Designing a Wetland Ecosystem

Wetlands and other river, or riparian areas, are very important habitats in the Southwest. An abundant water supply is not the only ingredient needed. Different types of vegetation that are adapted to different levels of soil water saturation are common in wetlands. Water flow must obey the laws of gravity (unless energy is used for a pump), including uncommon heavy rain events. Soil types will affect how much water can percolate through them into the ground water table. Before permanently destroying historical artifacts or impacting rare wildlife through ground disturbing digging and excavating, surveys and salvage operations may be needed. Depending on the source of the water that will fill your wetland, you may need to check on water rights issues for your drainage. It's likely illegal to just build a small dike across a wash to impound a pond.

This exercise will involve your group in designing a wetland ecosystem.

Objectives:

1. Investigate the structure and function of a simple wetland system
2. Design a small artificial wetland along with materials and methods.
3. Listen to the other group's concepts and participate in a discussion to develop the best possible designs that meet the needs of local wildlife.

Procedures:

1. Select a known, real area (in someone's backyard, acreage, or public land) that will be the site of your wetland.
2. Develop a concept of the type of vegetation and wildlife you would like to attract. Describe this concept in a short paragraph. Refer to the considerations on the next page.
3. Plan your activities with the budget and other assumptions provided below.
    1. $5,000 budget plus volunteer labor and use of a backhoe
    2. Required archeological surveys have found no items of interest
    3. Winter snowmelt can sometimes cause flooding
    4. A rubber liner is available for use
    5. No water rights issues are involved
    6. No endangered or sensitive species occur nearby
4. Draw a site plan with approximate dimensions in a top view and side view cutaway to show pond depth, etc.

5. Make a list of materials needed
6. Describe your methods of building the wetland considering the site and budget
7. Be prepared to discuss your design with the entire class.

Take into consideration the following factors when designing your wetland. You may not have to deal with all of these issues. However, some issues could have a major impact on how you develop your wetland and the costs involved.

Soil type, slope of the terrain, amount of water, availability of native vegetation, proximity to local wildlife, effects of flooding, proximity to a road, size/depth of pond, water quality, non-native wildlife in the area, other threats, existing habitat, proximity to electrical power, liability issues, long term use ownership of the land, neighbor concerns, long-term climate trends, and other possible issues specific to your site.