CHAPTER NAME: _____ STUDENT ID #: _____

2B. Habitat Improvement (40 pts)

You have just purchased the Bear River Ranch in Evanston, Wyoming and in one of the pastures there is an ephemeral stream that only flows in the early part of the year. The stream vegetation should consist of native willows, dogwoods, sedges, and rushes. However, you notice salt cedar shrubs increasing along the creek and the native grasses and willows seem to be declining. This concerns you because you know salt cedar is a problematic weed and will alter the vegetation and soil along streams by increasing salt concentrations. Salt cedar is also a prolific seeder and re-sprouter and can reduce stream flow due to its high water requirement. You would like to address the problem before you lose the water supply the creek provides. You plan a restoration project to remove the salt cedar and plant native willows and dogwoods. The project will be divided into two parts and luckily the local conservation district has agreed to cost share the project expense through a wildlife habitat improvement program. They will cover 50% of the project expenses.

- You have surveyed the stream and estimated there to be 38 mature salt cedar plants
- You have hired a 2 person chainsaw crew to cut the mature plants, lop the seedlings, and treat all stumps with herbicide. It is estimated that it will take .10 gallons of herbicide to treat each stump and each gallon of herbicide costs $55.00 (It comes already diluted). You want to be prepared and know there could be lots of seedlings, so you would like to have an extra 3 gallons of herbicide on hand. After they cut the salt cedar they will pile and burn the branches. You will pay each member of the chainsaw crew $10.50 an hour. It will take them roughly 3 days (30 hours of work) to cut and spray the stumps.
- After the chainsaw crew removes and sprays the salt cedar bushes you will then have an FFA student crew plant the willows and dogwoods. They are doing the project as a fundraiser to go and compete at the Western National Range CDE. The crew will consist of 8 students and you will pay them $8.50 an hour (each) and you estimate the project will take them 2 days (20 hours of work) to complete.
- The student crew will plant the willows and dogwoods on both sides of a 1200 foot section of the creek. You would like them to plant a willow every 15 feet and a dogwood every 25 feet.
- The willows and dogwoods come in bundles and each bundle has 25 seedlings that are 20 inches long. Each bundle of willows costs $30.00 and each bundle of dogwoods costs $35.00.

Remember you can't buy portions of a product – If you get a fraction of a product you want to buy, always round up to the next whole number!

What is the total cost for the chainsaw crew to cut, treat, and burn the salt cedar bushes? (15 pts)

How many total bundles of willows and how many bundles of dogwoods would they need? What is the total cost to buy the willows and dogwoods? (15 pts)

How much will the student crew earn by planting the willows and dogwoods? (5 pts)

What is your total expense for this project? (5 pts)

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What is the total cost for the chainsaw crew to cut, treat, and burn the salt cedar bushes? (15 pts)

38 stumps x .10 = 3.8 gallons + 3 gallons = 6.8 (round to nearest gallon) 7 gallons x $55 = **$385**
2 people x $10.50 = $21 x 30 hours = $630 + $385 (cost of spray) = **$1015 total**

How many total bundles of willows and how many bundles of dogwoods would they need? What is the total cost to buy the willows and dogwoods? (15 pts)

1200 x 2 = 2400 feet of stream bank
2400 / 15 feet = 160 plants /25 per bundle = 6.4 so… **7 bundles of willows** x $30 = $210
2400 / 25 feet = 96 plants / 25 per bundle = 3.8 so… **4 bundles of dogwoods** x $35 = $140
$140 + $210 **= $350 to buy the bundles of willows and dogwoods**

How much will the student crew earn by planting the willows and dogwoods? (5 pts)

$8.50 x 8 people = $68 x 20 hours = **$1360**

What is your total expense for this project? (5 pts)

$1360 + $350 + $1015 = 2725 x 50% cost share = **$1362.50**