Key Grace Carlsbad SWD

Plume Expansion with 20 Years of Injection

Inputs

Inj. Zone top (ft):	3,982
Inj. Zone Base (ft):	5,020
Depth to top Perforation (feet):	4,144
Native reservoir pressure gradient from surface (psi/ft):	0.45
Viscosity (μ; cP):	0.6
Formation Factor (B; proportion):	1
Net Formation Thickness (h; feet):	150
Porosity (ø; proportion):	0.12
Average Volume (BPD):	1,500
Maximum Volume (BPD):	5,000
Time (yrs):	20.0

Calculated Values

Injected Volume (bbl):	10,957,500
Injected Volume (ft^3):	61,521,760
Radius of Plume (ft):	1,043

Estimate of Radius of Plume

$$r_{waste\ plume}(ft) = \sqrt{\frac{V_{Injected}(ft^3)}{\pi \cdot h(ft) \cdot \phi(proportion)}}$$

$r_{waste\ plume}$	=	radial distance to the waste front (ft);
$V_{Injected}$	=	volume of waste injected to the completed in
h	=	net formation thickness (ft)
ϕ	=	porosity (proportion)

OCD Case No. 15322
Key Energy
Exhibit #25

iterval (ft^3);