ABCWUA Water Resource Education Activity

Activity Title:	**Why Share, Why Care?**
Description	Students work in groups representing our community's municipal water users to develop an understanding of the complex issues relating to competition for drinking water.
Objectives	Students will: • learn who the municipal water users are in our community. • develop an understanding of the value of water. • create a strategy for water distribution. • recognize that all the groups competing for water must conserve in order to have water in the future. • learn about their local water utility authority's long-term water strategy.
Grade Level	8^{th}-12^{th}
Materials Needed	• 2 one gallon plastic jug containers of water, one labeled "Aquifer" and one labeled "River" • 100 Dixie or other small paper or plastic cups • group perspective names (4 pieces of paper folded lengthwise into "tent". Each tent has one word on it representing a unique perspective: R*esidential, ICI, Recreation, and Future*.) • dry erase board or blackboard with chalk and eraser. • dry erase markers (2-4) • funnel • paper towels • posters/visuals • DVD for teacher (The Road to Sustainability)
Background Info	Most students do not realize how little fresh water there is on Earth, where their drinking water comes from or the politics behind water-related decision making. Locally, 100% of our drinking water has come from an aquifer that is deep underground, and the water is brought to the surface through a system of over 90 groundwater wells. The problem is that we have been pumping it out faster than it's being replenished naturally. In our area, it takes a long time for rain and river water to seep down and replenish the aquifer. To make matters more difficult, we live in a high desert ecosystem where droughts are common, everyone wants and needs water, and the population keeps growing.

	By Fall 2008, the Albuquerque area will begin to use surface water (the Rio Grande) to reduce our aquifer pumping so the aquifer can begin to recover on its own. The aquifer will remain an important reserve to draw on during drought. .
Procedure	Discuss the difference between infinite and finite resources, Discuss a need versus a want. We want a lot of things: clothes, entertainment, toys, food, water. The problem is that our wants are infinite but all things are finite. Perhaps the only things that are truly infinite are the universe…our imaginations…creativity…our wants! Discuss that water has no substitutes. It is very valuable and very political, especially in arid parts of world. It is a limited resource, but demand is virtually unlimited. Discuss city water versus bottled water facts (current cost about 1/2 cent per gallon and that includes delivering it to your faucets and toilets, then cleaning it after it goes down the drain. The average bottled water costs about 365 times that amount and it isn't even a regulated product by the FDA.) Discuss our local climate. What climate do we live in? A desert is defined as receiving 9" or less precipitation per year. Draw water line that indicates inches of precipitation. Draw tick mark on far left at 0.02" – the precipitation of the driest place on Earth where people actually live (Aswan, Egypt), then a tick mark to the far right at 224" (Columbia), the wettest place on Earth where people live. Then ask class how many inches of precipitation ABQ gets on average. Put tick mark at 9". Ask students what this means. Discuss that Albuquerque is built on aquifer and until about 10 years ago we thought there was an ocean of water below us, not true. We have been pumping out water faster than it is being replenished naturally. City is growing at rate of 1%/year. Half of state's population lives in ABQ area. How much water does a person need to (or should) drink per day? (1/2 gallon or 8 cups). Explain residential use in ABQ is about 100 gallons per person per day. Ask class what happens to the other 99 ½ gallons per day. Explain the average of all the users (residential, business and recreation) is 172 gallons per person per day, down from 250 gallons per person per day about 10 years ago. **<u>Part II: Pass the Jug</u>**

	Separate students into four community groups of approximately equal size. Each group represents a different perspective in our community when it comes to water use. The four groups are Residential, ICI, Recreation and Future. Distribute one tent label per group so each group remembers what perspective they represent. • What does residential mean? Who are residential users? • What does ICI mean? (industrial, commercial, institutional) Give examples of these users. • What does recreation mean? (Explain that we are not talking about the river, fishing, boating, because the water utility does not have control over that water.) • What does future mean? (The future need for water is determined by how much we are using today.) Ask each group how many cups they would like, knowing that there are other groups that need cups. Do not guide them or restrict how many they ask for unless it is a crazy number. All groups get desired amount except the ***Future*** group. The ***Future*** group will receive the cup total of the first three perspectives. This is because today's choices (i.e., the number of cups chosen by the first three groups) determines the minimum amount needed by the future group, presuming population increases and the ways and amount of water we use stays the same. Each group chooses a "secretary" to do some writing for the group. Each group is to brainstorm why they need the number of cups they chose. What entitles you to that amount of water? Starting with Residential group, followed by ICI then Recreation, let each group fill their cups ½ full with water from the **Aquifer** jug until the jug is empty. Do not show students the **River** jug. Once the jug is empty, stop the group. We have a problem. There is not enough water for everyone. **<u>Part III: Town Hall Meeting</u>** Students are to briefly debate as to why they believe their group should have access to the water in a greater capacity

	than the others. Residential: suggested reasons might be that water is life. People need it to drink, to clean themselves and their houses/property, to grow food. Without water people cannot survive, and without people a city cannot thrive. ICI: suggested reasons are that water enables businesses to do their thing, to create jobs and options for people to purchase things. Without businesses and institutions, things don't get done, communities don't thrive, people are left without employment and the ability to purchase all the stuff we want. How is water used to create everyday things? (point out how water is needed to grow the cotton, clean the cotton, power the electricity to run the machines that weave the thread and make denim fabric, cool the machines, dye the fabric, stonewash the fabric. In short, water is required in most manufacturing and businesses. Recreation: suggested reasons are that water in public areas gives us a higher quality of life. In the absence of recreation, a community's quality of life greatly decreases. Would you like to live here, or move here, if it looked like a dump? No parks, no soccer or baseball fields, no golf, no swimming pools, bare dirt and concrete everywhere? Bottom line: We need water today and in the future. Do we care whether or not we have enough water in the future to maintain a high quality of life? Why should we care? Take a moment and confirm that all group perspectives are correct, and that each consumer group is essential to our community. We all need water. The question is whether each group is willing to trade some of its water so all can groups have enough. ***Conservation*** Students from each consumer group will share (conserve) a portion of their water to enable access to the other perspectives. Ask the students to define some of ways that we can conserve water. Each cup that is eliminated from each consumer group will ultimately be eliminated from the ***Future*** group. Emphasize

	that the choices we make today clearly and definitely impact the choices we have for tomorrow. For example, since the City of Albuquerque implemented its water conservation program, we have saved over 100 billion gallons of water – or 3 years worth of water even though accounts have grown by 15% since 1998! What does that mean? Now that each group has conserved as much water as they can, can you think of any other options the community has to figure out how the Future (or other) user group can get enough water? (the answer is to find new sources of water and use non-potable water instead of drinking water for outdoor or other use). **<u>Part IV: Other Solutions</u>** Use the ***River*** jug to fill remaining cups and explain how the **S**an Juan Chama Drinking Water Project falls into a larger plan that includes • Conservation • Recycling • Finding new sources • Using San Juan/Chama water that is taken out of the Colorado river and piped/moved over the Continental Divide into the RG River. Very expensive. • We cannot continue to use that water unless we continue to conserve, by agreement with the State Engineer. The goal is to meet the water demands and let the aquifer recharge itself so we can use some of that water in emergencies. ***Protection*** Now that we will be drinking surface water (the river), does protecting our water take on a new meaning? What can we do to protect our water? **<u>Part V: Review</u>** Should we share our water among all the users? Why do we care about this? What climate do we live in? How much precipitation do we receive, on average? Where do we currently get our drinking water? Where will this drinking water come from next year? What can I do to protect our water? How is our municipal water different from bottled water?

	Clean Up Have students help pour water back into jugs.
Evaluation/Extension	Search the local newspaper archives online to learn about local water issues and controversies. Discuss the different perspectives of the groups involved.