SUSMP REPORT AND CALCULATIONS

FOR

THREE STORY HOTEL

Shade Redondo Beach

655 N. HARBOR DR.,
REDONDO BEACH, CA 90277

May 13, 2011

1.) Project Description:

The subject site has an approximate area of 60,000 sq. ft. (1.38 ac.). On the north it is bounded by neighboring property, on the east by Harbor Dr. on the west by Marina and on the south by neighboring property.

The proposed improvement consists of a three story hotel, lobby and event buildings constructed over one level subterranean parking. A parking lot approximately 30,000 sq. ft. is designed at the front portion of the site to serve the property. Some landscaping areas with a total of 3,100 sq. ft. have been designed in between and around the parking stalls.

2.) Pre & Post Development Impervious Areas:

Currently site is occupied by a building with a parking lot serving the building. The total projected impervious surface on a horizontal plane substantially stays the same and therefore no significant increase in generated storm runoff is anticipated.

3.) Source Control Pumps:

3.1- ***Storm Drain Stenciling and Signage***
Standard stencil with prohibitive language "NO DUMPING - DRAINS TO OCEAN" will be painted beside each catch basin.
(See the sign attached to this report)

3.2- ***Regular Sweeping***
Parking area, common walkways and yards as well as street which are open to sky must be swept regularly to prevent the particles, debris and solid trash from entering to storm drain system.

3.3- ***Property Designed Outdoor Trash & Material Storage Area***
These areas must be covered to prevent the rain water from entering these areas and being contaminated.

3.4- ***Efficient Irrigation System***
Irrigation system must be designed and programmed to prevent excessive irrigation water from over flowing into parking areas and convey contamination into storm drain treating system continuously.

3.5- ***Integrated Pest Management***
Building management must assure a continuous and effective control in eliminating all kinds of pests whose waste can introduce serious health as well as storm water contamination issues.

3.6- Green Gardening

Building Management must educate the gardeners to avoid the use of chemical/artificial fertilizers which often time can be washed into storm drain either by rain or excessive irrigation. Materials used for this purpose must be environmentally friendly.

3.7- Pet Waste Clean-Up Promotion Materials

3.8- Use of Non-Toxic Cleaners & Solvents in Housekeeping

3.9- Continuous Education of Employees

4.) Storm Drain System & Treatment Controls:

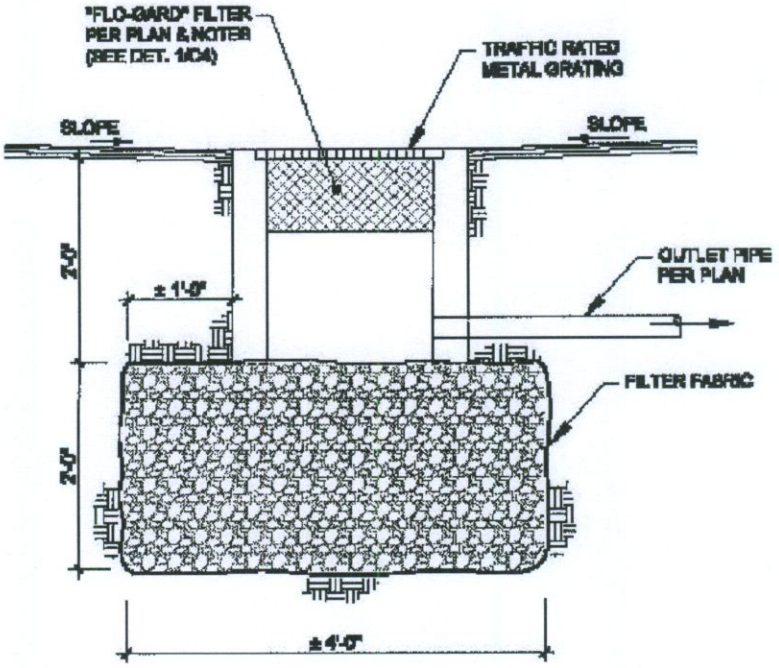
4.1- Street Level Parking Lot

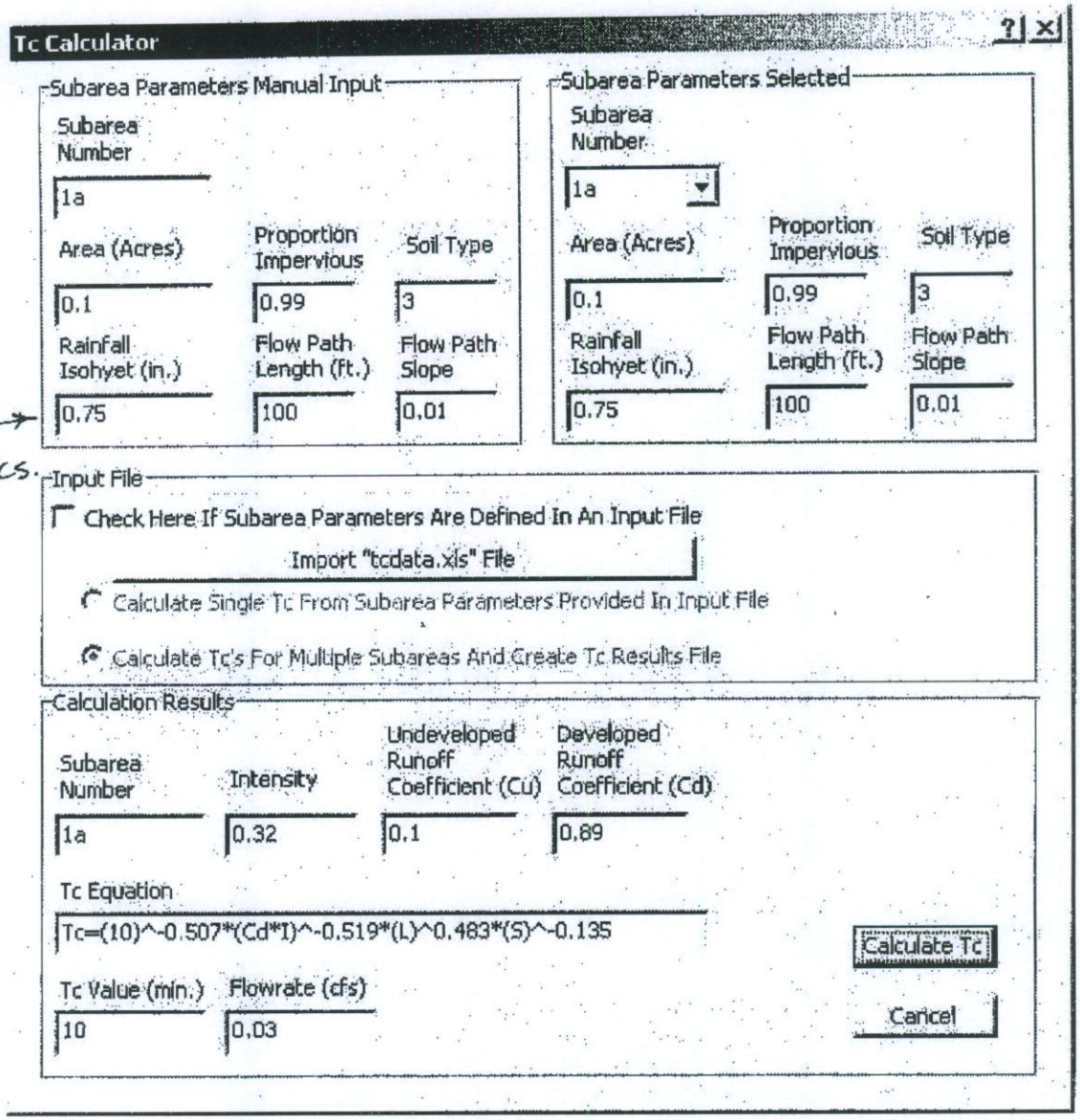
Street level parking lot with approx. area of 30,000 sq. ft. is drained by seven catch basins scattered evenly throughout the lot. The water collected by these catch basins must drain directly to the Marina via the existing three discharge points located along the promenade at the ocean front. The parking finished surface elevation is dictated by the street gutter on one side, and the building height limitations, on the other side. Therefore using any of Hydrodynamic devices such as CDS in a situation where there is not enough difference of elevation between CDS outlet and the discharge points would result adding pump to the system. Consequently, the drainage of the entire site (including the roof waters) would depend on pumping which was not considered neither feasible nor safe due to the cost of maintenance and possible frequent failures of such systems. In addition, by utilizing any pumping system to drain the property, the discharge would then happen in one single point which has not been evaluated sufficient for the anticipated flow rate.

As a result, a gravitational flow system (catch basins, and pipeline network) has been designed to drain the majority of the site. In the meantime, as a practical design for storm water mitigation a **source control policy** combined with **catch basin filters** was considered the most effective solution to minimize the pollution of the storm run-off water. "Flo-Gard" catch basin filters will be installed in all of seven catch basins and regularly inspected to assure an effective BMP for this part of the property. Further, regular sweeping of the area will significantly reduce the possibility of debris and trashes to enter the marina. This will also increase the life of filters. Although catch basin filters have been proposed as the main BMP device however, a local gravel pit under each catch basin has been proposed to possibly capture the very first (and very contaminated) portion of the rain and accordingly to feed it back to the ground through the open-end catch basins as much as possible. (see detail on page 4)

Hydrologic calculations using LA County "TC-Calculator" software (based on LA County Hydrology Manual) to determine the required flow-rate in BMP devices is presented in pages 5 and 6. Please note that for sizing the filters the following two criteria have been used:

1. ***Filtering Capasity:*** 0.75" rain has been plugged in the "TC-calculator" to determine the demand for filtering capacity per the City SUSMP guidelines.
2. ***Bypassing Capacity:*** This capacity has been compared with the flow rate calculated using 50-year rain intensity for the project area obtained from the LA County Hydrology Manual Isohyet map.


"FLO-GARD" FILTER
PER PLAN & NOTES
(SEE DET. 1/C4)
TRAFFIC RATED
METAL GRATING
SLOPE
SLOPE
2'-0"
± 1'-0"
OUTLET PIPE
PER PLAN
FILTER FABRIC
2'-0"
± 4'-0"



3/4" Rain for BMP calcs.

Design Data

Trib Area to each Catch Basin = 0.1 ac

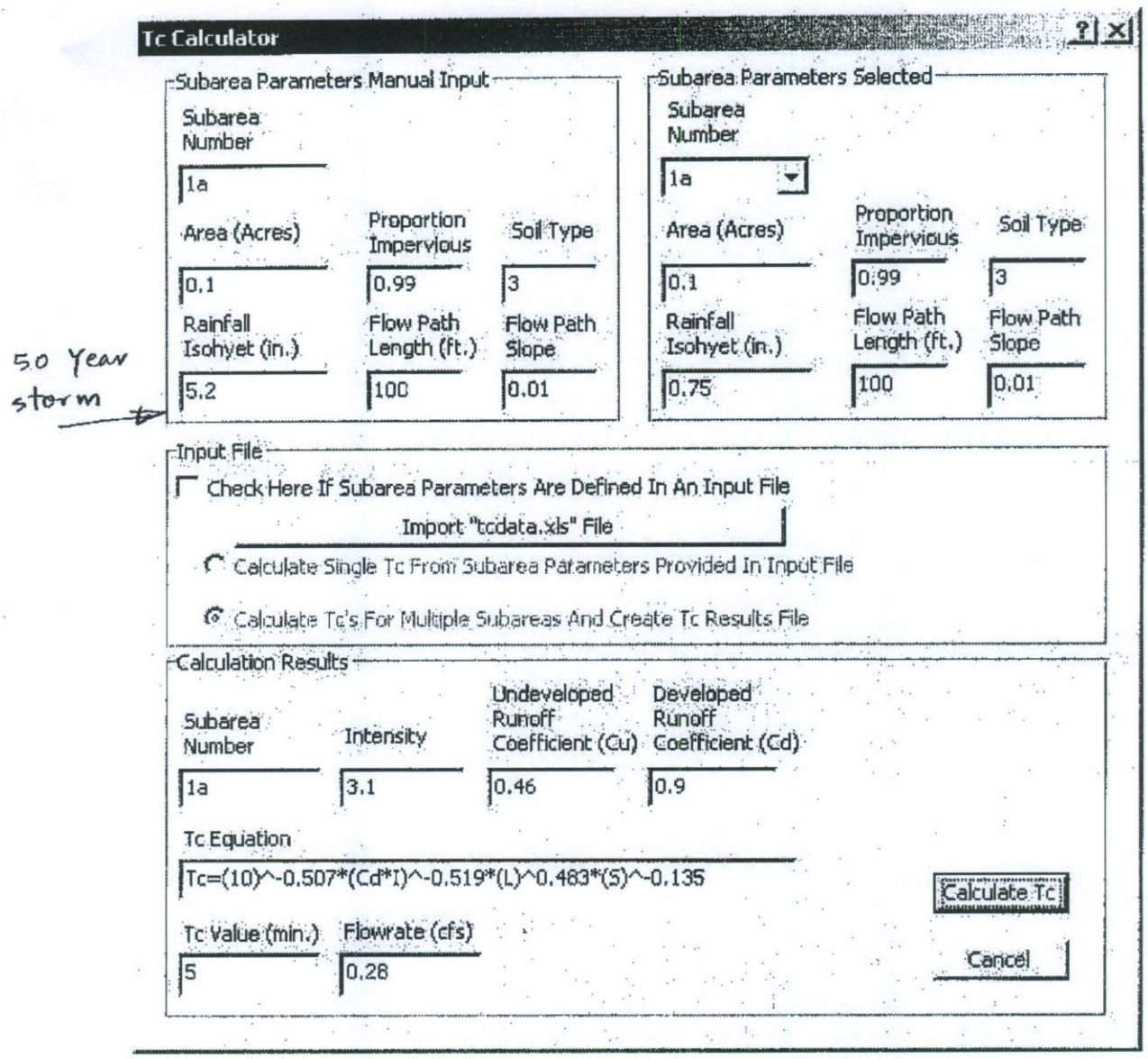
Imp% = 99%

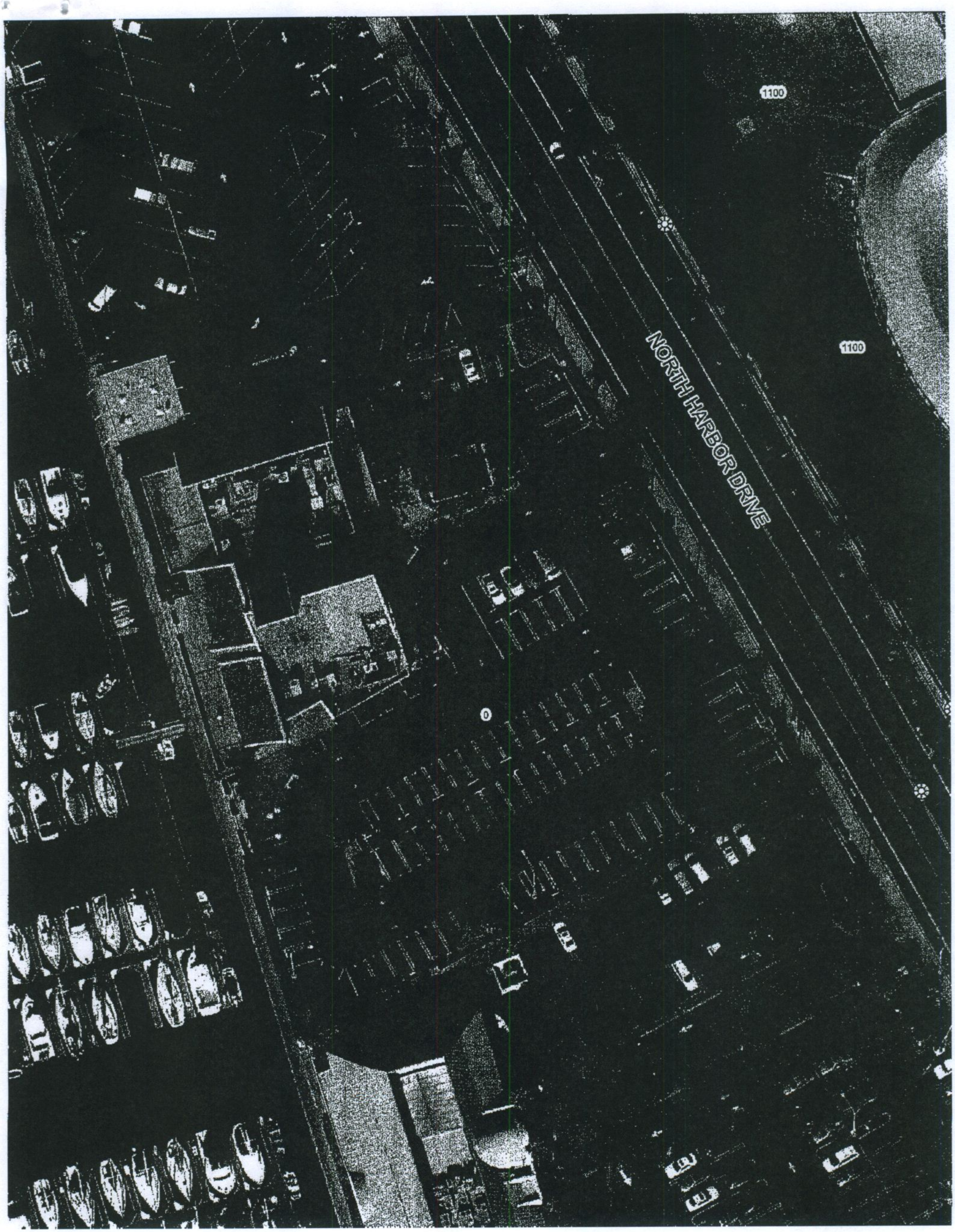
Soil Type = 3 (Per LA-COUNTY HYDROLOGY MANUAL)

50 year storm rainfall intensity = 5.2 in

Longest flow path length = 100 ft

Ave slope = 1%


Tc Calculator
Subarea Parameters Manual Input
Subarea Number
1a
Area (Acres)
0.1
Proportion Impervious
0.99
Soil Type
3
Rainfall Isohyet (in.)
5.2
Flow Path Length (ft.)
100
Flow Path Slope
0.01
Subarea Parameters Selected
Subarea Number
1a
Area (Acres)
0.1
Proportion Impervious
0.99
Soil Type
3
Rainfall Isohyet (in.)
0.75
Flow Path Length (ft.)
100
Flow Path Slope
0.01
50 Year storm
Input File
Check Here If Subarea Parameters Are Defined In An Input File
Import "tcdata.xls" File
Calculate Single Tc From Subarea Parameters Provided In Input File
Calculate Tc's For Multiple Subareas And Create Tc Results File
Calculation Results
Subarea Number
1a
Intensity
3.1
Undeveloped Runoff Coefficient (Cu)
0.46
Developed Runoff Coefficient (Cd)
0.9
Tc Equation
Tc=(10)^-0.507*(Cd*I)^-0.519*(L)^0.483*(S)^-0.135
Calculate Tc
Tc Value (min.)
5
Flowrate (cfs)
0.28
Cancel


1100
NORTH HARBOR DRIVE
1100
0