WORKSHEET 3.04 - SITUATION FOUR

Compile existing site-specific data and determine existing site imperviousness (I_{EXIST}). For the purposes of these calculations, site area (A_{SITE}) is defined as the entire parcel. A_{EXIST} represents the actual amount of existing impervious cover on the site.

A_{SITE} =   _____ acres

A_{EXIST} structures   =   _____ acres

       parking lot   =   _____ acres

       roadway   =   _____ acres

       other   =   _____ acres

Total A_{EXIST} =   _____ acres

I_{EXIST} =   (Total A_{EXIST} ÷ A_{SITE}) x 100

I_{EXIST} =   _____ % (expressed in whole numbers)

Compile post-development site-specific data and determine post-development site imperviousness (I_{POST}). For the purposes of these calculations, site area (A_{SITE}) is defined as the entire parcel. A_{POST} represents the actual amount of impervious cover on the site once the proposed development is complete.

A_{SITE} =   _____ acres

A_{POST} structures   =   _____ acres

       parking lot   =   _____ acres

       roadway   =   _____ acres

       other   =   _____ acres

Total A_{POST} =   _____ acres

I_{POST} =   (Total A_{POST} ÷ A_{SITE}) x 100

I_{POST} =   _____ (expressed in whole numbers)

If I_{EXIST} > 16% and the existing impervious area is served by a BMP, proceed with calculation of pollutant loadings. Otherwise, refer to Section 3.4 of the Manual for correct development situation determination.

Calculate the pre and post-development pollutant loadings for the site using the Simple Method.

$$L = P \times P_J \times [0.05 + (0.09 \times I)] \times C \times A \times 2.72 / 12$$

Where:　　P_J　　　=　　unitless rainfall correction factor
　　　　　　　　　　=　　0.9 for all of Tidewater, Virginia
　　　　　P　　　=　　annual rainfall depth in inches
　　　　　　　　　　=　　43 for the Richmond Metropolitan Area
　　　　　C　　　=　　flow weighted mean concentration of total phosphorus
　　　　　　　　　　=　　0.26 mg/l for the entire County
　　　　　$I_{WATERSHED}$　=　average land cover condition of the Bay watershed
　　　　　　　　　　=　　16 percent

Calculate the existing development load (L_{EXIST}):

$$L_{EXIST} = [0.05 + (0.009 \times I_{EXIST})] \times 2.28 \times A_{SITE}$$

$$= [0.05 + (0.009 \times \underline{\hspace{1cm}})] \times 2.28 \times \underline{\hspace{2cm}}$$

$$L_{EXIST} = \underline{\hspace{2cm}} \text{ pounds per year}$$

Calculate the post-development load (L_{POST}):

$$L_{POST} = [0.05 + (0.009 \times I_{POST})] \times 2.28 \times A_{SITE}$$

$$= [0.05 + (0.009 \times \underline{\hspace{1cm}})] \times 2.28 \times \underline{\hspace{1cm}}$$

$$L_{POST} = \underline{\hspace{2cm}} \text{ pounds per year}$$

Calculate the pollutant removal requirement for this project ($RR_{PROJECT}$):

$$RR_{PROJECT} = L_{POST} - L_{EXIST}$$

$$= \underline{\hspace{2cm}} - \underline{\hspace{1.5cm}}$$

$$= \underline{\hspace{2cm}} \text{ pounds per year}$$

Calculate the overall pollutant removal requirement (RR_{TOTAL})

$$RR_{TOTAL} = RR_{PROJECT} + RR_{EXIST}$$

RR_{EXIST}　　=　　the existing pollutant removal requirement for the site

$$RR_{TOTAL} = \underline{\hspace{2cm}} + \underline{\hspace{1.5cm}}$$

$$= \underline{\hspace{2cm}} \text{ pounds per year}$$