**Flood Mitigation Plan**

Name(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Resources**

* 8.5 x 11 map of West Branch of Herring Run or Schoolyard for mark up
* Color Land Cover Map of West Branch of Herring Run or Schoolyard
* Cost Estimates Table of Flood Reduction Options
* Colored Pencils
* Tracing Paper
* Masking tape

Baltimore City has budgeted out $1 million to flood reduction efforts in the West Branch of Herring Run watershed. Baltimore needs flood consultants to help them determine which methods would be more successful. As the consultants, it is your task to help Baltimore City come up with an affordable Flood Mitigation Plan. *Your goal is to minimize the frequency of flooding in the area surrounding the West Branch of Herring Run or your Schoolyard.* With your group, use your knowledge of surface water systems, provided resources, and the guidelines below to evaluate flood reduction methods and design and justify your plan. Prepare a short (5 minute) presentation to your class describing your plan.

To begin, spend some time researching a variety of flood mitigation practices including those listed in Table 1. Use Table 2 to summarize your research. Then, select three methods to use in your Flood Mitigation Plan and complete Table 3 with your chosen methods. Finally, provide a justification for your plan by completing the rest of the worksheet.

**Table 1: Cost Estimates – Flood Reduction Options** *(modified from K Burgess, BCity DPW)*

|  |  |  |
| --- | --- | --- |
| **Flood Reduction Option** | **Amount Treated** | **Total Cost** |
| Curb Extension | 0.26 acres | $60,249 |
| Rain Garden | 0.023 acres | $2100 |
| Bio-Retention Facility | 1.5 acres | $520,000 |
| Tree Planting | ~100 gallons of stormwater per year | $100 per tree |
| Green Roof | Holds 70% of rainfall | $30/square foot |

**Table 2: Flood Reduction Options**

| **Method** | **How does it work?** | **Where would it be used?** | **How well would this method work to reduce flooding in the West Branch of Herring Run? What evidence do you have?** | **What are the drawbacks, limitations or negatives of using this method?** | **Expected cost for this method** |
| --- | --- | --- | --- | --- | --- |
| Curb Extension |  |  |  |  |  |
| Rain Garden |  |  |  |  |  |
| **Method** | **How does it work?** | **Where would it be used?** | **How well would this method work at the E. Helena site? Provide evidence.** | **What are the drawbacks, limitations or negatives of using this method?** | **Expected cost for this method** |
| Bio-Retention Facility |  |  |  |  |  |
| Tree Planting |  |  |  |  |  |
| Green Roof |  |  |  |  |  |
| Other? |  |  |  |  |  |

Select three methods from your research that you would like to implement in your Flood Mitigation Plan. For each method you have selected, indicate in which area(s) on your map that this flood reduction method will take place. From the area coverage, determine the total square footage of surface that will be treated by this method. In the cost column, indicate the total cost of the method for all the areas addressed. [Tip: One box on your map is equal to 1,000 square feet and there are 43,560 square feet in one acre (multiply the acre value by 43,560 to covert to square footage)]

**Table 2: Flood Reduction Plan**

|  |  |  |  |
| --- | --- | --- | --- |
| **Method** | **Area(s)** | **Square Footage of Surface Treated** | **Cost** |
| 1  |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |

**Justification for Mitigation Plan**

1. On a scale from 1 = Not at all to 10 = Completely, to what extent do you think your remediation plan will address flooding in the West Branch of Herring Run or your Schoolyard?

 Not at all 1 2 3 4 5 6 7 8 9 10 Completely

1. What evidence and scientific rationale are you basing your estimate of effectiveness on?
2. What ideas do you have for how a computer model could be used to predict the effectiveness of your plan?
	1. What would you model and what would the model tell you?
	2. What data would you need to create the model?
	3. What do you think would work well and what do you think might be challenging or problematic about using the model you are proposing?
3. What are the pros and cons of your plan for flood reduction?
	1. Pros: What will this plan do well?
	2. Cons: What won’t this plan do well?
4. How do you think the stakeholder groups (from Lesson 1) would evaluate your plan and why?
	1. People who live in the effected watershed
	2. Environmentalists & environmental groups
	3. Government agencies such as Baltimore City Department of Public Works