

moulton niguel water district



The Life Box

Plants and animals have four things in common. Can you guess what they are?

Summary

Through a thought-provoking activity, students discover four essential, interdependent factors needed to sustain life.

- **Subject Areas** – Life Science
- **Skills** – Gathering Information; Analyzing; Interpreting;



moulton niguel water district

Project WET 2019

Serving six south Orange County cities:

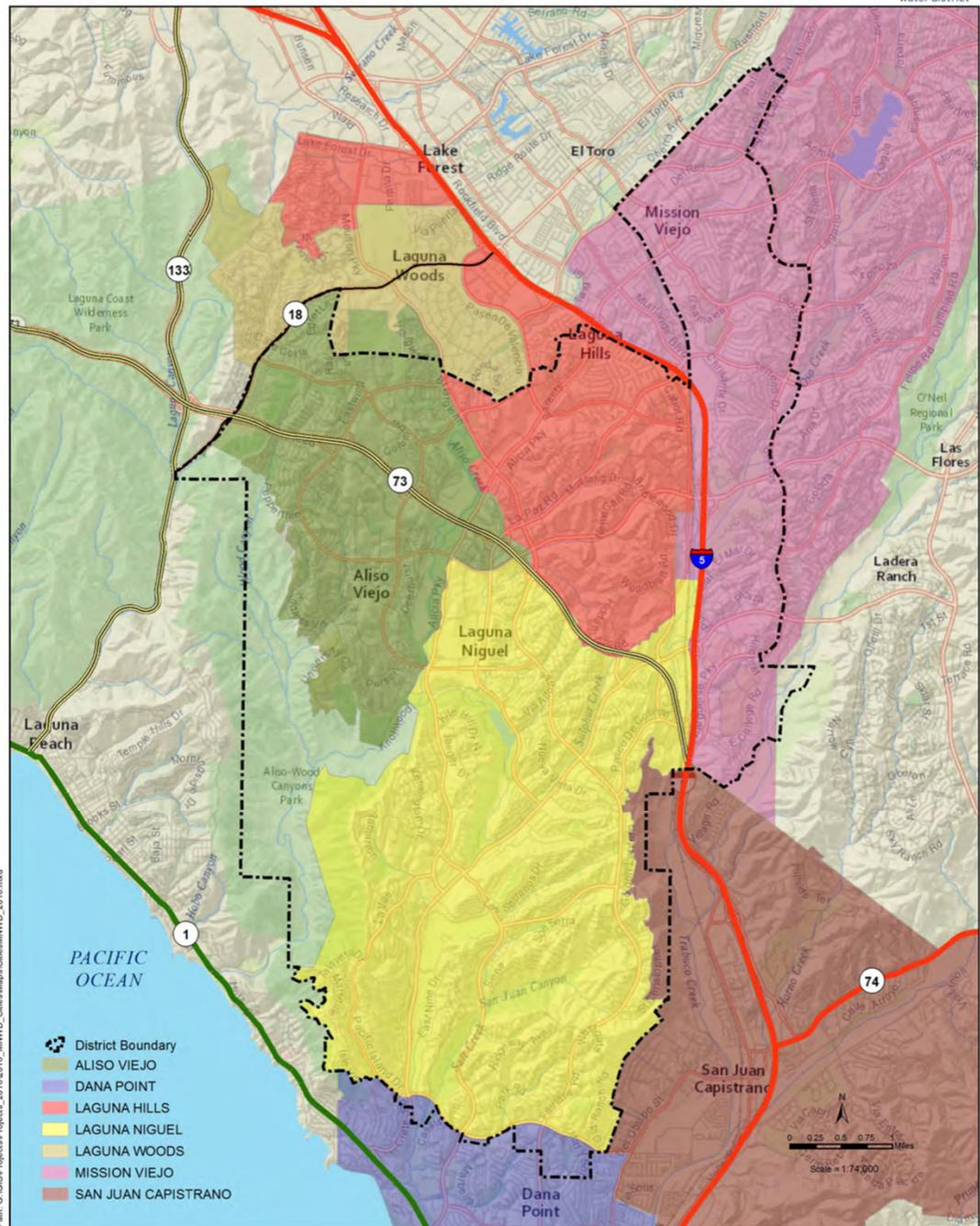
1. Aliso Viejo
2. Dana Point
3. Laguna Hills
4. Laguna Niguel
5. Mission Viejo
6. San Juan Capistrano

170,000 people rely on Moulton Niguel to provide safe, reliable drinking water



moulton niguel water district

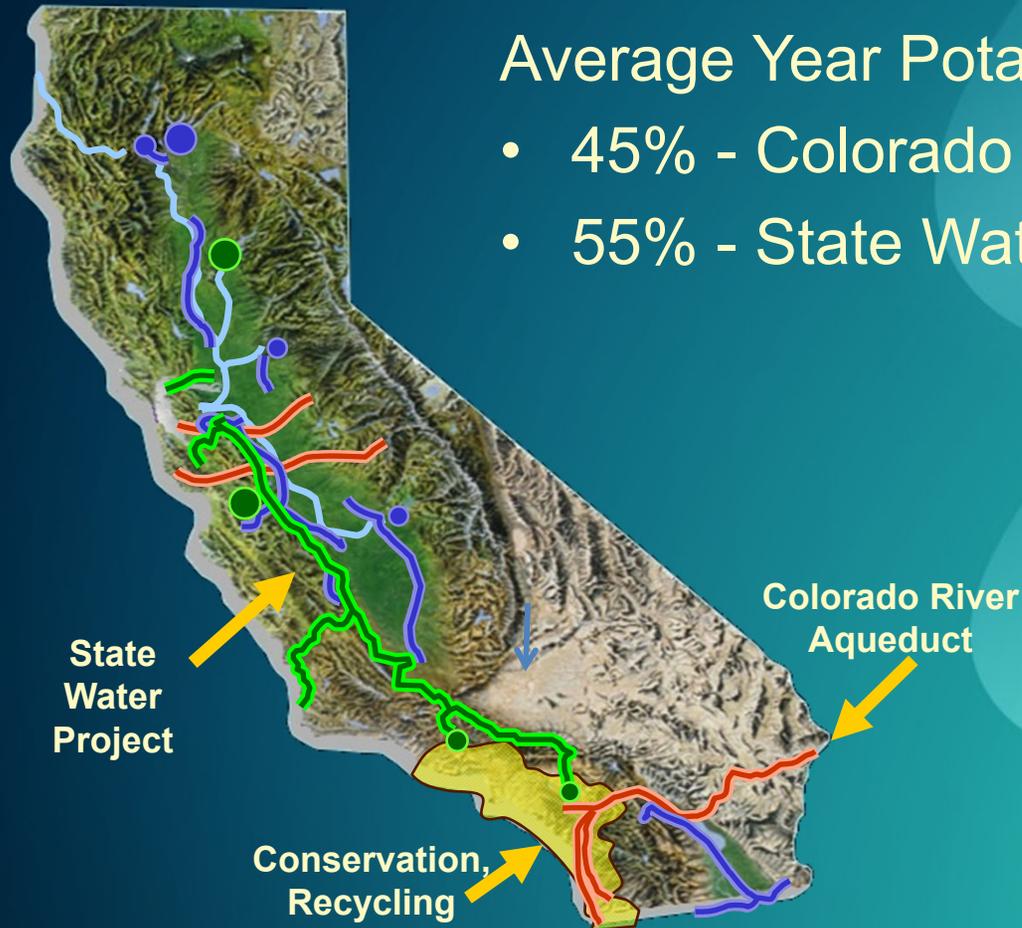
MNWD Boundary Map w/ Cities Served



Potable Water Supplies

Average Year Potable Supplies

- 45% - Colorado River
- 55% - State Water Project



State
Water
Project

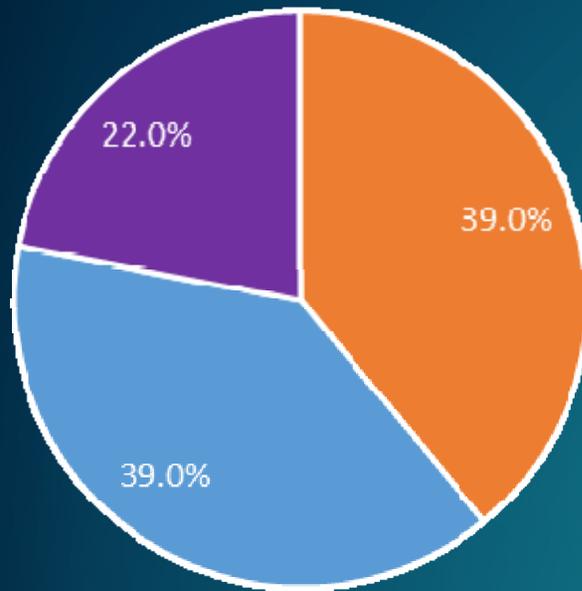
Colorado River
Aqueduct

Conservation,
Recycling

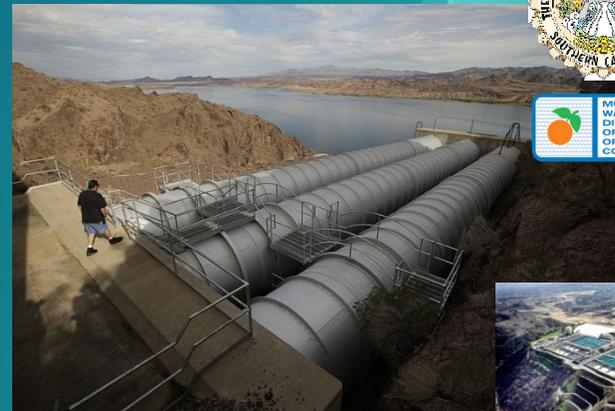


moulton niguel water district

Water Supplies – Including Recycled



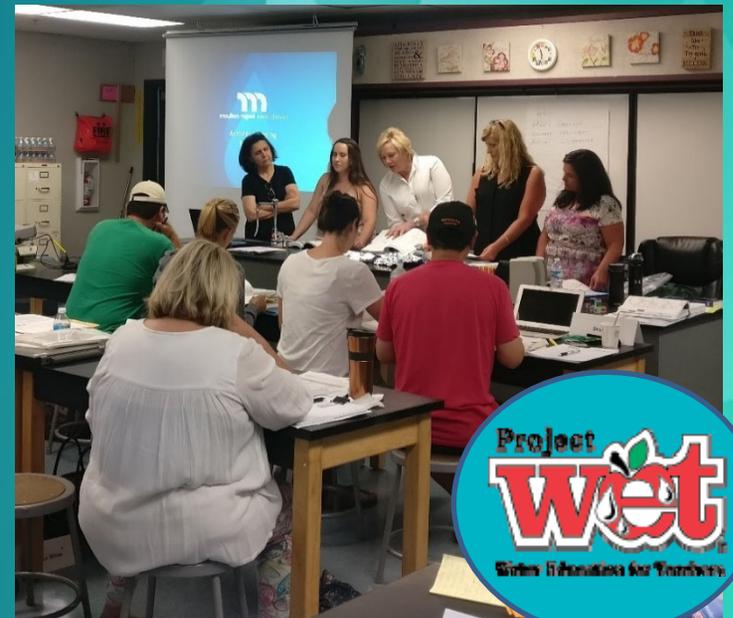
■ Colorado ■ State Water Project ■ Recycled Water



moulton niguel water district

K-12 Education Programs

- Grades K-2
 - Shows That Teach
- Grades 3-6
 - Discovery Cube of OC
- Grades 5-12
 - OC Coastkeepers Watershed Fieldtrips
- Project WET Teacher Workshops
 - Inside the Outdoors



Contact Us

Rhonda Himley
rhimley@mnwd.com



moulton niguel water district

FOLLOW US ONLINE!





Make the World Your Classroom.



Inside the Outdoors

Traveling Scientist



Field Trips



Service Learning



Field Trips



Traveling Scientist



Service Learning



Explore



Laugh



Discover



Learn





Create



Inside the Outdoors

- Supports Common Core Standards, NGSS, and other state standards
- Assists with 21st Century Competencies through Project Based Learning
- Builds early STEM thinking
- Learning outside increases students' ability to think creatively and improves problem solving skills

Aqua Bodies

What's the difference between a raisin and a grape?

Water!

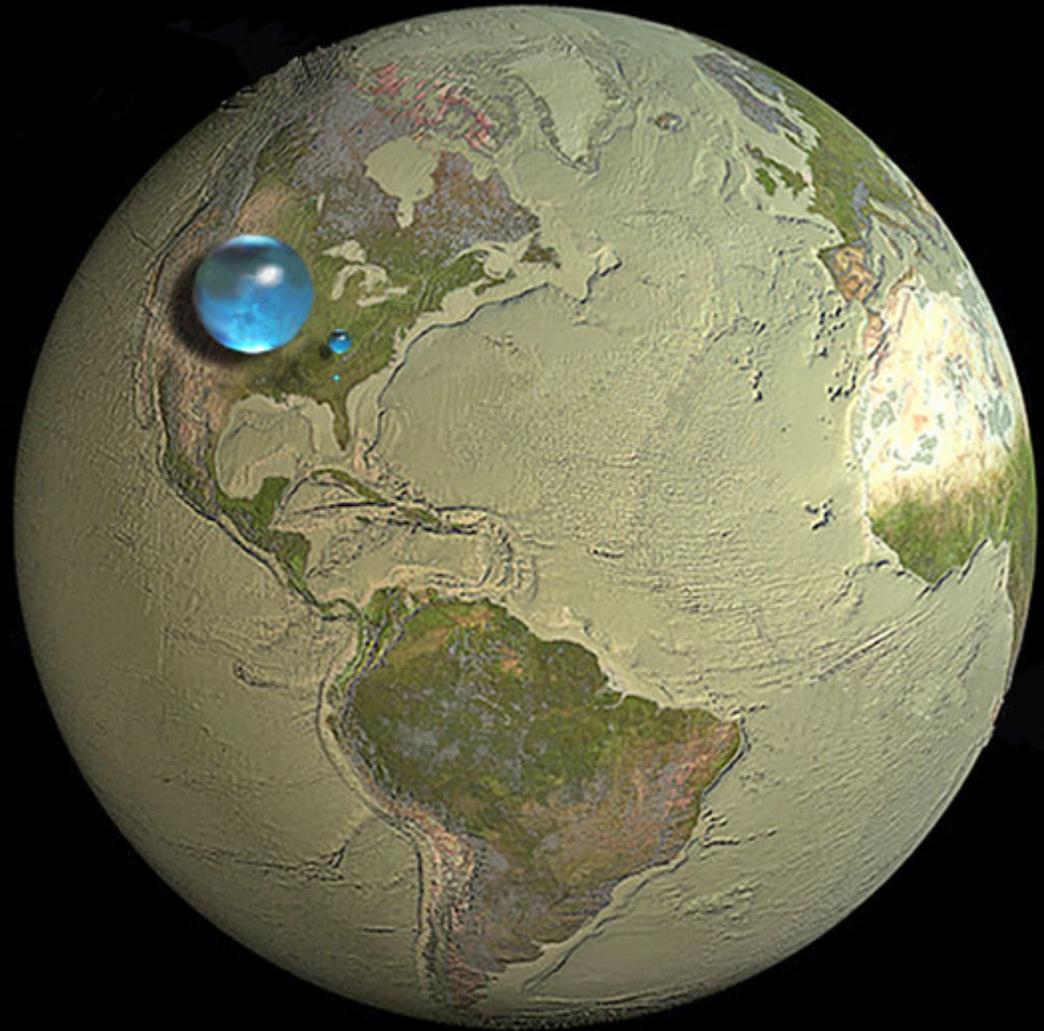
Summary

Students demonstrate how much of their bodies are composed of water, where water is found within their bodies and the functions of water in their bodies.

- Subject Areas – Life Science, Health, Math
- Skills – Gathering Information (calculating);
Organizing (estimating, categorizing);
Analyzing (comparing, identifying patterns)

*“Anyone who solves
the problem of water
deserves not one
Nobel Prize but two—
one for science and
the other for peace.”*

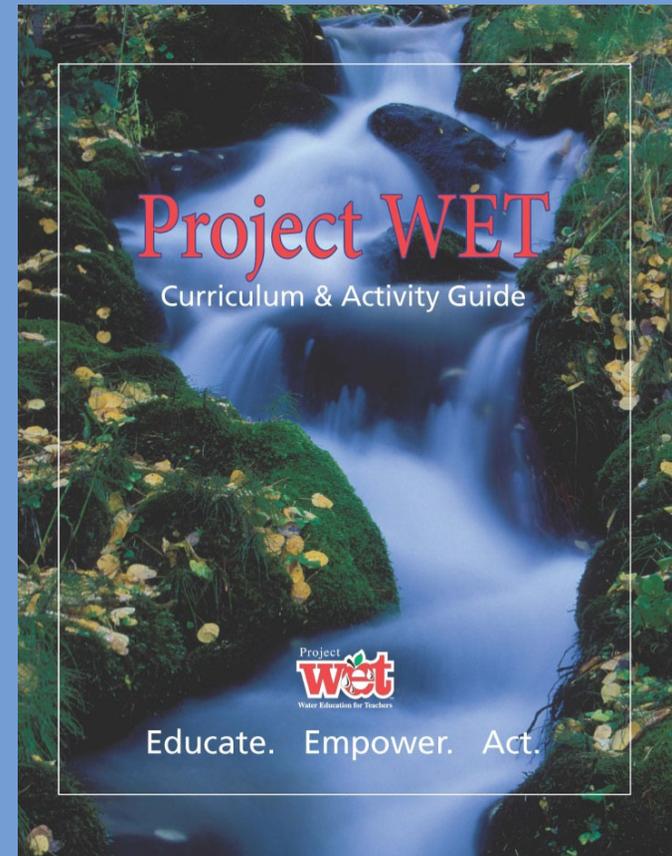
- Pres. John F. Kennedy



Project WET

Water Education for Teachers

Designed by natural resource and education professionals to help educators develop student knowledge, skills and conceptual understanding of water science, issues and management.



The Mission of Project WET



to reach Children,
Parents, Educators and
Communities of the
World with high
quality water
education materials.

Educate

Empower

Act

Project WET is Active in More Than 70 Countries Around the World

Project WET Around the World



Water Education Foundation

California Project WET

is a program of the Water Education Foundation- a private, non-profit dedicated to educating citizens of the West about local water issues.

The California program is the largest Project WET program in the world with an annual goal of 50 workshops training 1,000 educators per year. In 2017, the California program conducted 65 workshops, training 1,385 educators who planned to use the activities with over 275,589 students in this school year.



WATER EDUCATION
FOUNDATION

www.watereducation.org/project-wet

Statewide California Project WET Program Sponsors



SACRAMENTO - SAN JOAQUIN
DELTA CONSERVANCY
A California State Agency

*Sacramento-San Joaquin
Delta Conservancy*

*U.S. Geological Survey, California
Water Science Center*



*California Department of
Water Resources*

Hallmarks of High Quality EE Materials

Awareness and sensitivity about the environment and environmental challenges

Knowledge and understanding about the environment and environmental challenges

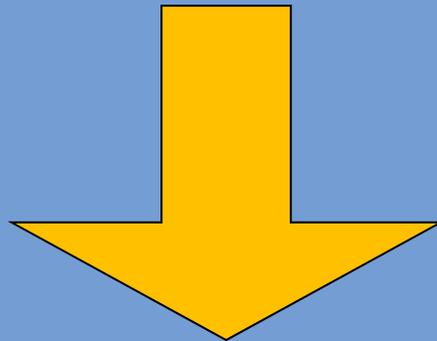
Skills to mitigate the environmental problems

Attitudes concern for the environment and help to maintain environmental quality

Participation for exercising existing knowledge and environmental related programs

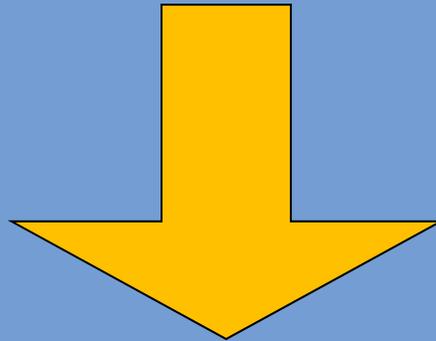
Teach students *HOW* to think- not *WHAT* to think about complex environmental issues by

Raising awareness using balanced and objective materials backed by sound educational practices and theory.



Teach students *HOW* to think- not *WHAT* to think about complex environmental issues by

Providing opportunities for students to evaluate information to help build knowledge and skills...



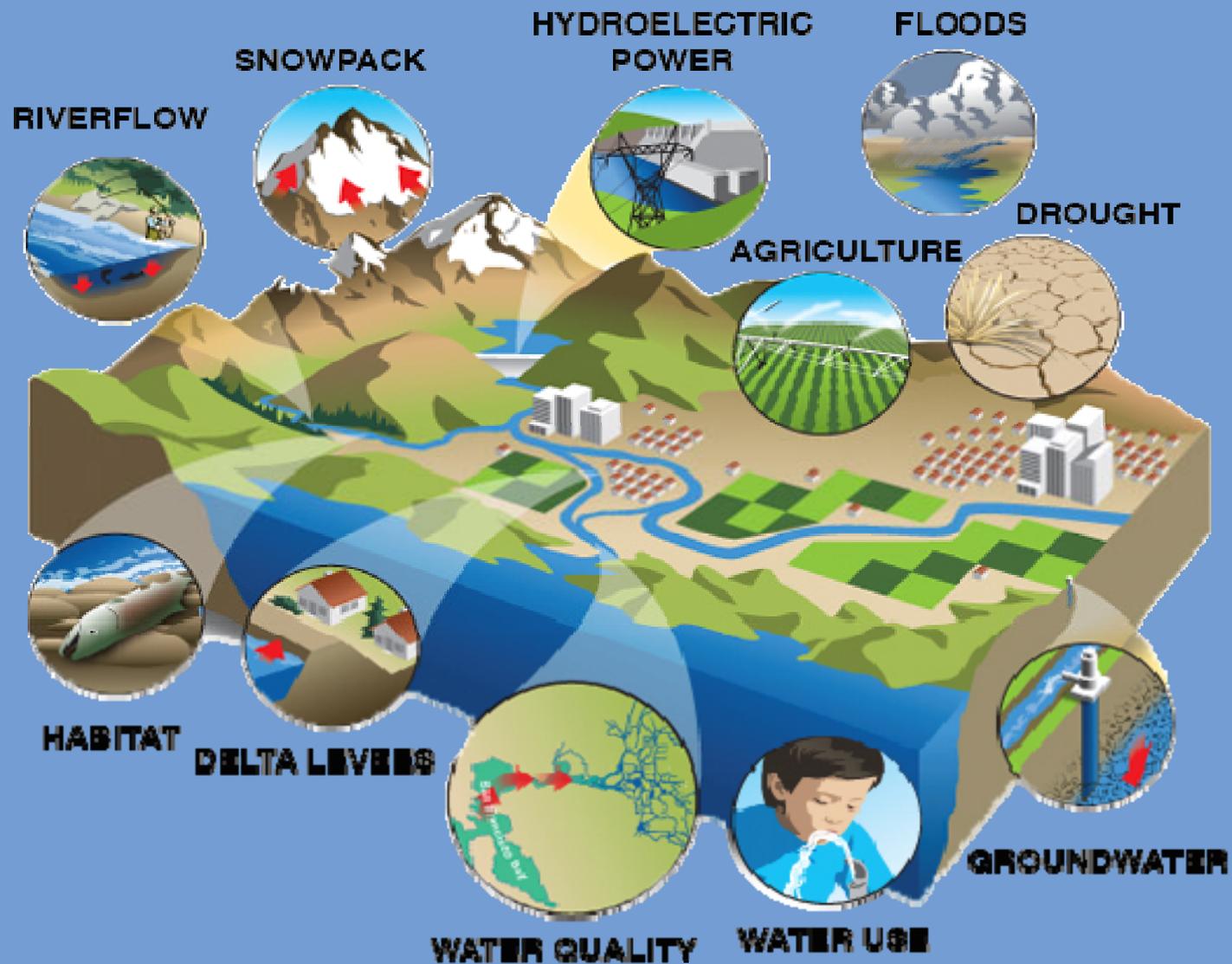
Challenging students to make informed decisions and responsible actions.

Educate

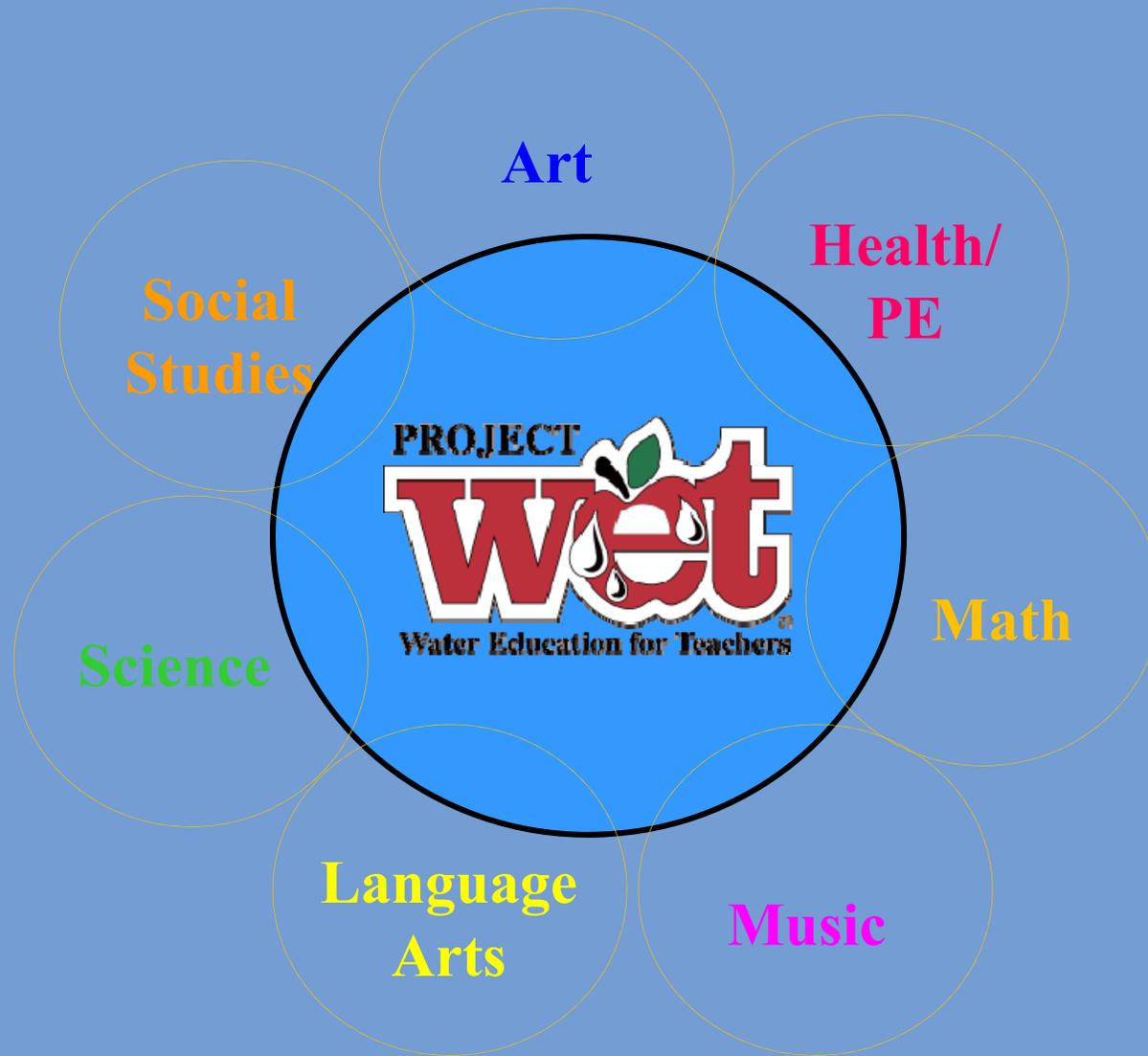
Empower

Act

Project WET Integrates Knowledge of Complex Water Issues



Interdisciplinary and Supplemental



Supports Education Standards

Connections to State Standards

(www.watereducation.org)

- **History – Social Science** *(Update in Progress)*
- **Education & the Environment Initiative (EEI) units**
- **Environmental Principals & Concepts** *(Update in Progress)*

Common Core

(www.portal.projectwet.org)

Next Generation Science

(www.portal.projectwet.org)

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<ol style="list-style-type: none"> 1. Asking questions and defining problems 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information 	<p>Physical Science</p> <p>PS1: Matter and its interactions</p> <p>PS2: Motion and stability: Forces and interactions</p> <p>PS3: Energy</p> <p>PS4: Waves and their applications in technologies for information transfer</p> <p>Life Science</p> <p>LS1: From molecules to organisms: Structures and processes</p> <p>LS2: Ecosystems: Interactions energy, and dynamics</p> <p>LS3: Heredity: Inheritance and variation of traits</p> <p>LS4: Biological evolution: Unity and diversity</p> <p>Earth and Space Science</p> <p>ESS1: Earth's place in the universe</p> <p>ESS2: Earth's systems</p> <p>ESS3: Earth and human activity</p> <p>Engineering, Technology, and Applications of Science</p> <p>ETS1: Engineering Design</p> <p>ETS2: Links among engineering, technology, science, and society</p>	<ol style="list-style-type: none"> 1. Patterns 2. Cause and effect: Mechanism and explanation 3. Scale, proportion, and quantity 4. Systems and system models 5. Energy and matter: Flows, cycles, and conservation 6. Structure and function 7. Stability and Change

Standard Alignments

Name of WET Activity	Correlates to NGSS as written				Supports NGSS PE as written				Correlates to and/or Supports NGSS PE with adaptations			
	K-2	3 to 5	MS	HS	K-2	3 to 5	MS	HS	K-2	3 to 5	MS	HS
8-4-1, One for All				HS-ESS3-1								
Drop in the Bucket (A)		5-ESS2-2	MS-ESS3-4			5-ESS3-1	MS-ESS3-3			5-ESS3-1		
Grave Mistake (A)			MS-ESS3-3							5-ESS3-1	MS-LS2-4	
Adventures in Density			MS-PS1-4, MS-ESS2-6									
A-maze-ing Water									K-ESS3-3	5-ESS3-1, 3-5-ETS1-1, 3-5-ETS1-2	MS-ESS3-3, MS-ETS1-1, MS-ETS1-2	
Aqua Bodies										4-LS1-1	MS-LS1-3	
Aqua Notes						4-LS1-1						
Back to the Future			MS-ESS3-4, MS-LS2-5	HS-ESS3-3, HS-LS2-7								
Blue Planet	2-ESS2-2, 2-ESS2-3	5-ESS2-2			2-ESS1-1	5-ESS3-1			2-ESS1-1		MS-ESS3-1, MS-ESS3-4	
Blue River	2-ESS1-1, 2-ESS2-2, 2-ESS2-3	5-ESS2-1, 5-ESS2-2	MS-ESS2-1			5-ESS3-1				5-ESS3-1	MS-ESS2-2	HS-ESS2-2, HS-ESS3-5
Color Me a Watershed		5-ESS2-1	MS-ESS3-4	HS-ESS3-3, HS-LS2-2					2-ESS2-2, 2-ESS2-3	4-ESS2-1, 4-ESS2-2, 5-ESS3-1	MS-ESS3-3	HS-ESS3-4
Common Water	K-LS1-1, K-ESS3-1, K-ESS3-3	5-ESS2-1, 5-ESS3-1										
Discover the Waters of Our National Parks	2-ESS2-2								2-ESS2-3, 2-LS4-1	4-ESS2-2	MS-ESS2-6	
Germ Busters					SEP and CCC Tables	SEP and CCC Tables						
Get the Ground Water Picture	2-ESS2-2		MS-ESS3-4				MS-ESS3-1, MS-ESS3-3		2-PS1-1	5-ESS2-1, 5-ESS3-1	MS-ESS3-1	
H2Olympics						SEP and CCC Tables	SEP and CCC Tables					

Standard Alignments

Correlations & Assessment Worksheet by Activity

Activity Name: A Drop in the Bucket

Grade Level: 3-5, 6-8

	NGSS*	ELA CCSS	MATH CCSS	NOAA Standards	Comments
	5-ESS2-2, MS-ESS3-4 <i>Supports: 5-ESS3-1, MS-ESS3-3</i>				
Warm Up		NA	7.RP.2	OL.1.a,e-f	
Part I		NA	NA	OL.1.a,e-f	
Part II					
Part III					
Wrap Up		SL.6-8.4	7.RP.2; 7.NS.3; 6.RP.3c	OL.1.a,e-f	

*NGSS standards in italics either 1) support the performance expectation (PE) as written but do not fully correlate to all three dimensions or 2) correlate to/support the PE with supplied adaptations.

Note: NGSS standards are correlated to the activity as a whole. For details on the correlation and suggestions for additional correlations see the individual NGSS correlation documents.

Standard Alignments

Project WET: A Drop in the Bucket

* Activities are correlated as written. However, by using the extensions or adapting the activity using the grey-shaded text, additional correlations or parts of correlations are met.

* *Gray shaded areas demonstrate additional connections that can be made/strengthened with a few minor additions and/or restructuring of activity.*

* *Blue text represents the Extension section of the activity.*

Grade: 5	Earth's Systems/ Earth and Human Activity	Project WET Guide, Page #: Guide 2.0, p. 257
Brief Lesson Description: By estimating and calculating the percentage of available fresh water on Earth, students understand that this resource must be used and managed carefully.		
Performance Expectation: 5-ESS2-2. Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.		
Performance Expectation: 5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.		
Science & Engineering Practice(s)	Disciplinary Core Idea(s)	Crosscutting Concept(s)
<p>Using Mathematics and Computational Thinking Describe and graph quantities such as area and volume to address scientific questions. (5-ESS2-2)</p> <ul style="list-style-type: none"> • <i>Students estimate the proportion of potable water on Earth (Warm Up)</i> • <i>Students determine and graph the proportion of Earth's available fresh water (Warm Up and Wrap Up).</i> • <i>Students estimate the volume of potable water available for human use.</i> • <i>Students calculate and graph the volume of water available for human use (step 5).</i> • <i>Students do an Internet search to determine the world population projections for 2025 and 2050 and calculate the impact that this growth will cause and possible solutions. (Extension)</i> 	<p>ESS2.C: The Roles of Water in Earth's Surface Processes 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. (5-ESS2-2)</p> <ul style="list-style-type: none"> • <i>Students determine and graph the proportion of Earth's available fresh water (Warm-Up and Wrap-Up).</i> • <i>Students identify areas of the globe where water is limited, plentiful or in excess and discuss the geographical and climatic qualities contributing to these conditions. (Extension)</i> 	<p>Scale, Proportion, and Quantity Standard units are used to measure and describe physical quantities such as weight, and volume. (5-ESS2-2)</p> <ul style="list-style-type: none"> • <i>Students determine and graph the proportion of Earth's available fresh water (Warm-Up and Wrap-Up).</i> • <i>Students calculate and graph the volume of water available for human use (step 5).</i> • <i>Students do an Internet search to determine the world population projections for 2025 and 2050 and calculate the impact that this growth will cause and possible solutions.</i>

Standard Alignments

NGSS Common Core Connections:

ELA/Literacy –

- RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-ESS3-1)
- RI.5.7 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. (5-ESS2-2), (5-ESS3-1)
- RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-ESS3-1)
- W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-ESS2-2), (5-ESS3-1)
- W.5.9.a,b Draw evidence from literary or informational texts to support analysis, reflection, and research. (5-ESS3-1)
- SL.5.5 Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-ESS2-2), (5-ESS3-1)

Mathematics –

- MP.2 Reason abstractly and quantitatively. (5-ESS2-2), (5-ESS3-1)
- MP.4 Model with mathematics. (5-ESS2-2), (5-ESS3-1)

Additional SEP Connections: Grades 6-8

Asking questions (for science) and defining problems (for engineering)	<p>Asking questions and defining problems in 6–8 builds on K–5 experiences and progresses to specifying relationships between variables, and clarifying arguments and models.</p> <ul style="list-style-type: none"> • Ask questions <ul style="list-style-type: none"> • that arise from careful observation of phenomena, models, or unexpected results, to clarify and/or seek additional information. • to identify and/or clarify evidence and/or the premise(s) of an argument. • to clarify and/or refine a model, an explanation, or an engineering problem. • that challenge the premise(s) of an argument or the interpretation of a data set.
--	--

Additional Crosscutting Concepts by Grade Level 6-8

Patterns	Students recognize that macroscopic patterns are related to the nature of microscopic and atomic-level structure. They identify patterns in rates of change and other numerical relationships that provide information about natural and human designed systems. They use patterns to identify cause and effect relationships, and use graphs and charts to identify patterns in data.
----------	--

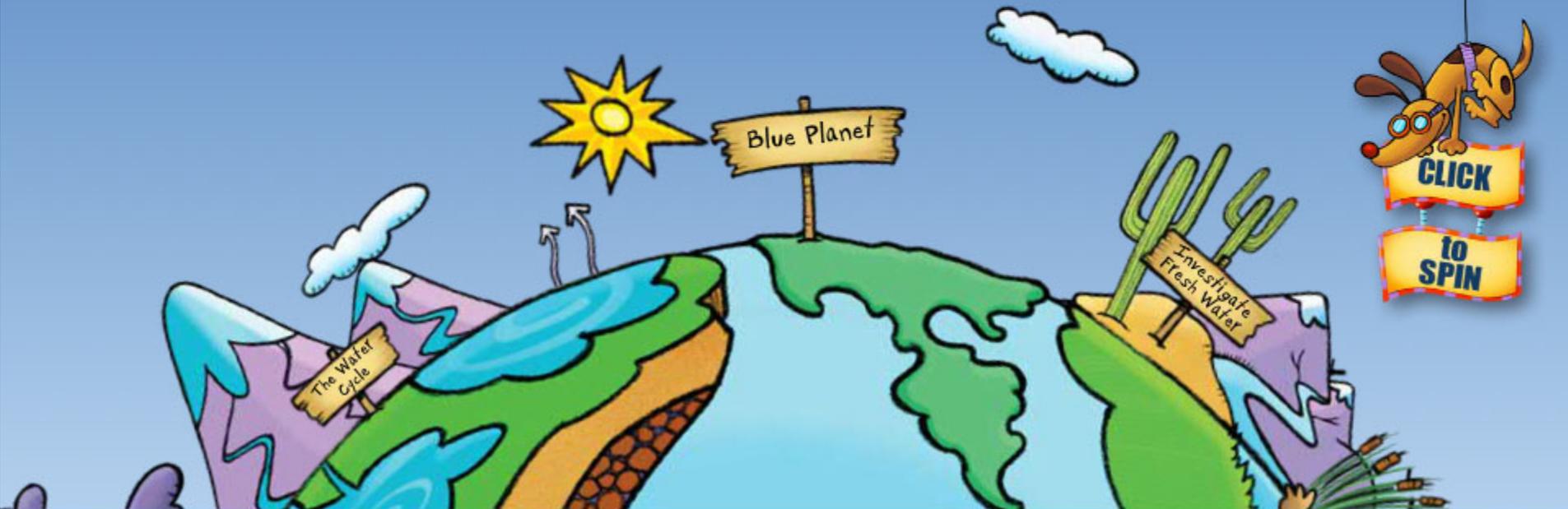
Standard Alignments

Correlation Comments	Correlator Initials: DBB
<p>A Drop in the Bucket correlates well to 5th grade NGSS Performance Expectations 5-ESS2-2 <i>as written</i>, but correlations to CCSS <i>could</i> be made and all NGSS correlations enhanced if modifications in grey are made. This would also help correlate this activity to an additional PE - 5-ESS3-1. Gray areas suggest revising activity lay-out:</p> <p>Warm-up – Keep as is with students estimating proportion of potable water on Earth.</p> <p>Part I: Water on Planet Earth would have students doing the current activity, but would also include reading the latest version of the USGS Fact Sheet <i>'Estimated Use of Water in the United States'</i> and analyzing how water is used in different parts of the United States. This is loosely referenced in the current activity extensions, but works so well as part of the activity!</p> <p>Part II: Global Water Distribution would have students start by trying to estimate the volume of potable water available on Earth per person – This has great math potential, if students are asked to explain how they arrived at their estimates based on the available information in the activity to this point. Students would do the latter part of the existing activity as written – It just changes the emphasis from Earth to human allocations and opens the door to having students research and identify areas of the globe where water is in short supply. This is currently an extension, but would add greatly to the depth of knowledge gained by integrating it into the activity.</p> <p>Part III: ActionEducation would incorporate other currently listed extensions into the activity by having students do the research on projected worldwide population trends at different points in the future, then discussing and calculating the potential impacts to global water supplies available for human use – and the potential ramifications for all other life on the planet. Students would then develop the television commercial or other presentation outlining reasons why water is a limited and also renewable resource in the extensions.</p>	

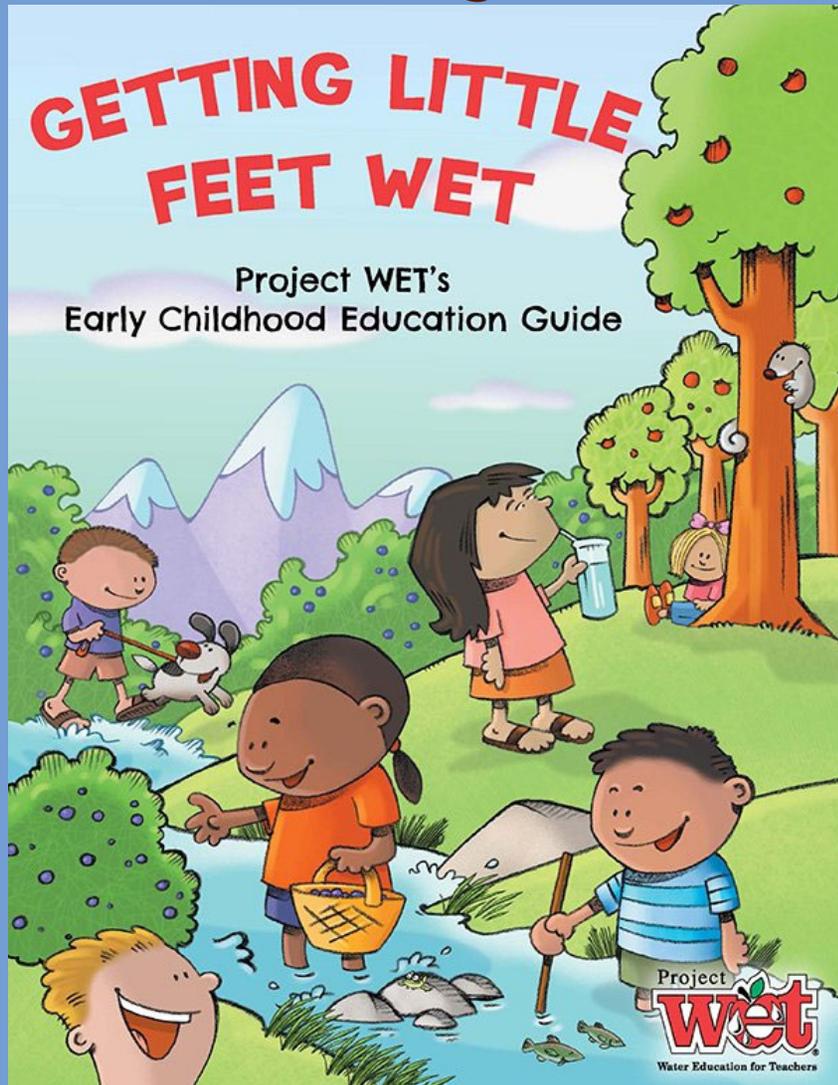
Discover Water The Role of Water in Our Lives



www.discoverwater.org



Early Childhood Guide



- Developed specifically for teachers working with young children (ages 3-6)
- In coordination with early childhood experts and educators.
- Contains 11 interactive, hands-on activities for young learners to explore different aspects of water—from water properties to water sounds.
- Each activity offers both Pre-K and K-2 options and is correlated to respective educational standards.
- Available both as a digital and printed book.

www.projectwet.org/earlychildhood

For more information please contact

Brian Brown

California Project WET Coordinator

Water Education Foundation

1401 21st Street, Suite 200

Sacramento, CA 95811

projectwet@watereducation.org

– OR –

(916) 444-6240



**WATER EDUCATION
FOUNDATION**

Common Water

What to you, your parents, your neighbors, a plant in your home, a squirrel in the park, and your classmates have in common?

Summary

Students analyze the results of a simulation to understand that water is a shared resource and is managed.

- Grade Level – Pre-K -2, Middle School
- Subject Areas – Environmental Science, History
- Skills –Analyzing; Applying

Water Audit

How does your home water use tally up?

Summary

Students discuss water sources and water conservation concepts, conduct a home audit, and compare and contrast results with and without the implementation of water conservation practices. Based on water and monetary savings, they then make recommendations for personal conservation strategies at home.

- **Subject Areas** – Math, Health, Government, Environmental Science
- **Skills** –Gathering Information Organizing; Analyzing; Interpreting; Applying

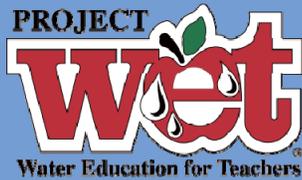
Rainy Day Hike

What do puddles on your playground, the trash on your school's parking lot, and a nearby lake or stream have in common?

Summary

Students are introduced to urban watershed concepts and storm water issues through an investigation of school buildings and grounds.

- **Subject Areas** – Earth Science, Environmental Science, Geography
- **Skills** – Gathering Information (collecting, observing); Organizing (mapping); Analyzing; Interpreting



Thank you!

See you October 14!

Kelly Ellis and Erin Foster

INSIDE THE OUTDOORS

714.708.3885

www.insidetheoutdoors.org

Rhonda Himley
rhimley@mnwd.com
www.mnwd.com

