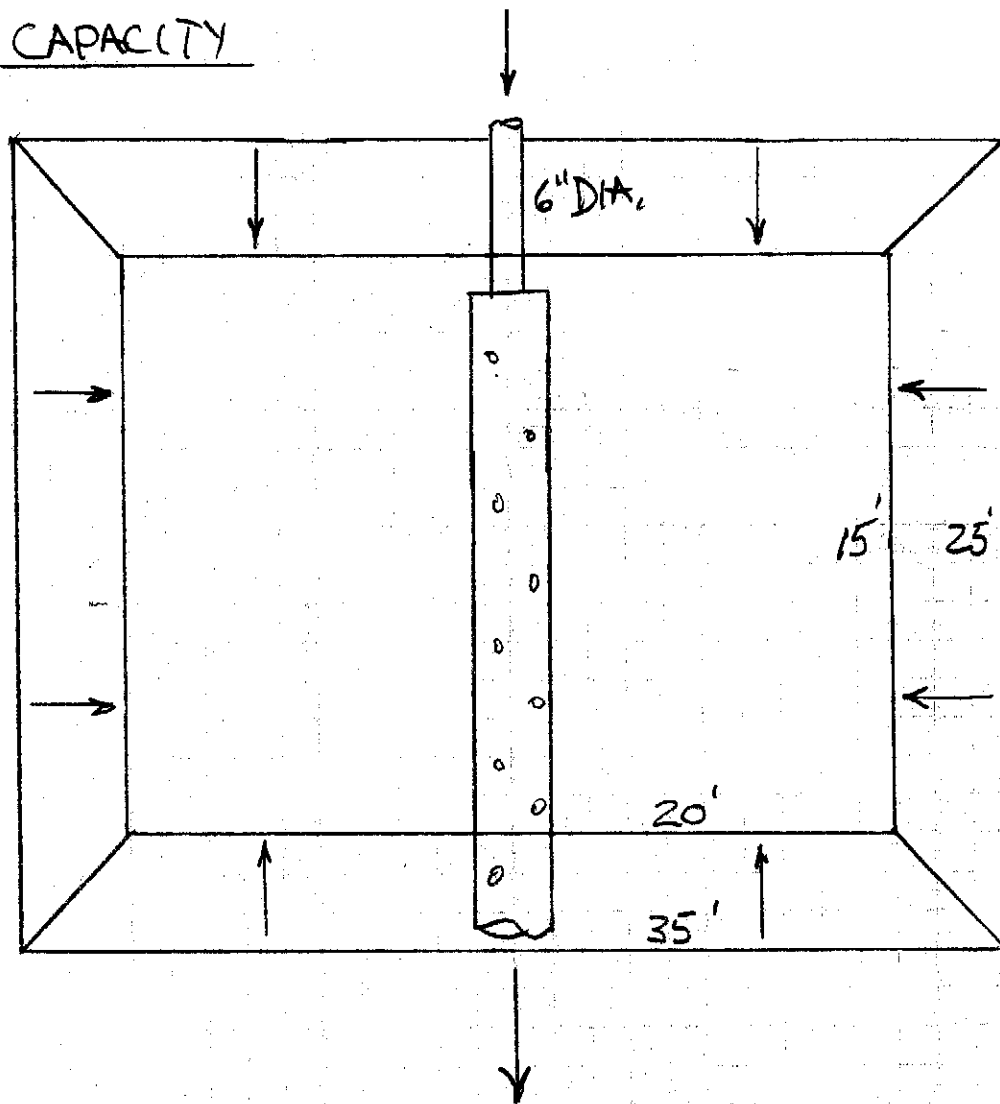


APPENDIX K

CAPILLARY BREAK UNDERDRAIN AND LCRS SIZING ANALYSES

LCRS CAPACITY

$$\text{PERIMETER} = 120 \text{ FT}$$

$$\text{DEPTH} = 1 \text{ FT}$$

$$K = 1.0 \text{ cm/sec} = 0.0328 \text{ FT/sec}$$

$$i = 1.0$$

$$Q_{\text{Sump}} = K \cdot i \cdot A$$

$$\begin{aligned} Q_{\text{Sump}} &= (0.0328 \text{ FT/sec}) (1.0) (1 \text{ FT} \times 120 \text{ FT}) \\ &= 3.94 \text{ FT}^3/\text{sec} \\ &= 1,761 \text{ Gal/min.} \end{aligned}$$

LCRS PIPE COLLECTOR

$$\text{DIA.} = 6 \text{ IN}$$

$$\text{Slope} = 2.5 \text{ percent}$$

$$Q = 1 \text{ FT}^3/\text{sec}$$

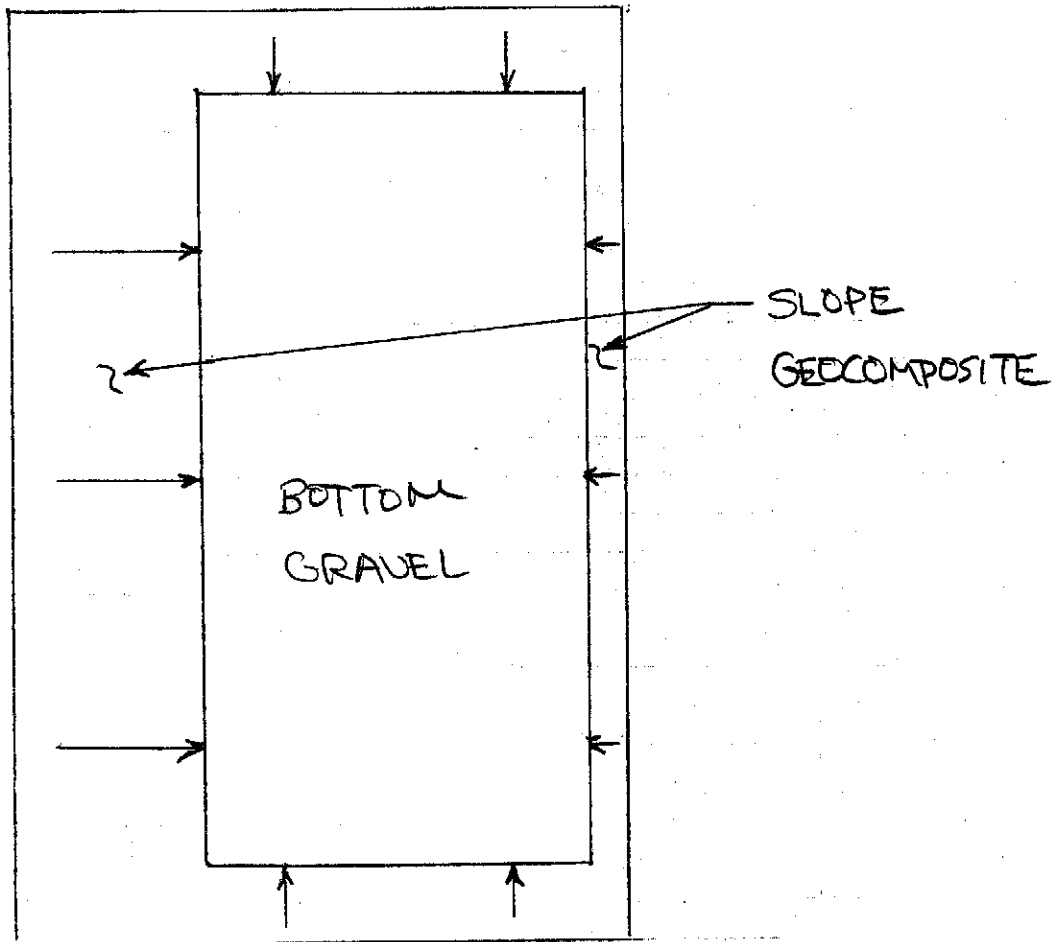
Fig 6-1 Nomograph, page 186,
Water Supply and Pollution Control
1971.

$$\begin{aligned} Q &= 1 \text{ FT}^3/\text{sec} \times 7.48 \text{ Gal/FT}^3 \times 60 \text{ Sec/Min} \\ &= 447 \text{ Gal/Min} \end{aligned}$$

$$\begin{aligned} \text{Total Capacity} &= 1,761 \text{ Gal/Min} + 447 \text{ Gal/Min} \\ &= 2,208 \text{ Gal/Min} \end{aligned}$$

$$\begin{aligned} 50\% \text{ Capacity} &= 2,208 \text{ Gal/Min} \div 2 \\ &= 1,100 \text{ Gal/Min} \end{aligned}$$

USE 1,000 GPM as Capacity

SLOPE DRAINAGE CAPACITY

$$\text{PERIMETER} = 2,600 \text{ FT}$$

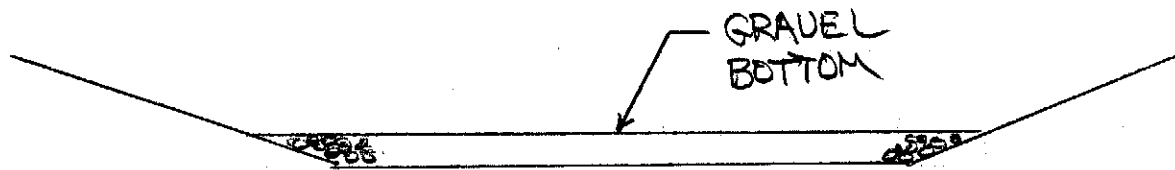
$$\text{TRANSMIIVITY} = 9.66 \text{ Gal/min/FT}$$

$$Q_{\text{SLOPE}} = T \times P$$

$$= 9.66 \text{ Gal/min/FT} \times 2,600 \text{ FT}$$

$$= 25,116 \text{ Gal/min} \div 2$$

$$= 12,558 \text{ Gal/min}$$

BOTTOM DRAINAGE CAPACITY

$$\text{DEPTH} = 1 \text{ FT}$$

$$\text{WIDTH} = 170 \text{ FT}$$

$$k = 1.0 \text{ cm/sec} = 0.0328 \text{ FT/sec}$$

$$i = 1.0$$

$$Q_{\text{BOT}} = k \cdot i \cdot A$$

$$Q_{\text{BOT}} = (0.0328 \text{ FT/sec}) (1.0) (1 \text{ FT} \times 170 \text{ FT})$$

$$= 5.58 \text{ FT}^3/\text{sec}$$

$$= 2,510 \text{ Gal/min} \div 2$$

$$= 1,255 \text{ Gal/min}$$