# Sample Calculations To Access L.T.A.R. Variations For Pressure Manifold Designs

Proposed use and L.T.A.R.:
3 bedrooms @ 360 gal/day / .3L.T.A.R = 1200 sqft / 3ft = 400ft
Example For Lines Of Equal Line Square Footage:
400ft/5 lines = 80ft

5 taps @ ½" sch40 = 7.11gpm x 5 taps = 35.55gpm flow

360 gal/day / 35.55gpm = 10.13 min. total run time
Calculations For Actual L.T.A.R. Per Line:
10.13 x 7.11 = 72.02 gals / day / 240sqft(3' x 80') = .3 L.T.A.R.

Dose volume:
400ft x .65gals x 70% = 182gals / 35.55 gal/min = 5.1 min run time per dose

Proposal With 25% Reduction And Equal Line Square Footage:

400ft x 25% reduction = 300ft

300ft/5 lines = 60ft

5 taps @ ½" sch80 = 5.48gpm x 5 taps = 27.4gpm flow

360 gal/day / 27.4gpm = 13.14 min. total run time
Calculations For Actual L.T.A.R. Per Line:
13.14 x 5.48 = 71.99 gals / day / 180sqft(3' x 60') = .4 L.T.A.R. Reduced

Dose volume:
300ft x .65gals x 70% = 146.25gals / 27.4 gal/min = 5.3 min run time per dose

Proposal With 25% Reduction And Varying Line Lengths:
Sample Layout:
3 bedrooms @ 360 gal/day / .3L.T.A.R = 1200 sqft / 3ft = 400ft x .75 = 300ft

NOTE:
These figures
are to be used
only as indicators
of possible LTAR
problems.

Line 1: 50'; ½"sch80pvc tap @ 2' head = 5.48gal/min; 5.48gal/min/50ft = .1096gal/min/ft
Line 2: 65'; ½"sch40pvc tap @ 2' head = 7.11gal/min; 7.11gal/min/65ft = .1094gal/min/ft
Line 3: 75'; ½"sch40pvc tap @ 2' head = 7.11gal/min; 7.11gal/min/75ft = .0948gal/min/ft
Line 4: 110'; ¾"sch80pvc tap @ 2' head = 10.1gal/min; 10.1gal/min/110ft = .101gal/min/ft
total flow = 29.8gpm
Calculations For Actual L.T.A.R. Per Line:
360gal/day/29.8gpm = 12.08 min total run time

5.48 x 12.08 = 66.19/150sqft = .44 L.T.A.R
7.11 x 12.08 = 85.89/195sqft = .44 L.T.A.R.
7.12 x 12.08 = 85.89/225sqft = .38 L.T.A.R.
10.1 x 12.08 = 122.01/330sqft = .37 L.T.A.R.

.4 L.T.A.R. reduced x 1.05(5% increase) = .42 L.T.A.R.  Therefore this design can not be accepted due to the increased L.T.A.R.'s on the 50' and 65' lines.  The L.T.A.R. is dependent upon the amount of line used.  In no case may the reduced amount of line used be less than the amount required by the original L.T.A.R..  As An Example: If 400' of line is required, 390' of unreduced line or 290' of innovative line will not be accepted.  However, 400+' of line or 300+' of innovative line is acceptable.