



Crystal Springs Live!





Thank you for choosing Crystal Springs LIVE!

Crystal Springs Preserve and WaterVentures Florida's Learning Lab are committed to bringing quality environmental education programs to teachers and parents. Our programs are aligned with NGSSS and SNF standards to align with topics taught in classrooms. Each program has been created with the student in mind and conveys important environmental topics in a fun and engaging manner. Additionally, supplemental activities, vocabulary lists, pre/post tests and more are offered to provide an all-encompassing program for students in and out of the classroom.

For those of you unfamiliar with Crystal Springs or WaterVentures, we invite you to explore our websites. (www.crystalspringsfoundation.org and www.waterventures.us). Crystal Springs Preserve is a 530-acre living laboratory that is dedicated to bringing directed learning opportunities to visitors through immersion into the pristine habitat of the preserve. WaterVentures was created to extend this learning throughout the state of Florida. As a high-tech mobile learning lab, WaterVentures brings those same fun and engaging environmental programs to schools free of charge. Both are devoted to inspiring guests to be responsible environmental stewards of Florida's precious natural resources.

We hope you enjoy our virtual programs and please do not forget to check out the offerings of Crystal Springs Preserve and WaterVentures!

Happy learning!

Swamp Sampling Water Chemistry- Nitrates Pre/Post Test

- 1) Nitrates in water are nutrients that can feed aquatic plants and aquatic animals in rivers, lakes, streams and swamps.
 - a. True
 - b. False
- 2) How do nitrates get in the water?
 - a. Runoff from rain as it travels over roads and bridges with grease and oil.
 - b. When aquatic animals eliminate waste “poop” in the water.
 - c. When aquatic animals and aquatic plants die and decompose in the water.
 - d. Runoff from rain as it carries fertilizers or chemicals into the water
 - e. All of the above
- 3) What is an example of “good” nitrates that can get into rivers, lakes, or streams?
 - a. An aquatic animal eliminates waste “poop” in the water
 - b. Human sewage “poop” in the water
 - c. Pollution from cars on the roads, like gas, oil, and rubber
 - d. Decomposition of aquatic animals or aquatic plants in rivers, lakes, or streams
 - e. Both A and D
- 4) What is an example of “bad” nitrates that can get into rivers, lakes, and streams?
 - a. A person putting chemical weed killer on their lawn
 - b. An aquatic animal pooping in the water
 - c. A person not picking up their dog poop near a storm drain that leads to a river
 - d. Both A and C
 - e. None of the above
- 5) Do streams, lakes, rivers, and swamps need some nitrates?
 - a. Yes
 - b. No
- 6) Can too many nitrates be harmful to a waterway?
 - a. Yes
 - b. No



- 7) What bad nitrates can be created by humans?
 - a. Pollution from cars
 - b. Pollution from fertilizers and chemical weed killers
 - c. Pollution from people not picking up their dog's poop
 - d. Both A and B
 - e. All of the above
- 8) What kind of trees can you find in a Florida swamp?
 - a. Long leaf pine trees
 - b. Cypress trees
 - c. Apple trees
- 9) What is a recharge area?
 - a. A place where people can charge their phones
 - b. A place where water can slowly seep into the ground to refill the aquifer
 - c. A place where water runs into the ocean
- 10) What helps take nitrates out of the river, lakes, streams, and swamps?
 - a. Alligators
 - b. Aquatic animals
 - c. Flowing water
 - d. Aquatic plants
 - e. Both C and D



Swamp Sampling Water Chemistry- Nitrates Pre/Post Test Answer Key

1. A
2. E
3. E
4. D
5. A
6. A
7. E
8. B
9. B
10. E

PRE/POST EXHIBIT DATA SUBMISSION FORM

Date of Program	
School name	
Teacher name	
Number of students taking the Pre-test and Number taking Post-test	
Pre-test average percentage *	
Post-test average percentage *	

*Scoring all tests, adding up all scores, and dividing by the number of students that took the test will obtain an average percentage.

Swamp Sampling Water Chemistry- Nitrates Vocabulary Words

Cadmium - A reagent. A chemical that facilitates a reaction to release nitrates when testing water samples.

Cypress Tree - An evergreen coniferous tree that thrives living in a wetland.

Decomposition - The process of microscopic organisms breaking down organic matter into nutrients.

Nitrates - Nutrients that can get in the water either by animal waste, decomposition, pollution and run off.

Nutrients - A substance that provides nourishment essential for growth and the maintenance of life. (Oxford dictionary)

Pollution - Something that gets into the environment that can be harmful.

ppm - Parts per million.

Recharge Area - A place where water is able to slowly seep into the ground and eventually reach an aquifer. Example would be a swamp.

Runoff - Water flowing across the land and carrying substances with it into waterways.

Swamp - A low-lying area of land that holds water and has wetland plants and trees.

Wetland - An area of land that is wet all year or most of the year.



Swamp Sampling Water Chemistry- Nitrates Standards

SC.6.E.6.1
SC.6.E.6.2
SC.6.E.7.2
SC.7.E.6.6
SC.8.N.1.1
SC.8.N.1.4
SC.8.N.1.6
SC.8.L.18.4

Swamp Sampling Water Chemistry- Nitrates Supplemental Activities- Word Search

Name: _____
Created with TheTeachersCorner.net Word Search Maker

Swamp Sampling Chemistry - Nitrates -

Find all the words, then find the hidden message by placing the unused letters in the spaces provided starting with the first unused letter. _____ !!



G O T R O M P I N A S W P
 A M P Y K A Y A K F R L O
 C Y P R E S S T R E E O L
 U J C O N H K I C K Z G L
 Z T V U I O R P X P V K U
 V W C U P S W A M P Y W T
 V W F J A W G W Z Y V P I
 R T P N I T R A T E S P O
 W N U T R I E N T S G O N
 D E C O M P O S I T I O N
 K Z H D U C K W E E D P J
 D R W O Y F U L Z T W Y R
 R E C H A R G E A R E A J

NITRATES NUTRIENTS SWAMP
 POLLUTION DUCKWEED RECHARGE AREA
 CYPRESS TREE POOP DECOMPOSITION
 KAYAK

Swamp Sampling Water Chemistry- Nitrates Supplemental Activities- Word Search Answer Sheet

Name: _____
Created with TheTeachersCorner.net Word Search Maker

Swamp Sampling Chemistry - Nitrates -

Find all the words, then find the hidden message by placing the unused letters in the spaces provided starting with the first unused letter. ----- !!



G	O	T	R	O	M	P	I	N	A	S	W	P
A	M	P	Y	K	A	Y	A	K	F	R	L	O
C	Y	P	R	E	S	S	T	R	E	E	O	L
U	J	C	O	N	H	K	I	C	K	Z	G	L
Z	T	V	U	I	O	R	P	X	P	V	K	U
V	W	C	U	P	S	W	A	M	P	Y	W	T
V	W	F	J	A	W	G	W	Z	Y	V	P	I
R	T	P	N	I	T	R	A	T	E	S	P	O
W	N	U	T	R	I	E	N	T	S	G	O	N
D	E	C	O	M	P	O	S	I	T	I	O	N
K	Z	H	D	U	C	K	W	E	E	D	P	J
D	R	W	O	Y	F	U	L	Z	T	W	Y	R
R	E	C	H	A	R	G	E	A	R	E	A	J

NITRATES NUTRIENTS SWAMP
 POLLUTION DUCKWEED RECHARGE AREA
 CYPRESS TREE POOP DECOMPOSITION
 KAYAK

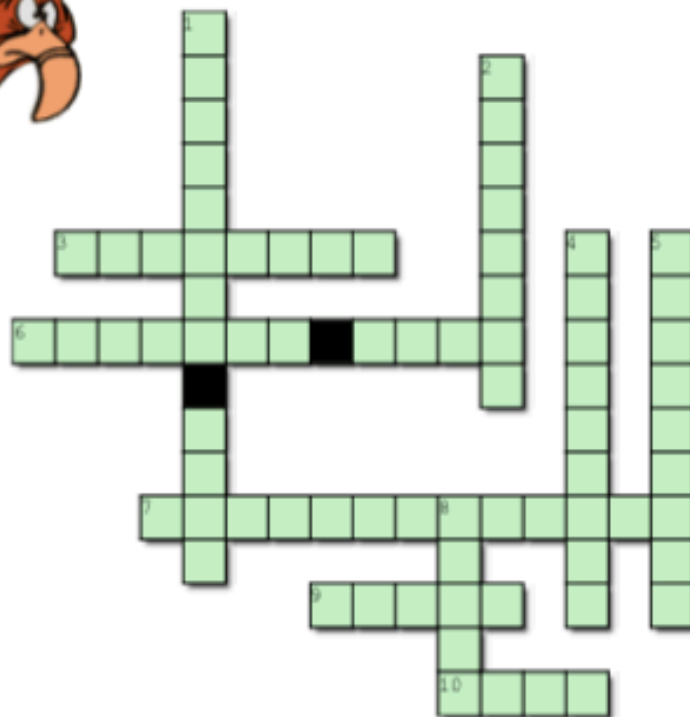
Swamp Sampling Water Chemistry- Nitrates Supplemental Activities- Crossword

Name: _____

Swamp Sampling Chemistry - Nitrates -



Complete the crossword puzzle



Created using the Crossword Maker on TheTeachersCorner.net

Recharge area Kayak Duckweed Nitrates Pollution Poop Swamp Decomposition Cypress Tree Nutrients

Across

- 3. Nutrients that can get in the water.
- 6. A type of tree that loves to live in a wetland.
- 7. The process of microscopic organisms breaking down organic matter.
- 9. A cool boat used to explore a swamp.
- 10. Animal waste.

Down

- 1. An area of land where water resides and slowly filters into the aquifer.
- 2. A beneficial floating aquatic plants.
- 4. Harm to the environment created by humans.
- 5. A source of food for plants.
- 8. A low lying ground that holds water in a wetland most of the year.

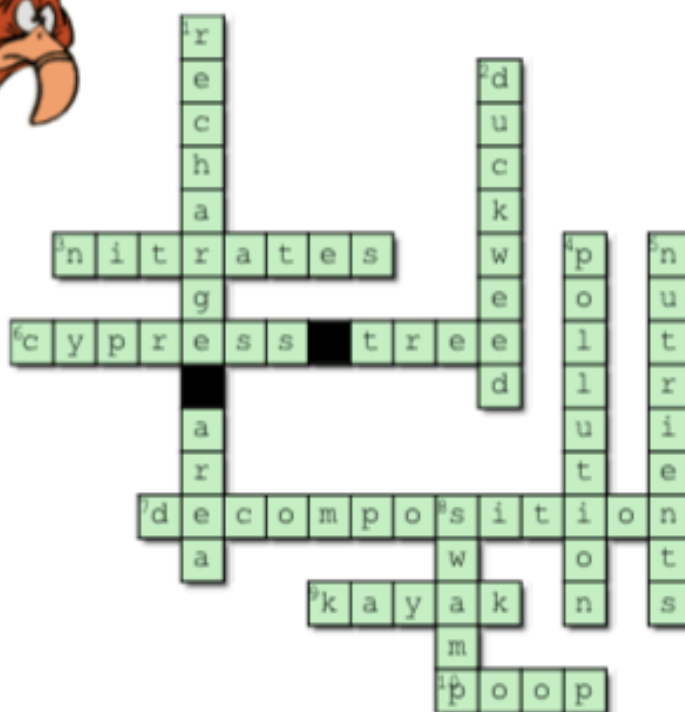
Swamp Sampling Water Chemistry- Nitrates Supplemental Activities- Crossword Answer Sheet

Name: _____

Swamp Sampling Chemistry - Nitrates -



Complete the crossword puzzle



Created using the Crossword Maker on TheTeachersCorner.net

Recharge area Kayak Duckweed Nitrates Pollution Poop Swamp Decomposition Cypress Tree Nutrients

Across

- 3. Nutrients that can get in the water. (nitrates)
- 6. A type of tree that loves to live in a wetland. (cypress tree)
- 7. The process of microscopic organisms breaking down organic matter. (decomposition)
- 8. A cool boat used to explore a swamp. (kayak)
- 10. Animal waste. (poop)

Down

- 1. An area of land where water resides and slowly filters into the aquifer. (recharge area)
- 2. A beneficial floating aquatic plants. (duckweed)
- 4. Harm to the environment created by humans. (pollution)
- 5. A source of food for plants. (nutrients)
- 6. A low lying ground that holds water in a wetland most of the year. (swamp)

Swamp Sampling Water Chemistry- Nitrates Supplemental Websites/Videos

STEM Powered Family, 2020

“Water Science Experiments and STEM projects”

<https://www.steampoweredfamily.com/activities/water-projects-for-kids/>

Science for Kids, 2020

“Water Science for Kids”

<https://www.sciencekids.co.nz/water.html>

Project WET Foundation, 2020

“Discover Water: The Role of Water in Our Lives”

<https://www.discoverwater.org/>

USGS, 2020

“Nitrogen and Water”

https://www.usgs.gov/special-topic/water-science-school/science/nitrogen-and-water?qt-science_center_objects=0-qt-science_center_objects

Home Science Tools, 2020

“Water Pollution Demonstration:”

<https://learning-center.homesciencetools.com/article/water-pollution-demonstration/>

Teach Engineering, University of Colorado, Boulder, 2020

“How Clean is That Water?”

https://www.teachengineering.org/lessons/view/cub_enveng_lesson02