Drainage Radius Calculation

$$G_i = 1546.2\,\phi\,(1 - S_w)\,p_i A\,h/(z_i T)$$

G_i = initial gas-in-place at standard conditions, MCF
phi = porosity
Sw = initial water saturation
p_i = initial reservoir pressure, psia
A = area, acres
h = reservoir height, ft
z_i = gas compressibility at initial reservoir condition, dimensionless
T = reservoir temperature, Rankin

- Standard Gas-in-Place formula
  - Rearranged the formula to solve for area, A
  - Substituted G_i as $UltG_p$ / RF

  Where $UltG_p$ is ultimate gas produced and RF is recovery factor

- Formula Inputs – calculated per well
  - Ultimate recovery per well
    - Forecasted individual well remaining gas reserves using exponential decline method
    - Ultimate gas production calculated from gas produced plus forecasted remaining gas reserves
  - Porosity – height (phih) calculated from Whiting's net pay map
  - Recovery factor, initial water saturation, and temperature from Oxy's August 2010 Exhibit
  - Initial reservoir pressure from Broadhead's published pressure regions for Bravo Dome Area
  - z-factor from SPE Monograph, "Practical Aspects of CO2 Flooding"

- Formula Output
  - Calculate Area in acres
  - Convert acres to feet assuming circular drainage radius