

# *Water, Soil and Air Quality Testing*



## **Air Quality Testing**

Some suggestions:

Simple particulate testing!

Smear vaseline on a flashcard. Let it dangle from a fence or a tree someplace. (Next to a freeway, far from a freeway, varying distances from a street, something like that)

Put it next to magnifying glass or microscope.

Count how many particles are there. (decide on sample size -- how big of area are you looking at?) \*\*If you use graph paper, you can decide how many squares you're going to count for a more precise sample size.

Another option:

Stand on top of a tall building -- how far can you see? Note the visibility across the city. You can find interesting things by figuring out that a certain landmark, such as the hollywood sign, is x km away.

A great resource to use for soil quality testing is the GLOBE atmospheric protocol. GLOBE is an international organization started in the 90s by politician and environmental activist Al Gore. GLOBE “provides students and the public worldwide with the opportunity to participate in data collection and the scientific process, and contribute meaningfully to our understanding of the Earth system and global environment.” You can collect data to share with GLOBE and explore the following areas: soil, water, air, land cover (biosphere), and Earth as a System. It is also

associated with National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), National Oceanic and Atmospheric Administration (NOAA) and Department of State.

<https://www.globe.gov/do-globe/globe-teachers-guide/atmosphere>

**Field Trip Destination:**

“Baldwin Hills Scenic Overlook”

New visitor center with a lookout on top of Baldwin Hills. You can almost get a 360 view. You can see the inversion layer if it is around. Also you can tell how clean the air is based on how far you can see. Includes a little science and history of LA.

[https://www.parks.ca.gov/?page\\_id=22790](https://www.parks.ca.gov/?page_id=22790)

## Soil Quality Testing

Many students want to study soil quality, but don't be fooled -- this can be a tricky one. Sometimes students want to study concentrations of certain pollutants in the soil, but that might not really make sense. For example, a student might want to measure oil in the soil near a road, but the oil wouldn't really be washing into the soil nearby, it would more likely run on the pavement into another road. If you are testing soil quality, you must first determine **what is good soil**. Are you trying to grow plants? Build a house on top of it? What kind of soil would be ideal for this spot?

If you are testing at a school, some interesting criteria to test are aeration (often soil is too compact), temperature, moisture, and nutrient concentrations.

A great resource to use for soil quality testing is the GLOBE soil protocol. See air quality testing description for an overview and explanation of the GLOBE program.

<https://www.globe.gov/do-globe/globe-teachers-guide/soil-pedosphere>

**Field Trip Destinations:**

Visit a farm. Soil is an essential aspect of all agriculture.

Amy's Farm

<http://www.amysfarm.com>

Amy's Farm is a fun and unique experience for all ages. From early childhood to senior citizens, we offer age-appropriate tours for all visitors. We have been offering tours for the past 18 years and have had all types of groups visit: school groups, scout groups, church groups, clubs, college classes, health clubs, families, friends... everyone! Enjoy a garden walk, smell fresh herbs, feed the pigs, visit the petting zoo, milk a cow and visit our horses. We can't wait to meet you! Tour pricing varies from \$8-\$30 per person.

La Brea Tar Pits

Malibu Lagoon

Ballona Wetlands

## Water Quality Testing



Water quality testing often requires some kind of kit with testing instruments. Here are some tests you might want to try out.

Test 1: Temperature

Test 2: pH

Test 3: Dissolved Oxygen (DO)

Test 4: Biochemical Oxygen Demand (BOD)

Test 5: Nitrates

Test 6: Total Dissolved Solids (TDS) and Salinity

Test 7: Turbidity

Test 8: Total Coliform Bacteria

<http://www.mwra.state.ma.us/publications/waterqualitytesting/pdf/06wqm.pdf>

A great resource to use for soil quality testing is the GLOBE hydrosphere protocol.

<https://www.globe.gov/do-globe/globe-teachers-guide/hydrosphere>

Super helpful!!!!

(also see SURFRIDER PROJECT)

### **Field Trip Destinations:**

Water Reclamation plants

More info on LA City Sanitation's website

Hyperion wastewater treatment plant-- El Segundo

VISIT

Admission is FREE to school groups, community groups, and individuals.

All visitors must meet the requirement of nine years old and above.

Monday through Friday from 8:30am to 4:00pm. Visits are open by appointment only.

Available Tours

ELC Exhibit Tour – allow one hour

Explore three floors of interactive exhibits

Maximum of 40 attendees

Hyperion Water Reclamation Plant Tour – allow one hour

Enjoy a tram ride around the Hyperion Plant to see how wastewater is treated for reuse

Maximum of 40 attendees

ELC/Plant Tour Combo – allow 1.5 hours

Maximum of 80 attendees

Schedule a Tour: Use our online scheduling tool or email us at [san.elc@lacity.org](mailto:san.elc@lacity.org). You may also reach us by phone at 310-648-5363.

Terminal Island Water Reclamation Plant -- Harbor City

Donald C. Tillman Water Reclamation Plant -- San Fernando Valley

Los Angeles-Glendale Water Reclamation Plant (LAG) is strategically located to serve east San Fernando Valley communities

[http://www1.mwdh2o.com/DocSvcsPubs/Education\\_Site/pdfs/Water\\_Education\\_Programs\\_Your\\_Guide.pdf](http://www1.mwdh2o.com/DocSvcsPubs/Education_Site/pdfs/Water_Education_Programs_Your_Guide.pdf)

let's roll!



## field trips

### Hands-On Water Distribution Model (Grades 4-12)

Students visit our Metropolitan Headquarters and Olvera Street (downtown Los Angeles) for this field trip. Metropolitan's water source, treatment, and distribution system model is an exciting hands-on learning experience for all students. The model is a set-up, take-apart, put-together, working-with-water activity. Students will also explore Olvera Street and the history of water use in early Los Angeles. One adult per eight students is required with a maximum of 40 students. (Approximately 4 hours)

Contact: Julie Miller at (213) 217-6738, jamiller@mwdh2o.com

### Diamond Valley Lake (Grades 3-8)

This program takes you to Riverside County, near Hemet, the home of Metropolitan's Diamond Valley Lake. Students experience a variety of standards-based, water-related, hands-on science activities. Tours of the DVL Viewpoint and Visitor Center is among the highlights. The field trips are available on a first-come, first-served basis and on specified weekdays. (Approximately 3-4 hours)

Contact: Blanca Biller at (951) 926-7076, bbiller@mwdh2o.com

### H<sub>2</sub>O Science Lab (Grades 4 - College)

Students may visit our MWD Headquarters to become involved in utilizing a series of fun and innovative science investigations, simulating experiments and tests that are conducted by our water quality chemists and microbiologists. They also visit our state-of-the-art Boardroom and learn about contemporary water issues through debating, role-playing, portraying stakeholders and MWD board members. A modified version of this program can be designed for your classroom. (Approximately 3 hours)

Contact: Benita Lynn Horn at (213) 217-6739, bhorn@mwdh2o.com

**Field trips are FREE, but MWD is not able to provide buses nor reimburse schools for field trip transportation.**

### Inspection Trips for Educators

This is an educational and enjoyable day tour of the Colorado River Aqueduct system. Especially designed for teachers and administrators, it provides first hand experience and insight into the complexities of Metropolitan's amazing water distribution system from Lake Havasu to Lake Mathews and Diamond Valley Lake. This annual tour is offered free, and on a first-come, first-served basis, with preference to teachers who are currently using our programs.

Contact: Royetta S. Perry at (213) 217-6926, rperry@mwdh2o.com

10 MWD Water Education

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## Metropolitan Water District Education Programs/Materials/Resources Order Form

\*Also available online at: [mwdh2o.com/education](http://mwdh2o.com/education)

### Please Print

Name: \_\_\_\_\_  
 Grade Level (Teaching): \_\_\_\_\_ class size: \_\_\_\_\_  
 School: \_\_\_\_\_  
 School Address: \_\_\_\_\_  
 City, State, Zip: \_\_\_\_\_  
 School District: \_\_\_\_\_  
 School Phone: ( ) \_\_\_\_\_ E-mail: \_\_\_\_\_

(Please check one) New To MWD  Have Used MWD Programs

### Program(s) Requested: (Please check)

#### Elementary

All About Water (Grades K-2)  
 Admiral Splash (Grades 4-5)  
 Water Ways (Grade 5)

#### Secondary

Water Times (Grade 6)  
 Conservation Connection (Grades 6-8)  
 Water Quality: The Qualities and Science of Water (Grades 7-12)  
 Water Works: School-to-Career (Grades 6-College)

I am interested in an in-service/workshop:  Yes  No

Online in-services are also available at: [www.mwdh2o.com/education](http://www.mwdh2o.com/education)

### Supplemental Materials (Please provide quantity needed for your classroom)

Quantity		All Grades	_____
Water Cycle Poster (one)		All Grades	_____
The Guzzler Gang/Student Booklet (class set)		Gr. K-2	_____
The Guzzler Gang Activity Book (one)		Gr. K-2	_____
Little Splash (class set)		Gr. K-3	_____
Journey Down the Colorado River Aqueduct (class set)		Gr. 3-8	_____
California's Water Resources Map (one)		Gr. 3-Adult	_____
The Geography of Water		Gr. 4-8	_____

### Fact Sheets (Please provide quantity needed for your classroom)

Quantity			
Diamond Valley Lake At-A-Glance Fact Sheet (class set)		Gr. 4-Adult	_____
MWD At-A-Glance Fact Sheet (class set)		Gr. 9-Adult	_____

Please fold with the pre-addressed side showing, seal, and return.

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## ● Ballona Wetlands

- [http://www.ballonafriends.org/visit\\_programs.html](http://www.ballonafriends.org/visit_programs.html)

Friends of Ballona Wetlands

Home Why Wetlands Matter Ballona History Habitat Restoration Visit/Programs About Us Blog

Visit The Wetlands  
 Volunteer  
 Education

### Visiting the Ballona Wetlands

While much of the reserve is currently closed to the public, Friends of Ballona Wetlands, together with our community partners, offer many opportunities to visit Ballona, including weekend tours, monthly volunteer restoration events, and more. Click on the following links for more information.

**TOURS AND COMMUNITY ACTIVITIES:**

- Calendar of Community Activities (Spring 2018) »
- Download the calendar for information on our regularly scheduled tours and volunteer restoration days. Open to the public, reservations only required for groups of 5 or more, otherwise just show up!

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