D.2.2.B Volume of SSO at Manhole

Length x Width x Depth x 7.48 = gallons
Spill area = 20 feet by 30 feet = 600 sq. ft.
Depths of spill = 3 inches = 0.25 feet
Volume = 20 x 30 x 0.25 x 7.48 = 1,122 gallons

D.2.3 WET WEATHER OVERFLOW CALCULATION:

The following can be used to help in estimating the rate of loss of flow out of manholes. As this is an estimate, judgment by the observing person and/or estimator must always be used.

All calculations are based on an estimate of the size of the opening involved, the velocity of flow through the opening, and the duration of time the overflow occurred. In most all occurrences, the opening size and velocity will change over an event from low to high back to low. Judgment on an average condition must thus be attempted to reach a realistic rate of loss.

D.2.3.A. Loss through vent holes

1. Size of opening:
   Assume holes at 1- inch diameter

   Area = (number of holes) (π) ($D^2/4$) ($1ft^2/144$)
   Area = (number of holes) (3.14) (1/4) (1/144)

   Area = (number of holes) ($0.0055ft^2$/hole)

2. Velocity Plume Guide

   Velocity through holes, based on Velocity Head = ($Velocity^2/2g$)

Plume height	Velocity
1-inch	2.0 ft/sec
2-inch	3.3 ft/sec
3-inch	4.0 ft/sec
4-inch	4.6 ft/sec
5-inch	5.2 ft/sec
6-inch	5.7 ft/sec

3. Time = convert to minutes

Volume (Gal.) = (Area) (Velocity) (Time) (448 gpm/cfs)

Example: Top with six hole, flow through holes makes a one-inch high plume, last for 4 hours, 15 minutes