

SPILL CALCULATION METHODS

Appendix C1

To calculate the amount of gallons in a sewage spill, determine the area of the spill (Length, Width & Depth).

Depth/inches to Depth/feet		Depth/inches to Depth/feet	
1/16"	0.0052'	1/8"	0.0104'
3/16"	0.0156'	1/4"	0.0208'
5/16"	0.0260'	3/8"	0.0312'
7/16"	0.0364'	1/2"	0.0417'
9/16"	0.0468'	5/8"	0.0521'
11/16"	0.0573'	3/4"	0.0625'

Concrete permeation depth = 0.0026'

Asphalt permeation depth = 0.0013'

$$V = L \times W \times D \times 7.48 = \text{GALLONS}$$

EXAMPLE: A spill 15' L x 15' W x 0.0052' (1/16") D
 $15' \times 15' \times .0052' \times 7.48 = 8.7516$ gallons

If you are dealing with a spill that has been running into a storm drain, you must estimate the gallons by determining the following criteria:

Time of reported overflow _____, **overflow cleared at** _____ (time)

Length of Time for overflow _____ in minutes.

Calculating an overflow from a manhole cover "hook-hole"

Overflow in gallons = 19.191 Constant x (Sq. root / Head in feet) x (Time)

Example: Overflow reported at 14:00 hours and was cleared at 14:15 hours.

Overflow through manhole hook hole (std. 1") has a Head of 1.5 inches.

Head in feet = $1.5"/12 = .3535'$

The square root of $.3535 = 0.5945$

$19.191 \text{ C} \times 15 \text{ minutes T} \times 0.5945 \text{ SQ.ROOT} = 101.76 \text{ GALS or } 6.78 \text{ gpm.}$

The constant consists of; radius of manhole hook hole, area, coefficient of nozzle, the square of 2 for gravity, conversion from secs/min and cu.ft./gallons.

Initial Spill Calculation Worksheet

SSO Site:



Depth / Inches	Depth / Feet
1/16	0.0052
1/8	0.0104
3/16	0.0156
1/4	0.0208
5/16	0.0260
3/8	0.0312
7/16	0.0364
1/2	0.0416
9/16	0.0468
5/8	0.0520
11/16	0.0572
3/4	0.0625
13/16	0.0677
7/8	0.0729
15/16	0.0781
1	0.083
2	0.166
3	0.250
4	0.333
5	0.416
6	0.500
7	0.583
8	0.666
9	0.750
10	0.833
11	0.916

FORMULA FOR SURFACE AREA IN CUBIC FEET (cf)
(FOR A SQUARE OR RECTANGLE);

L_(ft.) x W_(ft.) x D_(ft.) = cf
 cf x 7.48 = Gallons

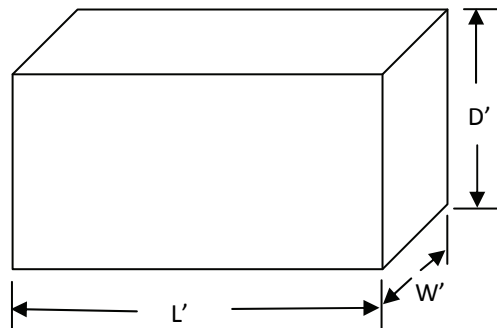
Site 1

L_(ft.) x W_(ft.) x D_(ft.) = cf
 cf x 7.48 = Gallons

Site 2

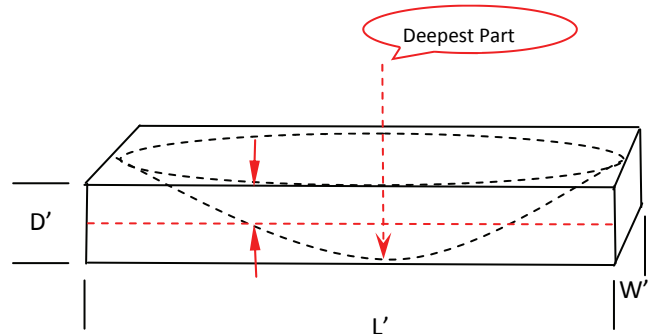
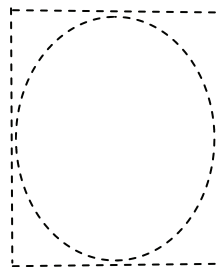
L_(ft.) x W_(ft.) x D_(ft.) = cf
 cf x 7.48 = Gallons

Site 3



Total Estimated Spill Volume
Sites 1-2-3

Wet Area Depth :
Asphalt: 0.0026'
Concrete: 0.0013'



Math work must be reviewed, accepted & signed off by one Legally Responsible Official (LRO):

Date _____ Initial _____

- Jed Beyer _____
- Sergio Ramirez _____

When measuring ponding and puddles, measure and record the deepest part, divide that number by 2. That will be considered the average depth of the pond or puddle. *Example: The deepest part of the ponding is 10" deep (10" ÷ 2 = 5"), 5' in length and 3' in width. 1) Determine the Surface area in cubic Feet. L 5' x W 3' x 0.416 = 6.24 cf, 2) Multiply the cubic footage by 7.48, 6.24 x 7.48 = 46.67 gallons.*