Water Pollution Prevention

Learning Module #19

**Opening Activity**

Question 1:

Water Pollution Prevention

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**Water Blues, Green Solutions**

Instructions: For each clip you choose to watch our listen to on waterblues.org, use the table below to write down:

1. The title of the clip
2. 1-2 sentences about the pollution “solution” described in the clip.

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| **Title** | **Pollution Solution** |
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Water Pollution Prevention

Learning Module #19

**Stream Pollution Prevention Plan**

**Scenario:**

You and your partner are a freshwater scientist and landscape architect at Blue Ridge University.

There is a stream that runs through the STEM Campus of Blue Ridge University called Reedy Creek. In a recent water quality monitoring event, you found that Reedy Creek is polluted. You determined that Reedy Creek has high levels of:

* Conductivity
* Nitrogen
* Phosphorus
* *E. coli*

In hopes of improving the water quality of Reedy Creek, you and your partner have just been awarded a $10,000 grant to install eco-friendly design features to the STEM campus of Blue Ridge University.

**Exploring the Excel File:**

Open up the excel file sent you by the instructor.

* Sheet 1 – Reference Map
  1. This is a reference map of the campus.
  2. You will NOT make changes to this sheet.
  3. Notice the map is split up into squares. Each square represents an area of 5 feet x 5 feet.
* Sheet 2 – Stream Pollution Prevention Map
  1. This is the very similar to the reference map, except you will notice there is now a separate key that includes eco-friendly design features.
  2. This is the map you will use for your Stream Pollution Prevention Plan (i.e., the one you WILL change).
* Sheet 3 – Budget
  1. This sheet includes costs of each design feature. This sheet will also allow you to calculate the total costs of your Stream Pollution Prevention Plan.
  2. You will ONLY make changes to the yellow column. Do not change anything in the red column, unless instructed to do so!
* Sheet 4 – Example: Steam Pollution Prevention Map
  1. This is an example of a Steam Pollution Prevention Plan.
  2. In this example, the only eco-friendly design element this team added was making the entire parking lot porous pavement.
* Sheet 5 – Example: Budget
  1. This is an example of a Costs sheet
  2. In this example, the only two eco-friendly design elements this team added were:
     1. Making the entire parking lot porous pavement (400 squares, $8000)
     2. Creating educational materials (1; $2000)

**Your task:**

* You and your partner will have ~50 minutes to design a Stream Pollution Prevention Plan for Reedy Creek at Blue Ridge University.
* To do this, you will select the TYPE of eco-friendly design features that you want to include in your plan, and the NUMBER of each (based on 5x5 foot squares). You will create your plan on:
  1. Sheet 2 – Stream Pollution Prevention Map – Indicate/design the eco-friendly features you are choosing to add by changing the colors of the squares according to the key.
  2. Sheet 3 – Budget ­– Keep track of your costs of the eco-friendly features you are choosing to add by indicating the number of squares of each feature using the yellow column. This will automatically add up your total costs, and the grant money you have left.
* A few important notes:
  1. You must stay within your budget ($10,000).
  2. You CANNOT remove buildings, but you CAN remove other features if you so choose (grass, trees, sidewalk, road, parking lot).
     1. There is no cost to remove features (only costs are to install features).
     2. You can alter the buildings by adding green roofing.
  3. You must balance the needs of the stream with the needs of the students and faculty/staff on campus.
     1. For example, you could replace the roads and parking lot with grass… but how would students and teachers get to work?
     2. As another example, you replace the sidewalks with dirt, but would this be sustainable in the long term?
  4. There is a suggested key of colors for the eco-friendly design features, but you can change this key if you so choose (i.e., choose different colors).
  5. “Education materials” is not a design feature, but a could be a part of your Stream Pollution Prevention Plan. So, you will need to decide whether to make educational materials (spend all $2000 dollars) for students at Blue Ridge University or NOT to create educational materials (spend nothing; $0).
     1. If you decide to create educational materials, you will insert a “1” in the yellow column beside “Education materials” and then describe what kind of educational materials you plan to create in your presentations.
     2. Examples could of informational material (but are not limited to):
        1. Informational signs on importance of water quality
        2. Brochures on importance of water quality
        3. Lesson plans for STEM classes on the University Campus
  6. If there are design features that you want to include in your plan that you DON’T see on the list, just ask your instructor how much that feature should cost per square. Your instructor will help you add it into your costs page.
  7. You can count the number of squares by multiplying, or by using the “=countblank()” command in excel. Your instructor will show you an example, and there are instructions under the “Restoration Design Features” Key.

**Presentations**

* After you have created your Stream Pollution Prevention Plan, you will have ~5 minutes to present your team’s plan to the rest of the class and ~2 minutes for questions. During the presentation, you will need to:
* Use your Stream Prevention Plan Map sheet to:
  + Discuss which of the design features you chose to add and why you chose those features.
  + Show where you chose to add each of the features (i.e., we decided to plan trees around the Science building).
* Use your Budget sheet to:
  + Discuss how much you spent on each of the design features, and how much of your budget you had left over (if any).
  + If you chose to add educational materials, explain why you chose to add this feature, and what kind of educational materials you would have created.

**Tips:**

Before you get started, it would be helpful to discuss with your partner:

* Which design features do we want to include in our plan and why?
* Which design features do we not want to include in our plan and why?
* Where do we want to place our design features?
* How many of each feature do we need to cover the desired area?

Feel free to experiment with your Budget before you decide on your final Plan!

\*\*When you have completed your Stream Pollution Prevention Plan,

email your excel file to your instructor!\*\*