SPRINGS PRESERVE

# Theme: Sustainability (Grades 9-12)

## Pre-Visit Activity #2
## Water Use Inventory

**Overview:**
By calculating their personal and family water usage, students will understand the amount of water used by common activities and determine ways they can conserve water.

**Objectives:**
- Students will examine their personal water use.
- Students will think of ways to conserve water.

**Materials:**
- Copies of "Water Bill Calculations/Estimated Water Use" worksheet (1 for each student)
- Copies of "Personal Water Use Inventory" worksheet (1 for each student)
- Water bills (students should each bring in one)

**Activity Part I: Water Bill Calculation**
The day before you begin this lesson, instruct students to each bring in a copy of their water bill from home. The month and year do not matter.
Using their water bills and the worksheet "Water Bill Calculations," have students answer the questions. These answers will be used later in the activity.

**Activity Part II: Estimated Water Use**
Students can gain a better understanding of where they use the most water in their home by using the chart "Estimated Water Use."

Explain that the figures in this chart are estimates; there is a tremendous amount of variation based on fixtures, time used, and other factors. For example, if you have a low-flow showerhead, the water flow will be about half the estimate on the chart. If you have a low-flow toilet, the water used per flush will be as low as 1.5-2 gallons per flush. The amount of water used for tooth brushing, shaving, hand and face washing, and dishwashing will vary significantly based on the time spent and the faucet setting. The amount of water used in your yard will vary depending on the size of the area in need of water.

Encourage students to change the amount of water used in the "Estimated Water Use" chart if they have more accurate information for their home.

It is important to understand where water is used and the variables affecting how much is used in order to conserve more water.

**Activity Part III: Personal Water Use Inventory**
Using the "Estimated Water Use" chart and their calculations from Part I, have students fill out the "Personal Water Use Inventory" chart.

For shared activities like washing clothes, students should calculate their share of the water used. For example, if there are 4 people in the household and the washing machine is estimated to use 40 gallons per load, the share for one person is 40 gallons/4 people = 10 gallons.

## Part I: Water Bill Calculations

Using the water bill that you brought to class, answer the following questions:

1. What month and year is the bill for?

   _____

2. On your water bill, find the amount of water used for the month:

   _____(include units)

3. Calculate your average cost of water per gallon and per 1000 gallons. Show calculations:

   Average cost of water = _____per gallon

   Average cost of water = _____per 1000 gallons

## Part II: Estimated Water Use

| **Use** | **Estimated gallons** | **Conditions** |
|---|---|---|
| Shower | 4-10 per minute | |
| Fill bathtub | 30-50 per use | |
| Toilet Flushing | 2-5 per flush | |
| Tooth brushing | 3 per minute | letting water run |
| Washing hands and face | 3 per minute | letting water run |
| Shaving | 3 per minute | letting water run |
| Cooking | 3 per meal | |
| Washing Machine | 20-50 per load | depends on setting |
| Dish Washing by hand | 3 per minute | |
| Dish Washing with Machine | 15-30 per load | depends on setting |
| Water Lawn | 10-20 per minute | depends on area |
| Lawn Sprinklers | 5-20 per minute | depends on area |
| Washing Car | 10 per minute | |
| Wash down driveway with a hose | 10 per minute | |
| Fill swimming pool | 20,000-30,000 per use | |

## Part III: Personal Water Use Inventory

| Use | Number of uses or minutes used per day | Estimated gallons per use or minute | Estimated gallons used per day | Estimated gallons used per week | Cost per gallon | Estimated cost per week | Estimated cost per year |
|---|---|---|---|---|---|---|---|
| *Shower* | | | | | | | |
| *Fill bathtub* | | | | | | | |
| *Toilet Flushing* | | | | | | | |
| *Tooth brushing* | | | | | | | |
| *Washing hands and face* | | | | | | | |
| *Shaving* | | | | | | | |
| *Cooking* | | | | | | | |
| *Washing Machine* | | | | | | | |
| *Dish Washing* | | | | | | | |
| *Water Lawn* | | | | | | | |
| *Lawn Sprinklers* | | | | | | | |
| *Wash Car* | | | | | | | |
| *Wash down driveway w/hose* | | | | | | | |
| *Fill swimming pool* | | | | | | | |
| *Other:* | | | | | | | |

**Discussion Questions:**
Based on your results, answer the following questions.

1. Does your household use more water than what you originally thought? Why?

2. Where does your household use the most water?

3. Where do you individually use the most water?

4. If you were to cut water use in three areas, where would you do so and how? How much water could you cut from each area? Calculate the percentage of water that you would save in each area.

5. Name another way that you can conserve water other than the areas listed above.