

9th Annual Model Water Tower Contest

October 2011

Instructions

General

- The Model Water Tower Competition will be held as follows:
 - When: Check with your teacher for details.
 - Time: Check-in is between **9:00-11:00 am**
 - Where: **Carlos E. Haile Middle School**, 9501 State Rd 64 East, Bradenton
- There is no cost to enter. To participate, arrive at the check-in with the following materials:
 - Bring your completed **model water tower**.
 - Bring your completed **Registration**, a blank form is attached.
 - Bring your completed **Participant Release**, a blank form is attached.
 - Bring your completed **Materials List**, a blank form is attached.
- Model water towers may be of any design and constructed from any materials. In fact, you will be awarded for using **creative designs** and **innovative materials**. Creative designs mean the water tower will function even though it does not look like any other tower. Innovative materials may have been used for something else at one time – an old broom handle used for support, for instance.

Objective

The objective of the competition is to make participants aware of the importance of **reliable drinking water** and the rewarding opportunities available in the **water profession**. The competition does this by having students develop an idea into a functioning water tower, just like water professionals do in the real world!

Prizes will be awarded to the top three finishers in the middle school and high school categories. The lowest scores win. Judges decision is final.

Judging will be based on **four criteria** – structural efficiency, hydraulic efficiency, cost efficiency and design ingenuity. Understand and achieve these criteria to do well! They are explained below.



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Structural Efficiency

Structural efficiency is calculated by **dividing** the weight of the model when it is empty by the average height of the tank **times** the amount of water it holds. The lower this number the better. This is shown with the following formula:

$$\text{Structural Efficiency} = \frac{\text{Weight of the tower when empty (pounds)}}{\text{Average tank height (ft)} \times \text{Amount of water the model holds (gal)}}$$

This criterion is similar to what engineer's use in the real world! Remember, the tank should be between 1.5 feet and 2.5 feet high (See Drawing Provided)

Hydraulic Efficiency

Hydraulic efficiency is the amount of **time it takes** the judges to fill the model with 1 gallon of water and drain it back out again. The judges will fill the tank through the 3/8 inch connector. The less time it takes to fill and drain the tank through the connector the better.

Cost Efficiency

Cost efficiency measures your ability to save money while building your model. **Bring receipts** for all items purchased for your model. Points will be assigned as follows (the lower the score the better):

\$ 0.00 - \$ 5.00	1 pt
\$ 5.01 - \$ 10.00	2 pt
\$ 10.01 - \$ 15.00	3 pt
\$ 15.01 - \$ 20.00	4 pt
More than \$ 20.00	5 pt

List all items used in your model and their costs on the **Materials List Form**. Where recycled items are used, put the letter "R" in the cost column. You may use as many recycled materials as you wish. A penalty of 1 pt will be given for each missing receipt for items purchased new. No receipt is necessary for recycled items however the items must be accounted for on the materials list form. The cost of glue and items used to decorate the tower are not counted towards the cost.



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Design Ingenuity

Ingenuity (in-ge-nu-i-ty) is how much **imagination and skill** were used in your model. Water professional must often use ingenuity; they use skill and imagination to solve difficult problems. The judges will look at several items:

- Craftsmanship (is the model sturdy, do the parts fit together nicely)?
- Imagination (are the design or materials unique)?
- Artistic merit (does the model have creative ideas, colors or themes)?

Penalties

Keep to the following standards when designing and constructing your model:

- The base of the model must fit in a square **1 foot on each side**.
- The tank must be **between 1.5 and 2.5 feet high (See Drawing)**.
- The tank must have a **vent or removable lid** so the judges can tell when it is full.
- When full, the tank must **hold between 1 and 2.5 gallons** of water and it **should not leak**. Hint; test your model to make sure the tower can hold the weight of the water!
- The model must use the **3/8 inch connector** as supplied.
- **Bring receipts** for all materials purchased for your model. A one point penalty will be given for each item not having a receipt (Max of 3 points).
- **Bring materials list**. Three points will be added to the score if a list is not provided.

Penalties will be assessed for not following the above standards. These standards are demonstrated in the diagram attached at the end of this hand-out.

Additional Information

For more information please contact the event organizers as follows:

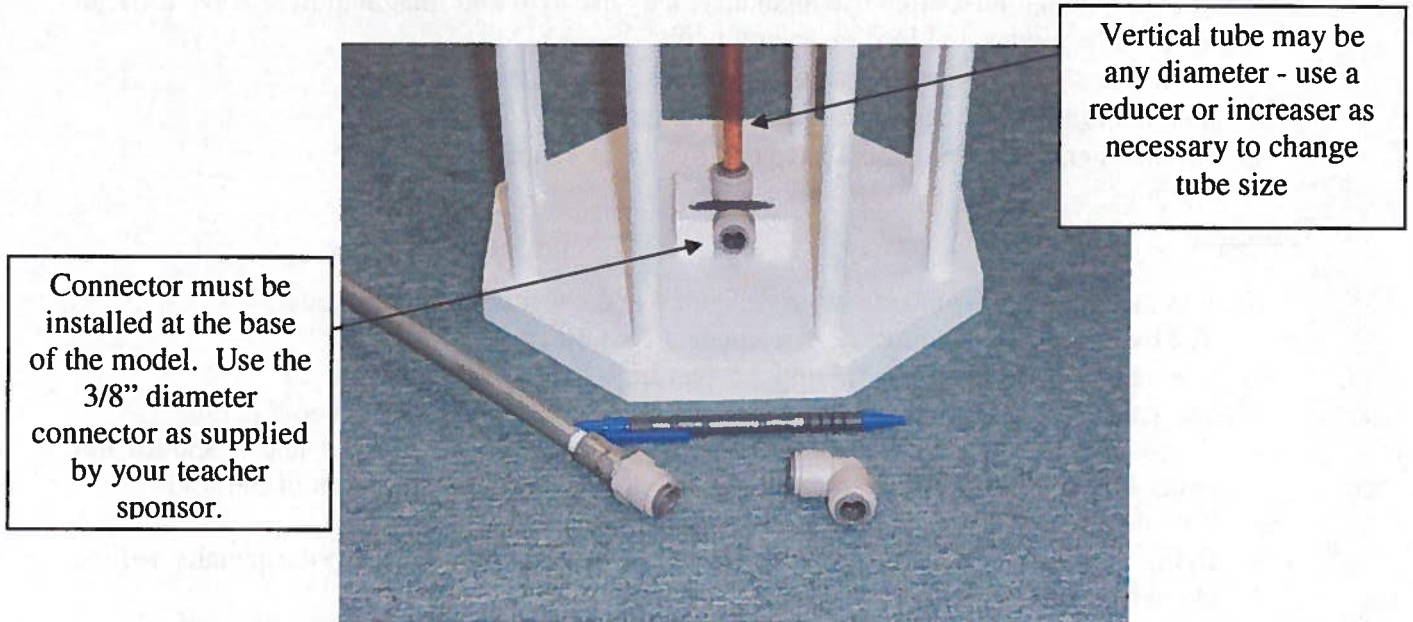
Seton Katz, PE
Chair – Youth Education Committee, AWWA Region X
Project Manager, Sarasota County Capital Management Services
1001 Sarasota Center Blvd
Sarasota, FL 34240
(941) 861-0879
skatz@scgov.net

American Water Works Association
AWWA  **FLORIDA**

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Model Water Tower Connector



The proper 3/8" diameter push-on connector will be provided to all registered contestants. You must use the connector given to you to avoid a penalty. Contact your teacher sponsor to receive the connector. If you do not have a teacher sponsor, contact the event organizer as follows to receive a connector:

Seton Katz, PE
Chair – Youth Education Committee, AWWA Region X
Project Manager, Sarasota County Capital Management Services
1001 Sarasota Center Blvd
Sarasota, FL 34240
(941) 861-0879
skatz@scgov.net

American Water Works Association
AWWA  **FLORIDA**

'From Today's Youth Come Tomorrow's Leaders, Lets Lead Some to the Water Profession'

Model Water Tower Competition Registration

Model #

Team Name: _____
School: _____
Teacher or Advisor: _____

Complete this form and bring with it you to the check-in.

List the name of your team members below. Teams may have from 1 to 4 members.

<u>Name*</u>	<u>Teacher / Grade</u>	<u>Telephone #</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

***Each team member must bring a signed Participant Release Form.**



'From Today's Youth Come Tomorrow's Leaders, Lets Lead Some to the Water Profession'

Model Water Tower Competition Participant Release Form

INSTRUCTIONS: Each team member must bring a copy of this form signed by their parent or guardian.

I AM THE PARENT/GUARDIAN OF _____

I HEREBY AUTHORIZE THE MEMBERS OF THE WATER TOWER COMPETITION COMMITTEE, A SPECIAL PROJECT OF THE AMERICAN WATERWORKS ASSOCIATION-YOUTH EDUCATION COMMITTEE TO:

1. PREPARE ANY PROMOTIONAL MATERIAL SUCH AS PRESENTATIONS, SLIDE SHOWS, VIDEO TAPES, PHOTOGRAPHS AND MOVIE FILMS IN WHICH MY CHILD WILL SPEAK AND/OR APPEAR.
2. USE, REUSE, PUBLISH AND REPUBLISH THE SAME IN THE WHOLE OR IN PART INDIVIDUALLY OR IN CONJUNCTION WITH OTHER PHOTOGRAPHS, VIDEO OR FILM IN ANY MEDIUM FOR ANY PURPOSES WHOSOEVER, INCLUDING (BUT NOT BY WAY OF LIMITATION) ILLUSTRATION, PROMOTION AND ADVERTISING BY THE COMMITTEE.

I HEREBY WAIVE ANY MONETARY RIGHTS OR OTHER RIGHTS THAT I MAY HAVE TO INSPECT AND/OR TO APPROVE THE FINISHED PRODUCT OR THE ADVERTISING COPY THAT MAY BE USED IN CONNECTION THEREWITH OR THE USE TO WHICH IT MAY BE APPLIED. I UNDERSTAND AND AGREE THAT ALL RIGHTS, ROYALTIES AND MATERIALS WILL BELONG TO THE COMMITTEE.

Parent/Guardian_(Print Full Name)_____

Parent/Guardian_(Signature)_____

Date_____ Phone #_____



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