



## Lesson 2 – Smart Landscapes – Part B

### Investigative Question:

- How can you harvest rainwater to transform an impermeable plot of land on your school grounds into a water-efficient oasis?

Slides: [Lesson 2 Part B PowerPoint](#)  
[Lesson 2 Part B Google](#)  
[Lesson 2 Part B PDF](#)

### Materials Needed:

- Colored pencils – 1 per group
- Rulers
- **Student Handbook per group which includes:**
  - [Background Info on Water Efficient Landscapes](#)
  - [Rubric for Smart Landscape Design](#)
  - [Images of Landscapes before and After](#)
  - [AZ Climate Data](#)
  - [Arizona Physiographic Provinces Map](#) per group
  - [Steps for Designing Your Water Efficient Landscape](#) Student Copy Pages
  - [Sample Landscape Design: Step 1 and 2](#)
  - [Rainwater Harvesting Calculations Student Pages](#)
  - [Native Plants for Water-Efficient Landscapes](#) Student Copy Pages
- Entire PDF of [Smart Landscapes Lesson](#) (optional)

### Investigations Activity:

1. **Tell students that they will be designing their own landscaping for a portion of a school's grounds, with systems for capturing and using their rainwater as well as native plants that are adapted for desert environments.** Refer back to notes from the activity on plant adaptations for arid environments, "Estivation, Ephemerals, and Xerophytes," for information about why these species are able to survive with little water.
2. **Direct the class to work through the calculations on the [Rainwater Harvesting Calculations Student Pages](#).** Provide the [AZ Climate Data](#) for students to use as they calculate their roofs' water yields.
- 3.



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4. **Hand out the [Sample Landscape Design: Step 1 and 2 Student Copy Pages](#) and emphasize that this is only an example to help them visualize what their completed project may look like (this is all in the Student Handbook).** Share the [Rubric for Smart Landscape Design](#) with them and remind them to focus on efficient use of rainwater (keeping rainwater on the grounds), temperature control, and use of native plants.
5. **Hand out the [Steps for Designing Your Water Efficient Landscape Student Copy Pages](#) and review the steps as a class.** Encourage students to think about the shade the building provides and which plants like full sun and which like partial sun when they are deciding where to place them. Ask them to think about ways to naturally cool the school building as they design their landscapes.
6. **Have students work in groups designing their Water-Efficient Landscape Garden:**
  - Students may use their notes from their watershed tour of the school grounds (*Part I* of the activity) to shape their landscape design, or they may create a hypothetical school yard.
  - Allow students to work in groups as they design their group landscapes and complete the calculations.
  - Remind them to refer to the *Native Plants* pages you handed out to them earlier in the activity. (You may want to develop an additional, more detailed assessment rubric for the project that specifies, for example, the number of plants required, a gutter, cistern, etc.)

**You can decide to let your students have one to two class periods to create their Water-Efficient Landscape Design (completely up to you), but we then expect the wrap-up to take another class.**