

Project Guide

Education Campaign

Water Pollution Prevention





Generation Earth Program

Generation Earth is a Los Angeles County Public Works environmental education program. Our goal is to educate and encourage youth in Los Angeles County to be an active part of the solution to environmental concerns in their community. We offer do-it-yourself environmental projects that help youth make a positive difference in their schools, at home and in the world. Our programs are built to support the needs of teachers, students and schools.

Water Pollution

As communities grow, more land is developed creating miles of impervious surfaces (hardscape such as streets and parking lots where water cannot percolate), buildings and houses. Since rain water cannot percolate into the ground, there is more runoff at the surface level carrying pollutants along the way.

The school campus may generate polluted runoff that ends up in the ocean. The land area of the school directs water from rain, sprinklers, faucets and garden hoses from the campus and into the storm drain system. As the runoff makes its way to a storm drain, trash and other pollutants are picked up and carried into the storm drain system negatively impacting the environment beyond the campus. Students, teachers, administrators and maintenance staff are responsible for what flows off the campus, into the storm drains and to the ocean.

Education Campaign Project Guide

An education campaign is a great way to inform and address water pollution issues to a specific audience. This guide will help your group raise awareness about water pollution through an educational campaign.

The Steps

1. Check This Out

Explore the subject of water pollution by working in teams to learn a specific topic related to water and share what is learned through the creation of infographics.

2. Pre-Survey

Prior to designing the education campaign it is important to survey members of your audience to find out what they already know or don't know, to provide them with new information. This will help to guide your messaging.

3. Campaign Strategy

Guidelines are provided on how to create messaging and ideas for a campaign strategy.

4. Post-Survey

A couple of weeks after the education campaign efforts, conduct the survey again to help determine whether the audience remembers seeing the communications, as well as the specific content about waste communicated through the campaign.

5. Evaluation

Complete the project by answering questions that serve to evaluate the process and offer next steps for potentially taking on an additional trash related project.

CHECK THIS OUT

To get started, students explore the subject of water by working in teams to learn a specific topic related to water pollution prevention and conservation and share what they have learned through the creation of an infographic that they share with the class.

Procedures

1. Divide students into five working groups. Groups should be as close to equal in size as possible.
2. Pass out a different topic sheet to each group.
3. Each group has 15 minutes to:
 - Learn and discuss the topic.
 - Use poster paper and markers to create an infographic answering the questions listed on the topic sheet.
4. Each group shares and explains their infographic with the whole group.
5. As a class, discuss the need for water pollution prevention and conservation, at home and in the community.

Materials

- Topic Sheets (pages 3-7)
- Poster paper or dry erase board—one per group
- Markers—one set per group

High School Option

Guiding questions are provided for each Topic Sheet. These can be optional for use in creating the infographic.

Invite teams to explore their subject further by answering questions they may still have or that came up while sharing the infographics.



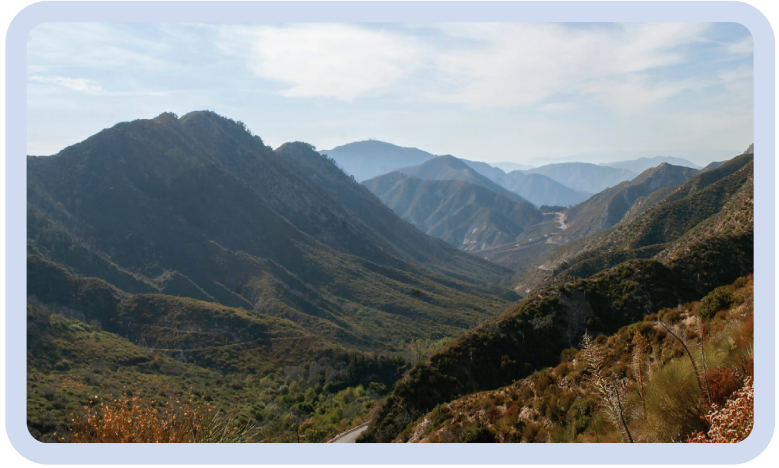
Moving Water

START HERE!

In thinking about Los Angeles County, it is hard to believe that there are seven major watersheds – five of which are located near metropolitan Los Angeles. These land areas collect and drain water runoff into a common body of water. For most of these watersheds that body of water is the Pacific Ocean. As water moves through the urban watershed, it picks up everything in its path!

Create an infographic that answers the following questions:

- What is a watershed?
- How does water move through a watershed?
- Why can this be an issue?
- What is something that can be done to support a healthy watershed?



- A watershed is the land area that “sheds” water to a drainage system or river. It helps supply us with water by feeding underground aquifers or channeling water into rivers and other waterways. Gravity moves water through the watershed from higher to lower areas. Every land is part of some watershed – including your campus and your neighborhood.
- A watershed functions best when the land area is more pervious allowing water to percolate into the aquifer. As rain falls onto land, it percolates through the soil and is filtered of pollutants before it reaches the water table below where it is stored. This underground layer is called an aquifer.
- A watershed’s headwater begins at the mountains and foothills, flows across the valley floor and eventually into a body of water (lakes and ocean). In Los Angeles County, the Antelope Valley Watershed flows into dry lakes. Other watersheds such as the Santa Clara River, Los Angeles River, San Gabriel River, South Santa Monica Bay, North Santa Monica Bay and Dominguez Channel watersheds which flow into the Pacific Ocean.
- When the land becomes developed and less pervious, rainfall is not able to percolate into the ground, disrupting the natural infiltration of water by collecting debris along the way.
- Support a healthy watershed by placing mulch on bare ground to allow the water to be absorbed. Also, picking up litter is another important action to take.

Open the Flood Gates

START HERE!

Many of the waterways in Los Angeles County have been covered in concrete to provide for flood protection during major storm events. Now connected to city streets by gutters, catch basins and storm drains, this flood control system provides a quick and direct path for everything draining from our city straight to the ocean.

Create an infographic that answers the following questions:

- What is the typical climate of Los Angeles?
- Historically, why is that an issue?
- What is channelization and how does it affect water health?
- What is something that can be done to prevent water pollution?




- Los Angeles County has a Mediterranean climate, meaning that the climate is subject to cool wet winters and hot dry summers. When it does rain, most flooding in Southern California is the result of heavy precipitation over short periods of time and damage is often severe.¹
- The flood event in 1938 saw over ten inches of rain over five days, leaving a third of Los Angeles flooded and causing 115 deaths. This, and floods earlier in 1914 and 1934 resulted in the decision to channelize the river.²
- Channelization is the process of engineering waterways to provide for flood control and improved drainage. The Los Angeles River channelization began in 1938 and when completed in 1960, formed a fifty-one mile engineered channel mostly lined with concrete.³
- Today, Los Angeles County Flood Control District encompasses more than 2,700 square miles within 6 major watersheds. It includes drainage infrastructure within 86 incorporated cities as well as the unincorporated County areas. This includes 14 major dams and reservoirs, 483 miles of open channel, 3,330 miles of underground storm drains and an estimated 82,000 catch basins.⁴
- These drainage systems were designed to move water swiftly and efficiently through the watershed. Unfortunately, it also carries debris and other pollutants that may affect water quality.
- Reducing pollutants or picking up trash are some of the ways to prevent pollutants from entering and flowing through the flood control channels and reaching the ocean.

Pollution Down the Drain

START HERE!

Street gutters are more important than you may realize. They drain water off the streets through catch basins and into storm drains. These catch basin openings lead to flood control channels that, in turn, carry the water directly to the waterbodies, such as creeks, rivers, lakes and ultimately the ocean. Water picks up debris as it travels through the streets and into the waterbodies.

Create an infographic that answers the following questions:

- What is stormwater?
 - What is the difference between stormwater and wastewater?
 - Why is stormwater an issue?
 - How is motor oil a part of the issue?
 - What is something that can be done to reduce the effect of urban runoff?
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- In urban environments, rain falls onto impervious surfaces and runs across the pavement, through gutters, enters the catch basins and into the storm drains.
 - Storm drains help prevent urban flooding by moving large volumes of stormwater to flood control channels and into the ocean. Urban runoff from sources of water, such as over watering of lawn, is carried directly to the ocean.
 - Unlike wastewater, which is from toilets, sinks and showers and is carried out by underground sewer pipes that go directly to a wastewater treatment plant, stormwater is not treated before being sent out to the ocean.
 - Urban runoff is a significant source of ocean pollution. Litter, pet waste, cigarette butts, fast food packaging, plastic shopping bags, plastic water bottles, leaking motor oil – anything on the ground – can end up washed into gutters and carried to the ocean.
 - One gallon of used motor oil, poured into the gutter or dripping from a car, can contaminate up to one million gallons of ocean water. Over 115 million gallons of motor oil are sold in California each year; and only about half of it is recycled with the other half ending up in the waste stream, polluting our waterways and ocean or burning off, causing air pollution.⁵
 - Eliminating the use of harmful pesticides and fertilizers on plants that will be washed into the street, recycling used motor oil and picking up trash are just some of the ways to prevent polluted urban runoff from reaching the ocean.

The Source of the Issue

START HERE!

Not all pollution is the same! Different types of pollution are regulated by the Environmental Protection Agency in different ways through the Clean Water Act. Identifying the type of pollutants and their source help government agencies address the pollutants' impacts on our environment.

Create an infographic that answers the following questions:

- How is water pollution categorized?
- What is nonpoint source pollution?
- What is TMDL?
- What is something that can be done to prevent nonpoint source pollution?



- Water pollution is categorized by where it originates or its “source.” It is either “point source” or “nonpoint source”.
- Point source pollution is discharged from a single, identifiable source such as pipes, factories or ships.
- Nonpoint source pollution is caused by rainfall moving over the ground as runoff picking up pollutants and depositing them into rivers or other bodies of water.⁶ Pollutants can include fertilizers, insecticides, motor oil, pet waste, bacteria and trash.
- When these pollutants enter bodies of water such as our lakes and ocean, whether it is point or nonpoint, it becomes a huge water quality issue. As a result, the State of California established TMDLs (Total Maximum Daily Loads) which are scientifically established maximum amounts of a particular pollutant that a specific body of water can receive and still meet water quality standards. For example, the Los Angeles River can only have a certain amount of metals in it and still meet the TMDL.
- Eliminating the use of harmful pesticides and fertilizers on plants that may be washed into the street, recycling used motor oil and picking up trash are just some of the ways to prevent these pollutants from entering waterways.

Every Drop Counts

START HERE!

The average person in California uses 120 gallons of water per day. Up to 70 percent of that water is used outdoors for watering plants and lawns. Los Angeles County residents can make a huge difference by reducing water usage and ensuring that every drop counts!

Create an infographic that answers the following questions:

- Historically, where did most of the water for Los Angeles come from?
- Where does it come from now?
- How does weather impact imported water?
- What can be done locally to conserve water and reduce the need for imported water?



- The El Pueblo de Los Angeles was founded in 1781. During this time the Pueblo relied almost exclusively on the Los Angeles River for its water. In the early years, water from the river was channeled through a distribution system of dams, water wheels and ditches.⁷
- Local water supply such as groundwater was not enough to satisfy the demand of the growing population, creating a need to import water from other sources. In 1913, the City of Los Angeles completed construction of the first Los Angeles Aqueduct.⁸ The Aqueduct diverted water from the Owens River that runs along the base of the eastern Sierra Nevada Mountains. Other sources include waters from the Colorado River and the Sacramento-San Joaquin River Delta (California Aqueduct/State Water Project).
- Relying on imported water can be an issue when the weather can be unpredictable. The amount of rainfall received during the winter season determines the amount of snowpack in the Sierra Nevada Mountains, the water levels in California's reservoirs and ultimately the supply of our underground aquifers.
- Conserve water by capturing rainwater in rain barrels that can provide water for gardens or replacing high-water use plants with climate-appropriate and native plants.
- Slowing down rainwater and allowing it to infiltrate into the ground, such as through planting trees, installing rain gardens and mulching helps to replenish local groundwater supplies and decrease the need for imported water.

PRE/POST SURVEY

It is important to survey members of your audience to find out what they already know or don't know, to provide them with new information. This will help to guide your messaging.

A couple of weeks after the education campaign efforts, conduct the survey again to help determine whether the audience remembers seeing the communications, as well as the specific content about water communicated through the campaign.

Materials

- Water Pollution Survey (page 9)
- Digital devices (optional)
- Pens and clipboards (optional)

Procedure

1. Determine your audience.
 - Who are you trying to educate? Students, teachers or the larger community?
2. Decide where and when you will conduct the survey.
 - Choose a time that has a large group to randomly choose from such as during lunch or at a sports event.
3. Decide who will conduct the surveys.
 - Surveys will be conducted in person.
 - Several people can be conducting surveys at the same time.
 - Make copies of the survey and place them on clipboards to make filling out the survey easier. Or, use a digital device to record answers.
4. Conduct the surveys.
 - Approach and ask a random portion of your audience to take the survey.
 - Be sure each person asks the questions in the same way.
 - The more surveys taken, the more accurate the information will reflect the knowledge of the whole.
5. Analyze the results.
 - Add up the responses and look for any common answers that reflect how much is known about water pollution.
 - Use this information to help guide the messaging for the educational campaign. See page 9.
6. After the education campaign conduct the survey again.
7. Analyze the results.
 - Look to see if the answers reflect the messaging and education provided, compared to the first survey.

Water Pollution Survey

Ask survey participants the following questions and write responses below.

- 1. Where does water go when it rains on our streets?**
- 2. How might litter and other pollutants impact our water?**
- 3. What might be done to help improve water quality?**
- 4. What might be done to help increase our local water supply?**

CAMPAIGN STRATEGY

Once the pre-survey is complete, use what was learned to help create messaging and an educational strategy to inform your audience about water pollution. Assign tasks and deadlines for the educational campaign. Consider the following:

Create Messaging

- Based on the answers to the survey questions, you should have a better understanding of the specific knowledge gaps the audience has about water pollution.
- Choose three to five facts or messages.
- Agree on what you want your audience to learn.
- Keep it simple and clear.

Be creative

- Use the infographics created as inspiration for visuals.
- Think about different ways to convey your message, such as through music, art and video.

Posters

- Create posters and flyers that are appealing to your audience.
- Present information in a way that it is easily understandable.
- Information should be as concise as possible.
- Include appropriate graphics and/or photos.
- Try to avoid too much text or “busy” layouts.

Determine how you want to communicate

Some ideas include:

- Create posters or other signage.
 - Display them where there’s a large majority of your audience.
- Create public service announcements and/or articles.
 - School PTA newsletters
 - Local newspapers
 - Radio stations
- Post on social media.
 - Online blogs
 - Facebook
 - Instagram
- Talk about water pollution on campus.
 - Ask school administrator for permission and help in getting the word out.
 - Make classroom announcements.

EVALUATION

Once the Education Campaign is complete, have students answer the following questions to evaluate their project and introduce some possible next steps.

Questions

1. What was the most successful part of the project?
2. What was the least successful?
3. What would you do differently next time?

What's Next?

Are you interested in another project?
Consider using another Project Guide:

- Campus/Community Cleanup Event
- Composting



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