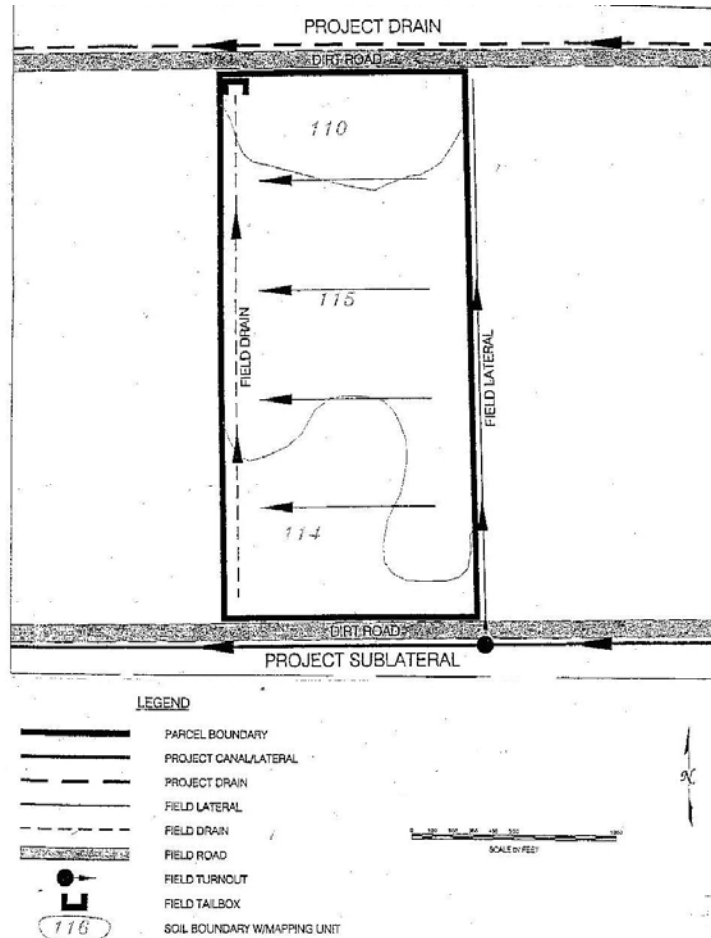


Final Exam



The figure above shows a 72 acre field irrigated by borders. The irrigator indicates that the borders are about 150 ft wide and 1200 feet long. The average slope of the field was measured as 0.002645. It is planted to alfalfa. The soil is “Imperial silty clay with a depth of 4 feet. This soil is subject to extensive cracking. A typical depletion during the normal irrigation cycle is 3 inches. On June 22, 2000 the field was irrigated with 11.2 cfs for 4.33 hours per set. The number of sets was not mentioned, but an independent assessment noted that the flow per unit width was 0.028 cfs and the advance time ranged from 5.3 to 6.2 hours. Apparently, the advance rate was somewhat linear or uniform although not precisely so. What can be said is that it was estimated that 27% of the inflow was field tailwater and 5% was deep percolation. If the infiltration function was independently determined to be:

$$z = 0.0813\tau^{0.200} + 0.083$$

in which z is in feet, τ is in minutes.

You are asked to revise the management of this field to achieve as high of application efficiency as possible. What would you recommend? Provide the SURFACE model output. Your grade will be based on how workable, effective and efficient your recommendations are.