

LOW RAINFALL YEAR (2002)

Source nodes

Location, Ex Site (0.925 ha), ROOF (0.232 ha), ROAD & DRIVEWAY (0.224 ha), OTHER IMPERVIOUS (0.073 ha), PERVIOUS (0.236 ha)

ID, 1, 6, 7, 8, 10

Node

Type, AgriculturalSourceNode, UrbanSourceNode, UrbanSourceNode, UrbanSourceNode, UrbanSourceNode

Zoning Surface Type, , Roof, Sealedroad, Residential, Residential

Total Area (ha), 0.925, 0.232, 0.224, 0.073, 0.236

Area Impervious (ha), 0.0480390435366418, 0.232, 0.224, 0.073, 0

Area Pervious (ha), 0.876960956463358, 0, 0, 0, 0.236

Field Capacity (mm), 50, 80, 80, 80, 80

Pervious Area Infiltration Capacity coefficient - a, 50, 200, 200, 200, 200

Pervious Area Infiltration Capacity exponent - b, 2, 1, 1, 1, 1

Impervious Area Rainfall Threshold (mm/day), 1, 1, 1, 1, 1

Pervious Area Soil Storage Capacity (mm), 150, 120, 120, 120, 120

Pervious Area Soil Initial Storage (% of Capacity), 25, 25, 25, 25, 25

Groundwater Initial Depth (mm), 50, 10, 10, 10, 10

Groundwater Daily Recharge Rate (%), 0.65, 25, 25, 25, 25

Groundwater Daily Baseflow Rate (%), 0.85, 5, 5, 5, 5

Groundwater Daily Deep Seepage Rate (%), 0, 0, 0, 0, 0

Stormflow Total Suspended Solids Mean (log mg/L), 1.544, 2, 2, 2, 2

Stormflow Total Suspended Solids Standard Deviation (log mg/L), 0.32, 0.32, 0.32, 0.32, 0.32

Stormflow Total Suspended Solids Estimation Method, Mean, Mean, Mean, Mean, Mean

Stormflow Total Suspended Solids Serial Correlation, 0, 0, 0, 0, 0

Stormflow Total Phosphorus Mean (log mg/L), -1, -0.523, -0.523, -0.523, -0.523

Stormflow Total Phosphorus Standard Deviation (log mg/L), 0.25, 0.25, 0.25, 0.25, 0.25

Stormflow Total Phosphorus Estimation Method, Mean, Mean, Mean, Mean, Mean

Stormflow Total Phosphorus Serial Correlation, 0, 0, 0, 0, 0

Stormflow Total Nitrogen Mean (log mg/L), 0, 0.177, 0.177, 0.177, 0.177

Stormflow Total Nitrogen Standard Deviation (log mg/L), 0.19, 0.19, 0.19, 0.19, 0.19

Stormflow Total Nitrogen Estimation Method, Mean, Mean, Mean, Mean, Mean

Stormflow Total Nitrogen Serial Correlation, 0, 0, 0, 0, 0

Baseflow Total Suspended Solids Mean (log mg/L), 1.2, 1.1, 1.2, 1.2, 1.2

Baseflow Total Suspended Solids Standard Deviation (log mg/L), 1.7, 0.17, 0.17, 0.17, 0.17

Baseflow Total Suspended Solids Estimation Method, Mean, Mean, Mean, Mean, Mean

Baseflow Total Suspended Solids Serial Correlation, 0, 0, 0, 0, 0

Baseflow Total Phosphorus Mean (log mg/L), -1.3, -0.82, -0.85, -0.85, -0.85

Baseflow Total Phosphorus Standard Deviation (log mg/L), 0.19, 0.19, 0.19, 0.19, 0.19

Baseflow Total Phosphorus Estimation Method, Mean, Mean, Mean, Mean, Mean

Baseflow Total Phosphorus Serial Correlation, 0, 0, 0, 0, 0

Baseflow Total Nitrogen Mean (log mg/L), -0.1, 0.32, 0.11, 0.11, 0.11

Baseflow Total Nitrogen Standard Deviation (log mg/L), 0.12, 0.12, 0.12, 0.12, 0.12

Baseflow Total Nitrogen Estimation Method, Mean, Mean, Mean, Mean, Mean

Baseflow Total Nitrogen Serial Correlation, 0, 0, 0, 0, 0

Flow based constituent generation - enabled, Off, Off, Off, Off, Off

Flow based constituent generation - flow file, , , , ,

Flow based constituent generation - base flow column, , , , ,

Flow based constituent generation - pervious flow column, , , , ,

Flow based constituent generation - impervious flow column, , , , ,  
 Flow based constituent generation - unit, , , , ,  
 OUT - Mean Annual Flow (ML/yr),3.52,2.35,2.27,0.740,0.720  
 OUT - TSS Mean Annual Load (kg/yr),121,235,227,74.0,58.1  
 OUT - TP Mean Annual Load (kg/yr),0.347,0.705,0.681,0.222,0.190  
 OUT - TN Mean Annual Load (kg/yr),3.50,3.53,3.41,1.11,1.05  
 OUT - Gross Pollutant Mean Annual Load (kg/yr),18.4,56.9,54.9,17.9,0.00  
 Rain In (ML/yr),10.3397,2.59329,2.50387,0.815994,2.63801  
 ET Loss (ML/yr),6.83528,0.242672,0.234304,0.076358,1.91807  
 Deep Seepage Loss (ML/yr),0,0,0,0,0  
 Baseflow Out (ML/yr),0.113396,0,0,0,0.165286  
 Imp. Stormflow Out (ML/yr),0.468605,2.35062,2.26957,0.739636,0  
 Perv. Stormflow Out (ML/yr),2.94066,0,0,0,0.554646  
 Total Stormflow Out (ML/yr),3.40926,2.35062,2.26957,0.739636,0.554646  
 Total Outflow (ML/yr),3.52266,2.35062,2.26957,0.739636,0.719932  
 Change in Soil Storage (ML/yr),-0.018285,0,0,0,8E-6  
 TSS Baseflow Out (kg/yr),1.7972,0,0,0,2.61961  
 TSS Total Stormflow Out (kg/yr),119.305,235.062,226.957,73.9636,55.4646  
 TSS Total Outflow (kg/yr),121.103,235.062,226.957,73.9636,58.0842  
 TP Baseflow Out (kg/yr),0.005683,0,0,0,0.023347  
 TP Total Stormflow Out (kg/yr),0.340926,0.70499,0.68068,0.221829,0.166347  
 TP Total Outflow (kg/yr),0.346609,0.70499,0.68068,0.221829,0.189694  
 TN Baseflow Out (kg/yr),0.090073,0,0,0,0.21293  
 TN Total Stormflow Out (kg/yr),3.40926,3.53332,3.41148,1.11178,0.833712  
 TN Total Outflow (kg/yr),3.49933,3.53332,3.41148,1.11178,1.04664  
 GP Total Outflow (kg/yr),18.6137,56.8617,54.901,17.8918,0

No Imported Data Source nodes

USTM treatment nodes

Location, BIO BASIN,Rainwater Tank x21  
 ID,4,9  
 Node Type,BioRetentionNodeV4,RainWaterTankNode  
 Lo-flow bypass rate (cum/sec),0,0  
 Hi-flow bypass rate (cum/sec),100,100  
 Inlet pond volume, ,0  
 Area (sqm),468,35.7  
 Initial Volume (m^3), ,0  
 Extended detention depth (m),0.3,0.2  
 Number of Rainwater tanks, ,21  
 Permanent Pool Volume (cubic metres), ,63  
 Proportion vegetated, ,0  
 Equivalent Pipe Diameter (mm), ,458  
 Overflow weir width (m),5,10  
 Notional Detention Time (hrs), ,9.07E-3  
 Orifice Discharge Coefficient, ,0.6  
 Weir Coefficient,1.7,1.7  
 Number of CSTR Cells,2,2  
 Total Suspended Solids - k (m/yr),8000,400  
 Total Suspended Solids - C\* (mg/L),20,12  
 Total Suspended Solids - C\*\* (mg/L), ,12  
 Total Phosphorus - k (m/yr),6000,300  
 Total Phosphorus - C\* (mg/L),0.13,0.13  
 Total Phosphorus - C\*\* (mg/L), ,0.13

Total Nitrogen - k (m/yr),500,40  
Total Nitrogen - C\* (mg/L),1.4,1.4  
Total Nitrogen - C\*\* (mg/L), ,1.4  
Threshold Hydraulic Loading for C\*\* (m/yr), ,3500  
Horizontal Flow Coefficient,3,  
Reuse Enabled,Off,On  
Max drawdown height (m), ,1.764  
Annual Demand Enabled,Off,On  
Annual Demand Value (ML/year), ,0.375  
Annual Demand Distribution, ,PET  
Annual Demand Monthly Distribution: Jan, ,  
Annual Demand Monthly Distribution: Feb, ,  
Annual Demand Monthly Distribution: Mar, ,  
Annual Demand Monthly Distribution: Apr, ,  
Annual Demand Monthly Distribution: May, ,  
Annual Demand Monthly Distribution: Jun, ,  
Annual Demand Monthly Distribution: Jul, ,  
Annual Demand Monthly Distribution: Aug, ,  
Annual Demand Monthly Distribution: Sep, ,  
Annual Demand Monthly Distribution: Oct, ,  
Annual Demand Monthly Distribution: Nov, ,  
Annual Demand Monthly Distribution: Dec, ,  
Daily Demand Enabled,Off,On  
Daily Demand Value (ML/day), ,0.0054  
Custom Demand Enabled,Off,Off  
Custom Demand Time Series File, ,  
Custom Demand Time Series Units, ,  
Filter area (sqm),380,  
Filter perimeter (m),0.1,  
Filter depth (m),0.4,  
Filter Median Particle Diameter (mm), ,  
Saturated Hydraulic Conductivity (mm/hr),125,  
Infiltration Media Porosity,0.35,  
Length (m), ,  
Bed slope, ,  
Base Width (m), ,  
Top width (m), ,  
Vegetation height (m), ,  
Vegetation Type,Vegetated with Effective Nutrient Removal Plants,  
Total Nitrogen Content in Filter (mg/kg),800,  
Orthophosphate Content in Filter (mg/kg),40,  
Is Base Lined?,No,  
Is Underdrain Present?,Yes,  
Is Submerged Zone Present?,No,  
Submerged Zone Depth (m), ,  
B for Media Soil Texture,13,-9999  
Proportion of upstream impervious area treated, ,  
Exfiltration Rate (mm/hr),10,0  
Evaporative Loss as % of PET,100,0  
Depth in metres below the drain pipe, ,  
TSS A Coefficient, ,  
TSS B Coefficient, ,  
TP A Coefficient, ,  
TP B Coefficient, ,

TN A Coefficient, ,  
TN B Coefficient, ,  
Sfc,0.61,  
S\*,0.37,  
Sw,0.11,  
Sh,0.05,  
Emax (m/day),0.008,  
Ew (m/day),0.001,  
IN - Mean Annual Flow (ML/yr),4.78,2.35  
IN - TSS Mean Annual Load (kg/yr),128,235  
IN - TP Mean Annual Load (kg/yr),0.943,0.705  
IN - TN Mean Annual Load (kg/yr),7.14,3.53  
IN - Gross Pollutant Mean Annual Load (kg/yr),1.46,56.9  
OUT - Mean Annual Flow (ML/yr),2.21,1.05  
OUT - TSS Mean Annual Load (kg/yr),4.32,68.5  
OUT - TP Mean Annual Load (kg/yr),0.118,0.255  
OUT - TN Mean Annual Load (kg/yr),1.33,1.57  
OUT - Gross Pollutant Mean Annual Load (kg/yr),0.00,0.00  
Flow In (ML/yr),4.77771,2.35062  
ET Loss (ML/yr),0.460224,0  
Infiltration Loss (ML/yr),2.09253,0  
Low Flow Bypass Out (ML/yr),0,0  
High Flow Bypass Out (ML/yr),0,0  
Orifice / Filter Out (ML/yr),2.20901,1.04857  
Weir Out (ML/yr),0,0  
Transfer Function Out (ML/yr),0,0  
Reuse Supplied (ML/yr),0,1.18448  
Reuse Requested (ML/yr),0,2.346  
% Reuse Demand Met,0,50.4893  
% Load Reduction,53.7642,55.3918  
TSS Flow In (kg/yr),128.259,235.062  
TSS ET Loss (kg/yr),0,0  
TSS Infiltration Loss (kg/yr),4.81699,0  
TSS Low Flow Bypass Out (kg/yr),0,0  
TSS High Flow Bypass Out (kg/yr),0,0  
TSS Orifice / Filter Out (kg/yr),4.31918,68.5264  
TSS Weir Out (kg/yr),0,0  
TSS Transfer Function Out (kg/yr),0,0  
TSS Reuse Supplied (kg/yr),0,21.0163  
TSS Reuse Requested (kg/yr),0,0  
TSS % Reuse Demand Met,0,0  
TSS % Load Reduction,96.6325,70.8475  
TP Flow In (kg/yr),0.94306,0.70499  
TP ET Loss (kg/yr),0,0  
TP Infiltration Loss (kg/yr),0.121819,0  
TP Low Flow Bypass Out (kg/yr),0,0  
TP High Flow Bypass Out (kg/yr),0,0  
TP Orifice / Filter Out (kg/yr),0.118049,0.255027  
TP Weir Out (kg/yr),0,0  
TP Transfer Function Out (kg/yr),0,0  
TP Reuse Supplied (kg/yr),0,0.17266  
TP Reuse Requested (kg/yr),0,0  
TP % Reuse Demand Met,0,0  
TP % Load Reduction,87.4823,63.8254



Enabled,True  
Input (kg/ML),0  
Output (kg/ML),0  
Input (kg/ML),100  
Output (kg/ML),2  
Input (kg/ML),  
Output (kg/ML),  
Input (kg/ML),  
Output (kg/ML),  
Input (kg/ML),  
Output (kg/ML),  
Input (kg/ML),  
Output (kg/ML),  
Input (kg/ML),  
Output (kg/ML),  
Input (kg/ML),  
Output (kg/ML),  
Input (kg/ML),  
Output (kg/ML),  
Total Nitrogen Transfer Function  
Enabled,True  
Input (mg/L),0  
Output (mg/L),0  
Input (mg/L),50  
Output (mg/L),50  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Total Phosphorus Transfer Function  
Enabled,True  
Input (mg/L),0  
Output (mg/L),0  
Input (mg/L),10  
Output (mg/L),7  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),

Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Total Suspended Solids Transfer Function  
Enabled,True  
Input (mg/L),0  
Output (mg/L),0  
Input (mg/L),1000  
Output (mg/L),300  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
Input (mg/L),  
Output (mg/L),  
TSS Flow based Efficiency Enabled,Off  
TSS Flow based Efficiency,  
TP Flow based Efficiency Enabled,Off  
TP Flow based Efficiency,  
TN Flow based Efficiency Enabled,Off  
TN Flow based Efficiency,  
GP Flow based Efficiency Enabled,Off  
GP Flow based Efficiency,  
IN - Mean Annual Flow (ML/yr),4.78  
IN - TSS Mean Annual Load (kg/yr),428  
IN - TP Mean Annual Load (kg/yr),1.35  
IN - TN Mean Annual Load (kg/yr),7.14  
IN - Gross Pollutant Mean Annual Load (kg/yr),72.8  
OUT - Mean Annual Flow (ML/yr),4.78  
OUT - TSS Mean Annual Load (kg/yr),128  
OUT - TP Mean Annual Load (kg/yr),0.943  
OUT - TN Mean Annual Load (kg/yr),7.14  
OUT - Gross Pollutant Mean Annual Load (kg/yr),1.46  
Flow In (ML/yr),4.77771  
ET Loss (ML/yr),0  
Infiltration Loss (ML/yr),0

Low Flow Bypass Out (ML/yr),0  
High Flow Bypass Out (ML/yr),0  
Orifice / Filter Out (ML/yr),0  
Weir Out (ML/yr),0  
Transfer Function Out (ML/yr),4.77771  
Reuse Supplied (ML/yr),0  
Reuse Requested (ML/yr),0  
% Reuse Demand Met,0  
% Load Reduction,0  
TSS Flow In (kg/yr),427.531  
TSS ET Loss (kg/yr),0  
TSS Infiltration Loss (kg/yr),0  
TSS Low Flow Bypass Out (kg/yr),0  
TSS High Flow Bypass Out (kg/yr),0  
TSS Orifice / Filter Out (kg/yr),0  
TSS Weir Out (kg/yr),0  
TSS Transfer Function Out (kg/yr),128.259  
TSS Reuse Supplied (kg/yr),0  
TSS Reuse Requested (kg/yr),0  
TSS % Reuse Demand Met,0  
TSS % Load Reduction,70  
TP Flow In (kg/yr),1.34723  
TP ET Loss (kg/yr),0  
TP Infiltration Loss (kg/yr),0  
TP Low Flow Bypass Out (kg/yr),0  
TP High Flow Bypass Out (kg/yr),0  
TP Orifice / Filter Out (kg/yr),0  
TP Weir Out (kg/yr),0  
TP Transfer Function Out (kg/yr),0.94306  
TP Reuse Supplied (kg/yr),0  
TP Reuse Requested (kg/yr),0  
TP % Reuse Demand Met,0  
TP % Load Reduction,30  
TN Flow In (kg/yr),7.13662  
TN ET Loss (kg/yr),0  
TN Infiltration Loss (kg/yr),0  
TN Low Flow Bypass Out (kg/yr),0  
TN High Flow Bypass Out (kg/yr),0  
TN Orifice / Filter Out (kg/yr),0  
TN Weir Out (kg/yr),0  
TN Transfer Function Out (kg/yr),7.13662  
TN Reuse Supplied (kg/yr),0  
TN Reuse Requested (kg/yr),0  
TN % Reuse Demand Met,0  
TN % Load Reduction,0  
GP Flow In (kg/yr),72.7928  
GP ET Loss (kg/yr),0  
GP Infiltration Loss (kg/yr),0  
GP Low Flow Bypass Out (kg/yr),0  
GP High Flow Bypass Out (kg/yr),0  
GP Orifice / Filter Out (kg/yr),0  
GP Weir Out (kg/yr),0  
GP Transfer Function Out (kg/yr),1.45586  
GP Reuse Supplied (kg/yr),0



GP Reuse Requested (kg/yr),0  
GP % Reuse Demand Met,0  
GP % Load Reduction,100

#### Other nodes

Location,Pre-Development Node,Post-Development Node  
ID,2,3  
Node Type,PreDevelopmentNode,PostDevelopmentNode  
IN - Mean Annual Flow (ML/yr),3.52,2.21  
IN - TSS Mean Annual Load (kg/yr),121,4.32  
IN - TP Mean Annual Load (kg/yr),0.347,0.118  
IN - TN Mean Annual Load (kg/yr),3.50,1.33  
IN - Gross Pollutant Mean Annual Load (kg/yr),18.4,0.00  
OUT - Mean Annual Flow (ML/yr),3.52,2.21  
OUT - TSS Mean Annual Load (kg/yr),121,4.32  
OUT - TP Mean Annual Load (kg/yr),0.347,0.118  
OUT - TN Mean Annual Load (kg/yr),3.50,1.33  
OUT - Gross Pollutant Mean Annual Load (kg/yr),18.4,0.00  
% Load Reduction,0.00,63.7  
TSS % Load Reduction,0.00,99.3  
TN % Load Reduction,0.00,85.4  
TP % Load Reduction,0.00,93.4  
GP % Load Reduction,0.00,100

#### Links

Location,Drainage Link,Drainage Link,Drainage Link,Drainage Link,Drainage Link,Drainage Link,Drainage Link,Drainage Link  
Source node ID,1,8,7,5,4,6,9,10  
Target node ID,2,5,5,4,3,9,5,5  
Muskingum-Cunge Routing,Not Routed,Not Routed,Not Routed,Not Routed,Not Routed,Not Routed,Not Routed,Not Routed  
Muskingum K, , , , , , , ,  
Muskingum theta, , , , , , , ,  
IN - Mean Annual Flow (ML/yr),3.52,0.740,2.27,4.78,2.21,2.35,1.05,0.720  
IN - TSS Mean Annual Load (kg/yr),121,74.0,227,128,4.32,235,68.5,58.1  
IN - TP Mean Annual Load (kg/yr),0.347,0.222,0.681,0.943,0.118,0.705,0.255,0.190  
IN - TN Mean Annual Load (kg/yr),3.50,1.11,3.41,7.14,1.33,3.53,1.57,1.05  
IN - Gross Pollutant Mean Annual Load (kg/yr),18.4,17.9,54.9,1.46,0.00,56.9,0.00,0.00  
OUT - Mean Annual Flow (ML/yr),3.52,0.740,2.27,4.78,2.21,2.35,1.05,0.720  
OUT - TSS Mean Annual Load (kg/yr),121,74.0,227,128,4.32,235,68.5,58.1  
OUT - TP Mean Annual Load (kg/yr),0.347,0.222,0.681,0.943,0.118,0.705,0.255,0.190  
OUT - TN Mean Annual Load (kg/yr),3.50,1.11,3.41,7.14,1.33,3.53,1.57,1.05  
OUT - Gross Pollutant Mean Annual Load (kg/yr),18.4,17.9,54.9,1.46,0.00,56.9,0.00,0.00

#### Catchment Details

Catchment Name,434-20-DA-WSUD-001-10thperc  
Timestep,Day  
Start Date,1/01/2002  
End Date,31/12/2002  
Rainfall Station, 066183\_Ingleside\_2002\_Daily  
ET Station,User-defined monthly PET

Mean Annual Rainfall (mm), 1118  
Mean Annual ET (mm), 1260