>● SM: Scientific Method</li> <li>● ES: Earth Science</li> </ul>	<p><b>Next Generation Science Standards Abbreviations (NGSS)</b></p> <ul style="list-style-type: none"> <li>● ESS: Earth and Space Sciences</li> <li>● LS: Life Sciences</li> <li>● ETS: Engineering and Design</li> <li>● PE: Performance Expectations</li> <li>● DCI: Disciplinary Core Ideas</li> <li>● CC: Crosscutting Concepts</li> </ul>
<p><b>California Common Core State Standards Abbreviations (CCSS)</b></p> <ul style="list-style-type: none"> <li>▪ L: Language Standards</li> <li>▪ RI: Reading Standards for Informational Text</li> <li>▪ SL: Speaking and Listening Standards</li> <li>▪ W: Writing Standards</li> </ul>	

### NGSS: General Concepts Covered in Lessons (L) #1-3

Students (Ss)

*Across grade levels*

*Possible applications in lessons are italicized.*

Science and Engineering Practices	Cross Cutting Concepts (CC)
<p>Make observations (first hand or from media) to construct an evidence-based account for natural phenomena.</p> <ul style="list-style-type: none"> <li>● <i>Ss use visual aids/photographs to depict natural events around the River.</i></li> </ul> <p>Use tools and materials provided to design a device that solves a specific problem.</p> <ul style="list-style-type: none"> <li>● <i>In L#3, Ss design a solution to a problem affecting the River habitat.</i></li> </ul> <p>Scientists use different ways to study the world.</p>	<p><b>Cause and Effect</b></p> <p>Simple tests can be designed to gather evidence to support or refute student ideas about causes.</p> <ul style="list-style-type: none"> <li>● <i>Ss predict the state of biodiversity and the web of life in the present, and the causes of change in them.</i></li> </ul> <p>Cause and effect relationships are routinely identified and used to explain change.</p> <ul style="list-style-type: none"> <li>● <i>Biodiversity decreased when the River was channelized in the late 1930s. No native fish live in the River today. Native species now compete with non-native and invasive species for habitat.</i></li> </ul>

- *Ss think like a scientist depending on the activity: biologist, anthropologist...*

Engaging in argument from evidence in K–2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s). Construct an argument with evidence to support a claim.

- *Ss compare man made “solutions” to floods and pollution. Ss will compare the current construction to what improvements can be made by humans: porous stones, less concrete, protected habitat, community access.*

Scientists search for cause and effect relationships to explain natural events.

- *Heavy rainy seasons caused the River channel to overflow, which damaged surrounding communities.*

### **Energy and Matter**

Matter is transported into, out of, and within systems.

- *Systems: food web, habitat around the River and within.*

### **Patterns**

Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Patterns of change can be used to make predictions.

- *Ss predict the level of biodiversity in the River habitat today based on prior knowledge and L#1.*

### **Influence of Engineering...and the Natural World**

People depend on various technologies in their lives; human life would be very different without technology.

- *Los Angeles was established because of the River’s resources. Urban development began on the riverbanks, which left businesses and residents susceptible to flooding. The Army Corps of Engineers channelized the River for flood control.*

Every human-made product is designed by applying some knowledge of the natural world and is built by using materials derived from the natural world.

- *Native plants and soil act as a natural filtration systems. On the field trip, Ss create a model of a filtration system through the lens of engineers. Ss will also see a newly designed channel that uses native plants and soil to filter city water before it meets the River.*

Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process.

Engineers improve existing technologies or develop new ones to increase their benefits, to decrease known risks, and to meet societal demands.

- *Angelenos saw the River as a nuisance and demanded a solution. Fredrick L. Olmsted proposed a design similar to*

*what the Army Corps has proposed for the future River. In the late 1930s, Olmsted's plan was rejected for plans to straighten and concretize the River. In L#3, students will design a solution to issues around the River today: runoff, air pollution, and habitat destruction. On the field trip, Ss will create models of filtration systems using trial and error.*

## NGSS Connections by Grade Level

Grade	CA Content Standards	NGSS (PE, DCI)
1	<p><b>SS K.6.3.</b> Understand how people lived in earlier times and how their lives would be different today...</p> <p><b>SS 1.4.1</b> Examine the structure of schools and communities in the past.</p> <p><b>SS.1.5.2.</b> Understand the ways in which Native Americans and immigrants have helped define Californian and American culture.</p> <p><b>LS Review: K.2.a</b> Students know how to observe and describe similarities and differences in the appearance and behavior of plants and animals (e.g., seed-bearing plants, birds, fish, insects).</p> <p><b>LS Review: K.2.c.</b> Students know how to identify major structures of common plants and animals (e.g., stems, leaves, roots, arms, wings, legs).</p> <p><b>Review: K.3.c.</b> Students know how to identify resources from Earth that are used in everyday life and understand that many resources can be conserved.</p> <p><b>Review: K.4.a</b> Observe common objects by using the five senses.</p>	<p><b>1-LS1 Structure, Function, and Information Processing (PE)</b>            1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.*</p> <p><b>1-LS1.D. (DCI)</b>            Information Processing            Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. (1-LS1-1)</p> <p><b>ETS1.B: Developing Possible Solutions</b>            Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.</p> <p><b>K-2 Performance Expectations</b>  <b>K-2-ETS1-1.</b> Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p>

	<p><b>LS 1.2.a</b> Students know different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.</p> <p><b>LS 1.2.b</b> Students know both plants and animals need water, animals need food, and plants need light.</p>	<p><b>K-2-ETS1-2.</b> Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p>
<p>2</p>	<p><b>SS 2.4.3</b> Understand how limits on resources affect production and consumption (what to produce and what to consume).</p> <p><b>SS 2.1.3</b> Place important events...in the order in which they occurred...</p> <p><b>SS 2.2.4</b> Compare and contrast basic land use in urban, suburban, and rural environments in California.</p> <p><b>LS 2.2.a.</b> Students know different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.</p> <p><b>LS 2.2.c.</b> Students know many characteristics of an organism are inherited from the parents. Some characteristics are caused or influenced by the environment.</p> <p><b>Earth Science 2.3.e</b> Students know rock, water, plants, and soil provide many resources, including food, fuel, and building materials, that humans use.</p> <p><b>Scientific Method 2.4.a.</b> Make predictions based on observed patterns and not random guessing.</p> <p><b>Scientific Method 2.4.b.</b> Differentiate evidence from opinion and know that scientists do not rely on claims or conclusions unless they are backed by observations that can be confirmed.</p> <p><b>SM 2.4.d.</b> Predict the outcome of a simple investigation and compare the result with the prediction.</p>	<p><b>2-LS4-1.</b> Make observations of plants and animals to compare the diversity of life in different habitats.</p> <p><b>2-LS4.D. Biodiversity and Humans (DCI)</b> There are many different of living things in any area, and they exist in different places on land and in water. (2-LS4-1)</p> <p><b>LS2.A: Interdependent Relationships in Ecosystems (DCI)</b> Plants depend on water and light to grow.</p> <p><b>ETS1.C: Optimizing the Design Solution (DCI)</b> Because there is always more than one possible solution to a problem, it is useful to compare and test designs.</p> <p><b>K-2 Performance Expectations</b></p> <p><b>K-2-ETS1-1.</b> Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p><b>K-2-ETS1-2.</b> Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p>

**3**

**SS 3.1.2.** Trace the ways in which people have used the resources of the local region and modified the physical environment (e.g., a dam constructed upstream changed a river or coastline).

**SS 3.3.3** Trace why...community was established, how individuals and families contributed to its founding and development, and how the community has changed over time...

**LS 3.3.c.** Students know living things cause changes in the environment in which they live: some of these changes are detrimental to the organism...and some are beneficial (human impact).

**LS 3.3.d.** Students know when the environment changes, some plants and animals survive and reproduce; others die or move to new locations.

**SM 3.5.b** Differentiate evidence from opinion and know that scientists do not rely on claims or conclusions unless they are backed by observations that can be confirmed.

**3-LS1 From Molecules to Organisms: Structures and Processes**

**3-LS2-1.** Cause and effect relationships are routinely identified and used to explain change.

**3-LS3-2.** Use evidence to support the explanation that traits can be influenced by the environment.

**LS3.A Inheritance of Traits (DCI)**

Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.

**3-LS2.C. (DCI) Habitat Dynamics, Functioning, and Resilience**  
When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary to 3-LS4-4)

**3-LS4-3.** Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

**3-LS4-4.** Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

**ESS3.B: Natural Hazards (DCI)**

A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts.



4

**SS 4.2** Students describe the social, political, cultural, and economic life and interactions among people of California from the pre-Columbian societies to the Spanish mission and Mexican rancho periods.

**SS 4.2.1** Discuss the major nations of California Indians, including... describe how they depended on, adapted to...the physical environment...

**SS 4.2.3** Describe the Spanish exploration and colonization of California, including the relationships among soldiers, missionaries, and Indians (e.g., Juan Crespi...).

**SS 4.4.7** Trace the evolution of California’s water system into a network of dams, aqueducts, and reservoirs. (watershed, Los Angeles River channel)

**LS 4.2.b** Students know producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs and may compete with each other for resources in an ecosystem.

**LS 4.3.a** Students know ecosystems can be characterized by their living and nonliving components.

**LS 4.3.b.** Students know that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.

**SM 4.6.c.** Formulate and justify predictions based on cause-and-effect relationships.

**ESS2.E: Biogeology (DCI)**

Living things affect the physical characteristics of their regions.

**4-ESS3-1.** Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

**4-ESS3-2.** Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

**ESS3.B: Natural Hazards (DCI)**

A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts.

5	<p><b>SS 5.1.1</b> Describe how geography and climate influenced the way various nations lived and adjusted to the natural environment...</p> <p><b>ES 5.3.d</b> Students know that the amount of fresh water located in rivers, lakes, underground sources, and glaciers is limited and that its availability can be extended by recycling and decreasing the use of water.</p> <p><b>ES 5.3.e</b> Students know the origin of the water used by their local communities.</p> <p><b>SM 5.6.e</b> Identify a single independent variable in a scientific investigation and explain how this variable can be used to collect information to answer a question about the results of the experiment.</p>	<p><b>5-LS2-1.</b> Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p> <p><b>LS2.A: Interdependent Relationships in Ecosystems (DCI)</b> ...Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem.</p> <p><b>ESS2.C: The Roles of Water in Earth’s Surface Processes (DCI)</b> Nearly all of Earth’s available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.</p> <p><b>5-ESS3-1.</b> Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.</p> <p><b>3-5-ETS1-2.</b> Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</p>
---	---	---

### CCSS : Grades 1-2

CCSS Abbreviation	Grade 1._	Grade 2._
RI _ .1	(RI.1.1) Ask and answer questions about key details in a text.	(RI.2.1) Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details...
RI _ .3	Describe the connection between two individuals, events, ideas, or pieces of information...	Describe the connection between a series of historical events, scientific ideas or concepts...

<b>RI _ .7</b>	Use the illustrations and details in a text to describe its key ideas.	Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.
<b>W _ .8</b>	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.	Recall information from experiences or gather information from provided sources to answer a question.
<b>SL _ .1</b>	Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.	Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
<b>SL _ .4</b>	Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.	(Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
<b>SL _ .5</b>	Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.	...Add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

### CCSS : Grades 3-5

<b>CCSS Abbreviation</b>	<b>Grade 3. _</b>	<b>Grade 4. _</b>	<b>Grade 5. _</b>
<b>RI _ .1</b>	(RI.3.1) Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	(RI.4.1) Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	(RI.5.1) Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
<b>RI _ .3</b>	Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.	Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text	Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

RI <u>  </u> .7	Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).	Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.	Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
SL <u>  </u> .1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
SL <u>  </u> .4	Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.	Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.	Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences
SL <u>  </u> .5	Add drawings or other visual displays to descriptions as desired to provide additional detail.	Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.	Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.
W <u>  </u> .8	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.	With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.	Recall information from experiences or gather information from provided sources to answer a question.

### California's Environmental Principles and Concepts

California's Environmental Principles and Concepts (EP&C's) examine the interactions and interdependence of human societies and natural systems, and are the foundation of the environmental content taught in the EEI Curriculum. Approved in 2004, these 5 principles and fourteen supporting concepts were developed by more than one hundred

scientists and technical experts. By law, the EP&C's must be addressed in all future California textbooks and instructional materials adopted by the state.

**Principle I. People Depend on Natural Systems**

The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem services.

**Concept A.** Students need to know that the goods produced by natural systems are essential to human life and to the functioning of our economies & cultures.

**Concept B.** Students need to know that the ecosystem services provided by natural systems are essential to human life and to the functioning of our economies and cultures.

**Concept C.** Students need to know that the quality, quantity, and reliability of the goods and ecosystem services provided by natural systems are directly affected by the health of those systems.

**Principle II. People Influence Natural Systems**

The long-term functioning and health of terrestrial, freshwater, coastal, and marine ecosystems are influenced by their relationships with human societies.

**Concept A.** Students need to know that direct and indirect changes to natural systems due to the growth of human populations and their consumption rates influence the geographic extent, composition, biological diversity, and viability of natural systems.

**Concept B.** Students need to know that methods used to extract, harvest, transport, and consume natural resources influence the geographic extent, composition, biological diversity, and viability of natural systems.

**Concept C.** Students need to know that the expansion and operation of human communities influences the geographic extent, composition, biological diversity, and viability of natural systems.

**Concept D.** Students need to know that the legal, economic, and political systems that govern the use and management of natural systems directly influence the geographic extent, composition, biological diversity, and viability of natural systems.

**Principle III. Natural Systems Change in Ways that People Benefit from and can Influence**

Natural systems proceed through cycles that humans depend upon, benefit from, and can alter.

**Concept A.** Students need to know that natural systems proceed through cycles and processes that are required for their functioning.

**Concept B.** Students need to know that human practices depend upon and benefit from the cycles and processes that operate within natural systems.

**Concept C.** Students need to know that human practices can alter the cycles and processes that operate within natural systems.

**Principle IV. There are no Permanent or Impermeable Boundaries that Prevent Matter from Flowing Between Systems**

The exchange of matter between natural systems and human societies affects the long-term functioning of both.

**Concept A.** Students need to know that the effects of human activities on natural systems are directly related to the quantities of resources consumed and to the quantity and characteristics of the resulting byproducts.

**Concept B.** Students need to know that the byproducts of human activity are not readily prevented from entering natural systems and may be beneficial, neutral, or detrimental in their effect.

**Concept C.** Students need to know that the capacity of natural systems to adjust to human-caused alterations depends on the nature of the system as well as the scope, scale, and duration of the activity and the nature of its byproducts.

**Principle V. Decisions Affecting Resources and Natural Systems are Complex and Involve Many Factors**

Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.

**Concept A.** Students need to know the spectrum of what is considered in making decisions about resources and natural systems and how those factors influence decisions.

**Concept B.** Students need to know the process of making decisions about resources and natural systems, and how the assessment of social, economic, political, and environmental factors has changed over time.