

Dear Teacher:

**Thank you for participating in Tucson Water's *Da Drops* program!**

*This booklet contains three activities:* An activity describing the physical properties of water, a water cycle crossword puzzle utilizing new vocabulary, and a sensory awareness exercise to help students realize how essential water is for all life. You will also find some useful background information on the history of water in Tucson.

*Remember:*

- 💧 **Please make advance arrangements to reserve a room where all of the presentations can take place.**  
The students from each class will rotate through this room. Students typically sit on the floor in front of the table.

**On the day of the presentations, we'll also need:**

- 💧 a TV / DVD player
- 💧 a large cleared table

See you soon!

Dr. Faucet

*For more information or additional copies of this packet, please contact:*

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*Da Drops is sponsored by:*

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## DA DROPS OVERVIEW

A water education program for 1st through 3rd grade students in Tucson, Arizona. Developed and funded by Tucson Water, the City of Tucson public water utility.

Tucson Water's *Da Drops* is an interdisciplinary program that has been specifically designed for first through third grade learners and focuses on the water cycle, water supply, and water conservation in the Tucson Basin. It poses three questions:

- Where does our water come from?
- Where does it go?
- What can we do to conserve this vital natural resource?

In answering these questions, these concepts are addressed:

- the water cycle (with emphasis on the states of water: solid-liquid-gas)
- water supply (groundwater, Colorado River water, recycled water)
- water conservation

### ***Da Drops* is a three-part program:**

**PART ONE** includes three fun pre-visit classroom activities. Conducting these activities in advance ensures that students will get the most out of the on-site presentation. Evaluate these lessons and modify as needed based on the grade level and abilities of your students.

**PART TWO** includes a lively and interactive one-hour on-site presentation. Students play a water cycle game, participate in demonstrations with a groundwater model, and discover how to be "water smart." At the end of the presentation, all students receive a water smart cup to take home.

**PART THREE** includes a ten-page activity booklet full of mazes and word searches, pages to color, and new fun facts to discover. This fun booklet will help students remember the many things they learned from their special visitor, Dr. Faucet.



## TEACHER BACKGROUND READING

Tucson's inhabitants continue to live in a delicate balance with water. Here in the Sonoran Desert we receive less than 12 inches (30.5 cm) of rain each year and have no perennial (continuously flowing) rivers nearby. Our city's population has grown from 7,500 in 1900 to approximately 1,000,000 in the metro area just a century later. In addition to our extraordinary population growth, lifestyle amenities such as swimming pools, outdoor landscaping, and daily showers have resulted in a rapid depletion of our groundwater. In 1875, Tucsonans could dig just 25 feet (7.5 m) underground to access water, and the local Santa Cruz River flowed perennially. Today the river is dry and we must drill 250-300 feet (75-90 m) down in order to pump up groundwater.

In 2001, Tucson Water began blending its groundwater with Colorado River water that was pumped 336 miles (541 km) from Lake Havasu via the Central Arizona Project canal. This Colorado River water is recharged into large basins west of the Tucson Mountains, where it percolates down to the water table before it is pumped up and into Tucson. Currently, Tucson's water supply is a blend of approximately 10 percent groundwater and 90 percent Colorado River water.

A third source of Tucson's water is reclaimed (or recycled) water. After our water is used, it travels in pipes to the Water Reclamation Treatment Plant where the wastewater, or effluent, goes through a process that mechanically and chemically cleans it. This recycled water is treated to a standard that can be used for landscaping at parks, schoolyards, and golf courses. Some places are already recycling their water for drinking (for example: Disneyland, International Space Station, and Orange County Water District in California).

Even though Tucson now has three water sources - groundwater, Colorado River water, and recycled water - the practice of conserving water in Tucson is as important as ever. The Colorado River is not a limitless supply of water, and the Southwest is one of the fastest growing regions in the country. Tucson Water's outreach programs promote a water-conscious culture by fostering a deeper understanding of our relationship with water in the desert. The *Da Drops* program seeks to provide students in first through third grade with a fun learning experience that will raise their appreciation of water and generate enthusiasm for water-saving practices.



## FOLLOW-UP / EXTENSION IDEAS

The **Da Drops** program sparks student interest in further explorations pertaining to water and can be used as a take-off point for related units of study that also address concepts in the Arizona Department of Education Academic Standards. Teachers may wish to consider pursuing one or more of the extension ideas outlined below. These ideas can also be expanded to embrace additional standards in other subject areas.

### Writing about Water

Students at all grade levels can write about their new understandings about water. They can begin with any of a variety of prewriting exercises (brainstorming, webbing, discussing the purpose and audience of their writing, organizing or outlining their ideas) and then develop a written piece appropriate to their grade level. This would address several writing standards (Strand 1 – writing process, Strand 2 – writing elements, and Strand 3 – writing applications).

### Properties of Objects and Materials

For first and second graders, continue to explore water by comparing its properties with those of other materials. First graders can benefit from practice in classifying objects by simple physical properties (shape, texture, size, color, weight) or as solids, liquids, or gases. Second graders can go further by measuring these types of properties and by devising simple demonstrations of how water can exist as a solid, liquid, or gas and by exploring how states of matter are related to shape. These activities would address academic standards SC01-S5C1-01; SC01-S5C1-02; SC02-S5C1-01; SC02-S5C1-02; SC02-S5C1-03; SC02-S5C1-04.

### Water and Weather

For first and second graders, consider following Dr. Faucet’s presentation with lessons about weather. First graders might simply identify characteristics of weather, including precipitation, and analyze how weather affects their daily lives. Second graders might actually measure and record weather conditions, learn to identify clouds, and analyze relationships between clouds and precipitation. These activities could address several ADE Science Standards, including SC01-S6C3-01; SC01-S6C3-02; SC02-S6C3-01; SC02-S6C3-02; SC02-S6C3-03; SC02-S6C3-04.

### Experiments with Plants and Water

Third grade classes might plan and conduct simple experiments in which plants are given adequate water, too much water, and not enough water. Experiments along these lines can involve using appropriate measurement tools and recording and analyzing data. Students could learn about the functions of different plant structures and the fact that water is found throughout a plant. Such explorations could address several academic standards related to science as inquiry, including SC03-S1C2-01; SC03-S1C2-02; SC03-S1C2-03; SC03-S1C2-04; SC03-S1C2-05; SC03-S1C3-01; SC03-S1C3-02; SC03-S1C3-03; other inquiry process standards, and science content standard SC03-S4C1-01.

### Water Interactions

Third graders can expand their explorations of water to discuss how the amount of water in the environment affects human populations. Water availability affects human communities in general ways on an ongoing basis. Additionally, extreme events like droughts and floods affect us in other ways. In turn, human activities can affect the environment and the likelihood of drought, floods, and more. Finally, water is one of several environmental factors that affect other living organisms, including their ability to live in a given geographic area. Exploring these topics would address science standards SC03-S3C1-01; SC03-S3C1-02; SC03-S4C3-05.