**Homework 5**

For Question 1 submit an Excel File

1. Caterpillar Corporation wants to build a spare parts storage facility in the Phoenix, Arizona, vicinity. A plant engineer has identified four different location options. The initial cost of earthwork and prefab building and the annual net cash flow estimates are detailed in Table. The annual net cash flow series vary due to differences in maintenance, labor costs, transportation charges, etc. If the MARR is 10%, use incremental ROR analysis to select the one economically best location. (Use spreadsheet)

Table

Description automatically generated

1. In order to safeguard the public health, environment, public beaches, water quality, and economy of south San Diego County, California, and Tijuana, Mexico, federal agencies in the United States and Mexico developed four alternatives for treating wastewater prior to discharge into the ocean. The project will minimize untreated wastewater flows that have caused chronic and substantial pollution in the Tijuana River Valley, the Tijuana River National Estuarine Research Reserve, coastal areas used for agriculture and public recreation, and areas designated as critical habitat for federal- and state-listed endangered species. For the costs and benefits estimated, which alternative should be selected on the basis of a B/C analysis at 6% per year and a 40-year project period?

A table with numbers and text

Description automatically generated

1. The DOD is considering three sites in the National Wildlife Preserve for the extraction of rare metals. The cash flows associated with each site are summarized. The extraction period is limited to 5 years and the interest rate is 10% per year. Use the B/C method to determine which site, if any, is acceptable.

|  |  |  |  |
| --- | --- | --- | --- |
| Site | A | B | C |
| Initial Cost | 50 | 90 | 200 |
| Annual Cost | 3 | 4 | 6 |
| Annual Benefits | 20 | 29 | 61 |