TEKS Alignment to Field Trip and Post-Trip Lesson Plans

All TEKS are from Grade 4 from 2011-2012 unless noted; descriptions and worksheets are provided on website

Subject	TEKS #	TEKS	Sneed Activity
Science	Scientific investigation and reasoning 4 (A)	The student knows how to use a variety of tools, materials, equipment, and models to conduct science inquiry. The student is expected to collect, record, and analyze information using tools, including calculators, microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, mirrors, spring scales, pan balances, triple beam balances, graduated cylinders, beakers, hot plates, meter sticks, compasses, magnets, collecting nets, and notebooks.	**Species diversity activity** The species diversity activity teaches students to find different plant and animal species, collect data, and observe diversity. Students are divided into small teams that are given a hula hoop to place on the ground. They use hand lenses to observe and count as many different species as they can find within their hula hoop. They record their data onto a worksheet and discuss their results with the group.
Science Grade 5	Organisms and environments 10 (A)	The student is expected to compare the structures and functions of different species that help them live and survive such as hooves on prairie animals or webbed feet in aquatic animals.	**Herd activity** Students simulate a grazing herd of bison to understand how free-roaming bison eat. They experience how the bison on the outside of the herd are exposed to predation, and the ones on the inside are safer but have less grass to eat. Students observe and handle skulls of various prairie animals and learn to distinguish between the species. These species include bison, deer, hog, raccoon, and tortoise. Students find animal tracks on the walk and attempt to determine which species left them.
Science	Scientific investigation and reasoning 3 (C)	Students represent the natural world using models such as rivers, stream tables, or fossils and identify their limitations, including accuracy and size.	**Fossil Collection** Students examine fossils and skulls of native animals in the pavilion.
Social Studies	Science, technology & society 20 (B-C)	The student understands the impact of science and technology on life in Texas. The student is expected to describe how scientific discoveries and innovations such as in aerospace, agriculture, energy, and technology have benefited individuals, businesses, and society in Texas; and predict how future scientific discoveries and technological innovations might affect life in Texas.	**Pavilion** The tour of the pavilion teaches students about energy efficient buildings and the sustainable technology used to operate it. Students observe and discuss how the building differs from others and how it has less of an impact on the environment. The building has solar panels that generate electricity from sunlight and the building collects and filters rain water for drinking and other uses.
Math	Measurement (4.11)	The student applies measurement concepts. The student is expected to estimate and measure to solve problems involving length and area. The student uses measurement tools to measure capacity/volume and weight/mass.	**Pavilion** In the pavilion, students observe and estimate how many gallons of water the rain water collection tank can hold.

Science Science Grade 5	Scientific investigation and reasoning 3 (A) Scientific investigation and reasoning 2 (A-F)	The student is expected to analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student. The student is expected to: describe, plan, and implement simple experimental investigations testing one variable; ask well-defined questions, formulate testable hypotheses, and select and use appropriate equipment and technology; collect information by detailed observations and accurate measuring; analyze and interpret information to construct reasonable explanations from direct and indirect evidence; demonstrate that repeated investigations may increase the reliability of results; communicate valid conclusions in both written and verbal forms.	**Runoff demo experiment** **Hypothesis** Students create their own hypothesis for a water runoff experiment. Using the worksheet, they write which containers they think contain more runoff water and which contain the most ground water. **Experiment** Field guides walk through the procedure of the experiment and students observe as the guides pour water into each container above the plants. **Results of the experiment** After about an hour, students meet back at the experiment to observe and discuss the results and determine if their hypothesis is supported or not.
Science	Earth and space 7 (B)	Students observe and identify slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice.	**Erosion and water** Students learn how perennial plants help prevent erosion. Restoring the prairie helps reduce flash flooding and mud in reservoirs, and allows more water to reach aquifers.
Science Science Grade 5	Earth and space 7 (A) Organisms and environments 9 (C)	Students examine properties of soils, including color and texture, capacity to retain water, and ability to support the growth of plants; The student knows that there are relationships, systems, and cycles within environments. The student is expected to predict the effects of changes in ecosystems caused by living organisms, including humans, such as the overpopulation of grazers or the building of highways.	**Grasses and Grazing** Students learn that annual plants have a life cycle of only a year, and perennial plants, such as the native prairie grasses, can live for many years and survive under difficult conditions such as drought. We discuss the perennial grasses' root structure, water holding capacity, ability to hold soil, and ability to grow back after a fire. The field guides roll out an amazing 10-foot long photograph to show students a life-size image of a perennial plant's long roots. Students also discuss the different grazing habits of free roaming bison and fenced cattle and their different effects on plant growth.
Social Studies	History 1 (A-D)	The student understands the origins, similarities, and differences of American Indian groups in Texas and North America before European exploration. The student is expected to: explain the possible origins of American Indian groups in Texas and North America; identify American Indian groups in	**History: 200 years ago** Students learn the history of the Blackland Prairie by discussing what it was like two hundred years ago. Students describe the plants, animals, and people that were here at this time. This includes information about Native Americans and bison that used to live on the prairie.

		Texas and North America before European exploration; compare the ways of life of American Indian groups in Texas and North America before European exploration.	
Social Studies Social Studies Social Studies Social Studies	History 4 (B-D) History 5 (A) Geography 9 (A) Economics 12 (C, E)	The student understands the political, economic, and social changes in Texas during the last half of the 19th century. The student is expected to: explain the growth, development, and impact of the cattle industry; identify the impact of railroads on life in Texas, including changes to cities and major industries; examine the effects upon American Indian life resulting from changes in Texas, including building of U.S. forts and railroads, and loss of buffalo. The student is expected to identify the impact of various issues and events on life in Texas such as urbanization, increased use of oil and gas. The student is expected to describe ways people have adapted to and modified their environment in Texas, past and present, such as timber clearing, agricultural production, wetlands drainage, energy production, and construction of dams The student is expected to: analyze the effects of exploration, immigration, migration, and limited resources on the economic development and growth of Texas; explain how developments in transportation and communication have influenced economic activities in Texas.	**Changes over the past 200 years** The animals, people, and land usage on the prairie have greatly changed within the last two hundred years. There are now cattle instead of bison, roads, buildings, trees, annual plants, and settlers who have replaced the Native Americans. Students discuss how these factors have drastically altered the natural environment and its consequences.
Art	Response/ Evaluation 4 (A-B)	The student makes informed judgments about personal artworks and the artworks of others. The student is expected to: describe intent and form conclusions about personal artworks; and interpret ideas and moods in original artworks, portfolios, and exhibitions by peers and others.	**Mural** Students observe a painted mural of the native grasses in the pavilion and compare how different the prairie looks each season. They also see a bison silhouette sculpture that represents the size of a real bison.
Science	Organisms and environments 9 (B)	The student is expected to describe the flow of energy through food webs and predict how changes in the ecosystem affect the food web such as a fire in a forest.	**Restoration** The techniques Austin College uses to restore the prairie are mowing, burning, and grazing. In the past, lightning and Native Americans started fires. Now we carefully set fires to foster grass recovery, suppress trees, and thus help restore the soil. Students discuss how a fire can be beneficial to an ecosystem and imitate a grazing herd of bison by stomping native

			seeds into the ground. (Instructors will make clear that students should never set fires.) An example of the food web at the prairie is the relationship between the milkweed plant and the monarch butterfly. Students who visit the site during the spring monarch migration observe the two species and learn how the butterfly relies on the milkweed plant as a major food source.
Social Studies Social Studies	Geography 7 (B) Geography 6 (A)	The student understands the concept of regions. The student is expected to: identify, locate, and compare the geographic regions of Texas (Mountains and Basins, Great Plains, North Central Plains, Coastal Plains), including their landforms, climate, and vegetation. The student is expected to apply geographic tools, including grid systems, legends, symbols, scales, and compass roses, to construct and interpret maps.	**The Blackland Prairie ecosystem** Through discussion and observation of a map of Texas, students learn that the Blackland Prairie is an endangered ecosystem of which less than 1% remains. The Texas Blackland Prairie ranges from San Antonio to the Red River, and is a part of the tallgrass prairie that stretches to Canada.
Social Studies Social Studies	Geography 9 (a-b) Economics 12 (a-b)	Students describe ways people have adapted to and modified their environment in Texas, past and present, such as timber clearing, agricultural production, wetlands drainage, and energy production; identify reasons why people have adapted to and modified their environment in Texas, past and present, such as the use of natural resources to meet basic needs, facilitate transportation, and enhance recreational activities. The student is expected to explain how people in different regions of Texas earn their living, past and present, through a subsistence economy and providing goods and services; explain how geographic factors such as climate, transportation, and natural resources have influenced the location of economic activities in Texas.	**History of the prairie** Students learn the history of the prairie; Clinton and Edith Sneed farmed this land before they gave it to the college. Students guess which plants were grown on the prairie, including corn, oats, sorghum, and hay. The Sneeds also raised dairy and beef cattle. Students observe the dairy barn, which had one of the first automated milking machines in the area.
Social Studies	Geography 6 (A)	The student uses geographic tools to collect, analyze, and interpret data. The student is expected to apply geographic tools, including grid systems, legends, symbols, scales, and compass roses, to construct and interpret maps.	**Map of the property** A map in the pavilion shows students a bird's eye view of the Sneed Property. The fields are divided by the different techniques we use to restore them, which are combinations of fire, cattle, and mowing. This map is different from most maps because it has west, rather than north, at the top; so students must apply their knowledge of maps and use the symbols and key to understand it and navigate their

			way through the prairie.
Science	Scientific investigation and reasoning 1(b)	Make informed choices in the use and conservation of natural resources and reusing and recycling of materials such as paper, aluminum, glass, cans, and plastic.	**Recycling** When students eat lunch in the pavilion we discuss and identify what items can and cannot be recycled and help students place their waste into the correct bins.
Science	Scientific investigation and reasoning 1 (A)	Students demonstrate safe practices and the use of safety equipment as described in the Texas Safety Standards during classroom and outdoor investigations.	**Safety talk** Field guides give students instructions for personal safety and explain how to protect the plants and animals they encounter from human harm; such as picking a plant or intentionally stepping on an insect.
Science	Organisms and environment 9(B)	Within the living environment, students know and understand that living organisms within an ecosystem interact with one another and with their environment. The students will recognize that plants and animals have basic needs, and they are met through a flow of energy known as food webs. Students will explore how all living organisms go through a life cycle and that adaptations enable organisms to survive in their ecosystem.	**Definitions** Students define and discuss the terms ecosystem, environment, and endangered species. Throughout the trip they observe and learn about the plant life cycle and the basic needs of a plant. **Species identification** Students observe and identify plant and animal species of the prairie as we come across them on the field trip. An example of an animal the students will observe is the harvester ant, whose primary source of food in their native habitat is the seeds of prairie plants.
Science	Scientific investigation and reasoning 2 (C)	The student uses scientific inquiry methods during laboratory and outdoor investigations. The student is expected to construct simple tables, charts, bar graphs, and maps using tools and current technology to organize, examine, and evaluate data.	**Graphic organizers** Students create an individual t-chart to contrast a healthy ecosystem and a damaged ecosystem.

Sneed Prairie Post-Trip Lesson Plans

Descriptions and worksheets provided on website

Subject	TEKS #	TEKS	After trip lesson plan
Math	Probability and statistics (4.13 B)	The student solves problems by collecting, organizing, displaying, and interpreting sets of data. The student is expected to interpret bar graphs.	**Graphing Species Diversity: Hula Hoop Results** During the field trip students work in small groups to identify as many plant and animal species as they can find in a hula hoop laid on the ground. In the classroom, students get back into their groups and verify the number of plant and animal species they have discovered. Students graph this information using paper or a computer. Their graphs should include a title, x axis, y axis, and a legend. After they have finished their individual graphs, they make a class graph on the board, using butcher paper, or on the computer. Students can then create a new graph displaying data for the entire class.
Science	Scientific investigation and reasoning 2 (A-D, F)	The student uses scientific inquiry methods during laboratory and outdoor investigations. The student is expected to: plan and implement descriptive investigations, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer his/her questions; collect and record data by observing measuring, and using descriptive words and numerals such as labeled drawings, writing, and concept maps; construct simple tables, charts, bar graphs, and maps using tools and current technology to organize, examine, and evaluate data; analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured; communicate valid, oral, and written results supported by data.	
Social Studies	Geography 6 (B)	The student is expected to translate geographic data, population distribution, and natural resources into a variety of formats such as graphs and maps.	
English Language Arts and Reading	Writing/writing process 15 (A,B,C,E)	Students use elements of the writing process to compose text. Students are expected to: Plan a first draft by selecting a genre appropriate for conveying the intended meaning to an audience and generating ideas through a range of strategies (e.g., brainstorming, graphic organizers, logs, journals); Develop drafts by categorizing ideas and organizing them into paragraphs; Revise drafts for coherence, organization, use of simple and compound sentences, and audience; Revise final draft in response to feedback from peers and teacher and	**Expository and Narrative Writing Prompts** Students write an expository essay in response to a specific writing prompt, such as, “Describe the Blackland Prairie ecosystem and some of the techniques used to help restore it.” Students write a narrative about their personal experience at the prairie, such as, “Why is environmental conservation important to you? Include activities and discussions from the Sneed Prairie field trip, along with your own personal experiences about the environment.”

English Language Arts and Reading English Language Arts and Reading	Writing 17 Writing/expository and procedural texts 18	publish written work for a specific audience. Students are expected to write about important personal experiences. Students write expository and procedural or work-related texts to communicate ideas and information to specific audiences for specific purposes.	
Science Science	Scientific investigation and reasoning 2 (A,B,F) Earth and space 7 (c)	The student uses scientific inquiry methods during laboratory and outdoor investigations. The student is expected to: plan and implement descriptive investigations, including asking well-defined questions, making inferences, and selecting and using appropriate equipment or technology to answer his/her questions; collect and record data by observing and measuring, and using descriptive words and numerals such as labeled drawings, writing, and concept maps; communicate valid, oral, and written results supported by data. Identify and classify Earth's renewable resources, including air, plants, water, and animals; and nonrenewable resources, including coal, oil, and natural gas; and the importance of conservation.	**Water Filtration Experiment** Students conduct an experiment using the scientific method to see if water can be cleaned using a student made filter. Students gather materials, create a hypothesis, follow the procedure, and record and discuss the results. This experiment relates to the rainwater collection system that students observed in the pavilion and discussions about water quality and erosion during the field trip.
Social Studies English Language Arts and Reading	Social studies skills 21 (B-C) Reading/ comprehension of literary text/ literary nonfiction 7	The student applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including electronic technology. The student is expected to analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions; organize and interpret information in outlines, reports, databases, and visuals, including graphs, charts, timelines, and maps. Students understand, make inferences and draw conclusions about the varied structural patterns and features of literary nonfiction and provide evidence from text to support their understanding. Students are expected	**Reading Passages and Thinking Maps** Students read a passage about the prairie and pick which graphic organizer best represents the information. Students must think about how the author organized the paragraphs, and look for key words and transition words to help them in their decision. After they have chosen the best thinking map, students create their own thinking map by hand or use one of the blank maps provided at the end of the provided document to present information from the passages.

English Language Arts and Reading	Reading/ comprehension of literary text/ literary nonfiction 11 (A-C)	to identify similarities and differences between the events and characters' experiences in a fictional work and the actual events and experiences described in an author's biography or autobiography. Students analyze, make inferences and draw conclusions about expository text and provide evidence from text to support their understanding. Students are expected to: summarize the main idea and supporting details in text in ways that maintain meaning; distinguish fact from opinion in a text and explain how to verify what is a fact; describe explicit and implicit relationships among ideas in texts organized by cause-and-effect, sequence, or comparison	
English Language Arts and Reading	Reading/fluency 1	Students read grade-level text with fluency and comprehension. Students are expected to read aloud grade-level stories with fluency (rate, accuracy, expression, appropriate phrasing) and comprehension.	**Reading List** Many schools participating in the field trips have been given books relating to the prairie or environmental concepts for their school libraries for teachers and students to check out.

Sneed Prairie Blackland Prairie Field Trip Program

These materials were developed to be used by teachers for preparation and follow up to the Sneed Blackland Prairie Field Trip Program offered by Austin College

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