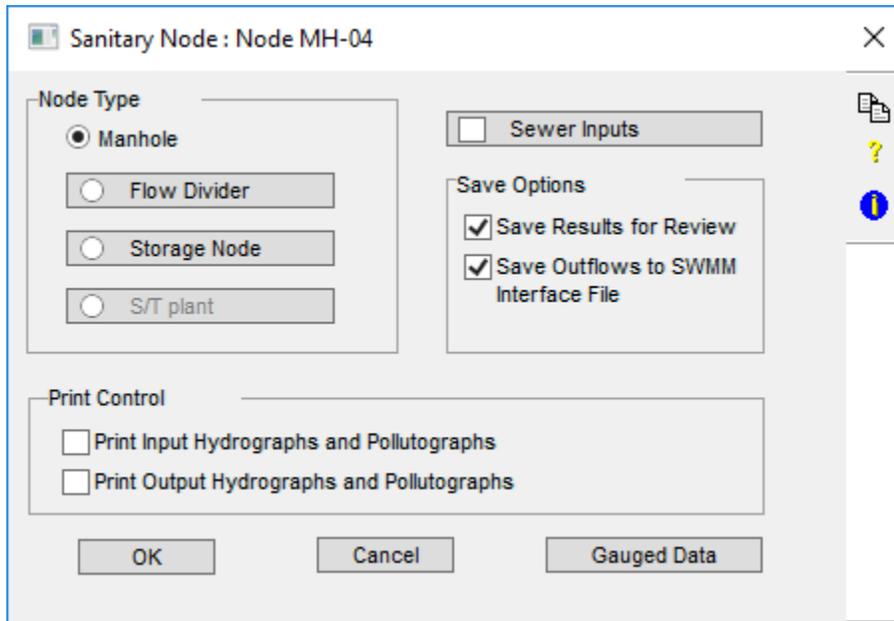


# Sanitary Node Data

To **input** or **edit** the attribute or model specific data associated with a node either: 1. "double-click" on the node, select the node and choose the "DATA" command from the Edit Menu; 2. select the node and press the <Enter> key; or 3. select the node and, right-click, and select **Edit Data** from the pop-up menu.



The image shows a software dialog box titled "Sanitary Node : Node MH-04". It contains several sections: "Node Type" with radio buttons for "Manhole" (selected), "Flow Divider", "Storage Node", and "S/T plant"; "Sewer Inputs" with an unchecked checkbox; "Save Options" with checked checkboxes for "Save Results for Review" and "Save Outflows to SWMM Interface File"; and "Print Control" with unchecked checkboxes for "Print Input Hydrographs and Pollutographs" and "Print Output Hydrographs and Pollutographs". At the bottom are "OK", "Cancel", and "Gauged Data" buttons. A vertical toolbar on the right includes a close button, a print icon, a help icon, and an information icon.

This dialog allows the definition of a node in the Sanitary layer. A node in the Sanitary layer may be simply a junction for connecting conduits, or may have storage reservoirs or complete storage/treatment units (or BMP's) incorporated. Nodes can contain sub-areas for dry-weather flow inputs, and may include direct time-series contributions of flows and pollutants.

This page contains the following topics:

- [Node Type](#)
  - [Manhole](#)
  - [Flow Divider](#)
  - [Storage Node](#)
  - [Storage Treatment Plant \(S/T\)](#)
- [Sewer Inputs Flag](#)
  - [Sewer Inputs](#)
- [Save Options](#)
- [Print Control](#)
- [Gauged Data](#)

## Node Type

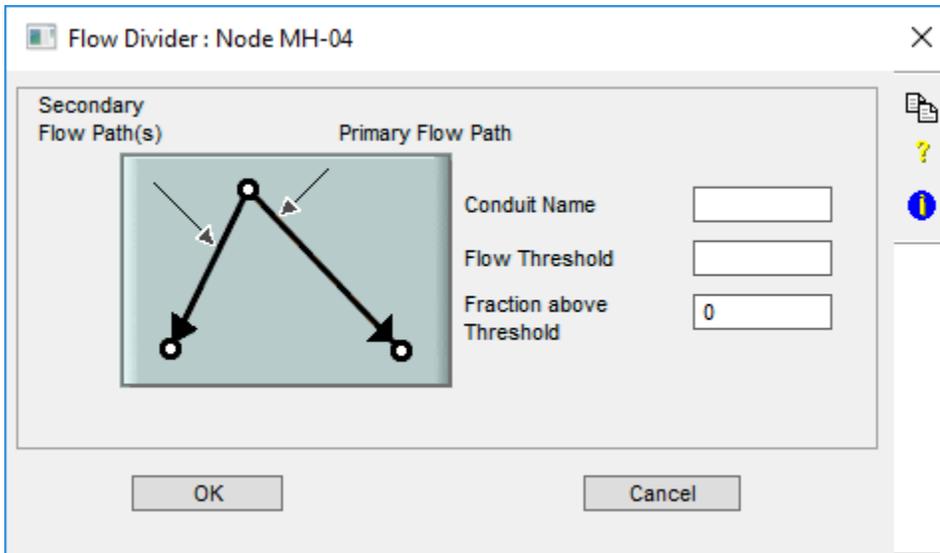
This parameter defines what type of structure exists at the node. The node may simply be a manhole junction for conduits, a flow divider for downstream conduits, a storage reservoir, or contain a complete storage/treatment plant. Flow inputs into a node are defined independently of the node's type.

### Manhole

This option sets the type of the element to be a manhole, which is simply a junction for all connecting conduits.

### Flow Divider

The Flow Divider serves to prioritize outflows from a node where multiple outflow conduits are connected. By default, flows will be distributed to multiple outgoing conduits according to their relative full-flow capacities. The Flow Divider gives priority to one nominated downstream connected conduit, with the remainder of the flow then being distributed according to the normal rules. (ie. by proportion of full-flow capacity). The Flow Divider is only relevant if there is more than one downstream connected conduit.



The data includes identifying the primary flow path where all flow up to some threshold value will be directed and the fraction of flow above that threshold which continues to flow down the primary conduit. All other flow is distributed to the remaining connected conduits according to the rule described above.

A Flow Divider is only required if there is more than one downstream conduit and flow distribution must be prioritized, where the outlets are at different depths for example.

**Primary Flow Path Conduit Name**

This is the name of the connected downstream conduit (not node) which is given the highest priority for distribution of outflows from the node. All flow up to some threshold value will be directed to this node and the fraction of flow above that threshold will continue to flow down the primary conduit. The Primary Conduit must be directly downstream of this node.

**Flow Threshold**

This flow represents the limit below which all flow is directed to the primary conduit, in cfs [cms]. Node flows above this threshold will be split according to the 'Fraction' described below.

**Fraction above Threshold**

This fraction represents the proportion of flow above the threshold that continues to flow down the primary conduit. The remainder is distributed to other connected downstream conduits according to their full-flow characteristics.

**Storage Node**

This option defines a storage reservoir at the node.

Internal storage is modelled in a manner similar to a detention unit in Storage-Treatment, using Pul's routing for hydrographs and simulating quality processes as a completely mixed reactor. Unlike Storage-Treatment, however, pollutant removal may be simulated only by decay.

Storage units may be placed anywhere in the sewer system where appreciable storage may exist, such as at an outflow or diversion structure, or to simulate detention storage in a stormwater management system. It should be noted that the storage area or "reservoir" may consist of a portion of the sewer system itself, and depth-area-discharge relationships developed accordingly.

This dialog describes the geometry and hydraulic characteristics of a storage node. A relationship between depth, surface area, outflow, and storage volume is required. The relationship can be entered directly, or indirectly with outflow conditions of weirs, orifices, or pumps. Evaporation losses are accounted for and evaporation data must be entered under Job Control.

Storage Node: Node MH-04

Initial Volume

Volume

Initial Pollutant Concentration

OutFlow Method

Pumping

Equation

Direct

	Node Depth	Surface Area	Volume
1			
2			
3			
4			
5			

<  >

Insert Delete

OK Cancel

## Initial Volume

This item contains the total volume of water in the reservoir at the start of the simulation, in cfs [cms].

## Depth

This column contains depths for the reservoir, in ft [m]. This is the primary variable in the hydraulic depth-storage-outflow relations.

## Surface Area

This column contains the Surface Area corresponding to Depth in the adjacent column, in ft<sup>2</sup>. [m<sup>2</sup>]. The only required hydraulic parameters are the depth and surface area. Volumes can be calculated by the model using the trapezoidal rule and surface areas.

## Volume Flag

If the volume flag is ON, a depth-volume relationship needs to be entered directly. The cumulative volume corresponding to the depth in the adjacent column is entered in ft<sup>3</sup> [m<sup>3</sup>]. If this flag is OFF, the model will calculate a depth-volume relationship by averaging the surface area between adjacent values of depth, multiplying by the difference in depth, and adding the incremental volume to the accumulated total.

## Outflow Method

This column provides options in describing how the discharge of outflow is related to depth. The options available include direct entry of an outflow for every depth, or power equations to approximate the relation, or a pump that specifies a constant pumping rate between certain depths.

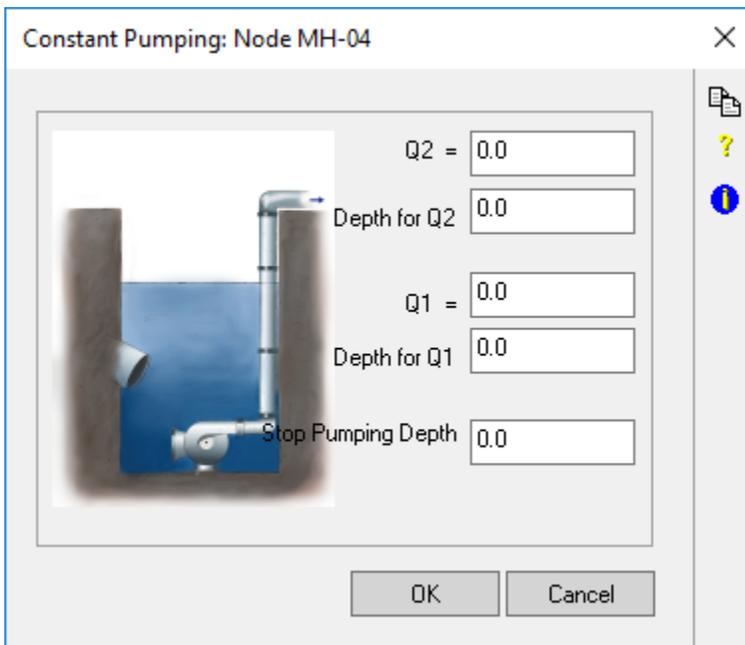
### Direct Outflow

This option requires the direct entry of the reservoir outflow, in cfs [cms], corresponding to the depth in the adjacent column to be entered in the column immediately below the radio button.

### Outflow - Constant Pumping

This option selects a pump as the method of generating outflow for this reservoir. The pump operates at a constant rate between certain depth ranges.

The pump begins operating from empty when the depth within it exceeds the first depth. If the depth then exceeds a second value, a second flow rate will apply until the depth drops below that value. The pump then continues to operate at the first flow rate until the depth drops below a stopping level.



**Depth for Q1**

Depth at which the first pumping rate begins, ft [m].

**Depth for Q2**

Depth at which the second pumping rate begins, ft [m].

**Pump Rate 1 (Q1)**

Pumping rate when the water depth within the pump exceeds the first depth, but is less than the second depth, in cfs [cms]. This rate applies while the depth is below the second depth and the pump is still operating.

**Pump Rate 2 (Q2)**

Pumping rate when the water depth within the pump exceeds the second depth, in cfs [cms]. This rate applies only while the depth exceeds the second depth.

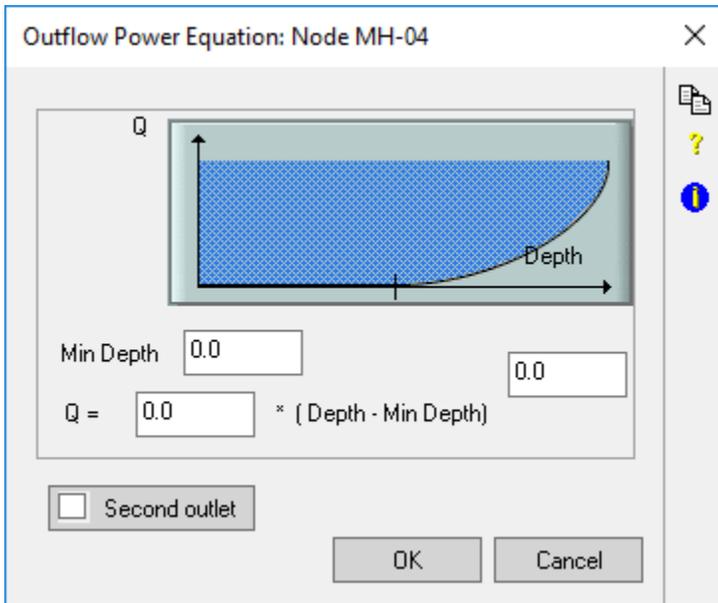
**Stop Pumping Depth**

The depth below which all pumping stops, ft [m].

**Outflow - Power Equation**

This option selects power equations as the method of generating outflow for this reservoir. Common outlet structures that may be modelled with this equation are the orifice and broad-crested weir.

This dialog contains a power equation used to describe the depth-outflow relationship.



The form of the equation is:

$$Q_{out} = C1 * (D - D0)^{C2}$$

where

$Q_{out}$  = treated outflow, ft<sup>3</sup>/sec [m<sup>3</sup>/sec]

$C1$ ,  $C2$  = user supplied coefficients [dimensionless]

$D$  = water depth in detention unit, ft [m],

$D0$  = user supplied depth below which there is no treated outflow, ft [m].

Two common outlet structures that may be modelled with this equation are the orifice and the broad-crested weir. For example, the familiar weir equation can be obtained by assigning the following values:

$C1 = 3.33 * L$  (where  $L$  = length of the weir in feet)

$C2 = 1.5$

$D0$  = depth at the bottom of the weir in feet [m].

**Min Depth**

This item contains the depth below which no outflow occurs, in ft [m].

**Second Outlet (Outflow - Power Equation)**

This dialog contains a power equation used to describe the depth-outflow relationship. The difference with the primary outflow equations is that the outflow can be directed to any arbitrary downstream conduit.

The screenshot shows a dialog box titled "Second Outflow Equation". At the top right, there are standard window controls (close, copy, help, info). The main area contains a graph with "Q" on the vertical axis and "Depth" on the horizontal axis. A blue shaded region is bounded by a curve that starts at a minimum depth and increases as depth increases. Below the graph, there are several input fields: "Min Depth" with a value of 0.0, a coefficient field with 0.0, another coefficient field with 0.0, and "Destination Conduit" with 0. The equation is displayed as  $Q = 0.0 * (Depth - Min\ Depth)$ . At the bottom, there are "OK" and "Cancel" buttons.

The form of the equation is:

$$Q_{out} = C1 * (D - D0)^{C2}$$

where

$Q_{out}$  = treated outflow, ft<sup>3</sup>/sec [m<sup>3</sup>/sec]

$C1, C2$  = user supplied coefficients [dimensionless]

$D$  = water depth in detention unit, ft [m],

$D0$  = user supplied depth below which there is no treated outflow, ft [m].

Two common outlet structures that may be modelled with this equation are the orifice and the broad-crested weir. For example, the familiar weir equation can be obtained by assigning the following values:

$C1 = 3.33 * L$  (where  $L$  = length of the weir in feet)

$C2 = 1.5$

$D0$  = depth at the bottom of the weir in feet [m].

**Destination Conduit.** This item contains any arbitrary downstream conduit to which the outflow is directed. The primary equation is directed to the reservoir outlet at the same node.

### Initial Pollutant Concentration

This button and the underlying dialog provides for the entry of initial pollutant concentrations in the reservoir. These concentrations are only required if the 'Initial Volume' is greater than zero.

Pollutant	Concentration
Potassium	2.000
TSS	1.200
Total Zinc	0.400

OK Cancel

**Pollutant Name**

These are the pollutants as selected in the 'Pollutant List' item in Job Control.

**Pollutant Concentration**

The initial concentration of the corresponding pollutant in the reservoir at the beginning of the simulation. The concentration is given in units consistent with the pollutant, as defined in the Pollutants Global Database.

**Storage Treatment Plant (S/T)**

This option is selected when a Storage-Treatment Plant (or BMP) is to be modelled. BMP is enabled by selecting the relevant options in [Job Control](#). Read more details in the [Storage Treatment Plant](#) page.

**Sewer Inputs Flag**

This flag enables the input of sewer inflows and loads into this node in the network. Sewer inflows comprise dry weather flows computed as a daily average and adjusted for the time of day and day of week, other constant inflows with pollutant concentrations, and optionally a time-varying input of flows and pollutant concentrations.

**Sewer Inputs**

This flag enables the input of sewer inflows and loads into this node in the network. Sewer inflows comprise dry weather flows computed as a daily average and adjusted for the time of day and day of week, other constant inflows with pollutant concentrations, and optionally a time-varying input of flows and pollutant concentrations.

The dialog defines inflows into the sewer system at the node. The inflows can be dry weather flows, and other constant inputs of flow and pollutant. The dry weather flows are adjusted for the time and day of the simulation by factors defined in the selected 'Dry Weather Flow' Global Database from Job Control.

**Sewer Inputs : Node MH-04**

**Constant Flow**

Constant Inflow      0

Pollutant	Concentration

**Temporal Variation**

Input Flows/Loads       Dry Weather Flow

OK      Cancel

### Constant Flow

When this flag is on, constant flow in cfs [cms] is enabled for this element.

**Flow (Sewer Input).** When the flag is on, process flow is enabled for this element. [Process flows](#) in cfs [cms], with their pollutant concentrations, are additional measured point source inflows into the sewer system. When study area data is used to adjust dry-weather flow estimates from sub-areas, process flows are subtracted from measured total flows to compute the average dry weather flow from the total study area.

**Pollutant Name (Sewer Input).** Pollutant name reference. These pollutants are defined from the 'Pollutant List' item in Job Control.

**Pollutant Concentration (Sewer Input).** The constant concentration of the given pollutant in the constant or process inflow. The concentration is given in units consistent with the pollutant, as defined in the [Sanitary Pollutants Global Database](#).

### Input Flows and Loads

This button allows a time series of flow and concentrations for each pollutant to be input directly into the Sanitary Sewer Network.

#### Sanitary Time Series

This dialog allows the direct input of time-varying inflows and pollutant concentrations at the node. Only the pollutants defined in the 'Pollutant List' item in Job Control will be displayed for required input. The model interpolates linearly between time values to obtain intermediate values of flow and concentration.

**User Inflow Time Series : Node MH-04**

Time

Flow

Time	Flow						

OK Graph Cancel

**Time (Sanitary Time Series)**

Time may be defined in either decimal hours. For example, 6:30 pm is 18.5 hours, or in terms of minutes from midnight depending on which radio button is selected in this dialog. The time of day is from the start day of the simulation, in the units defined in this dialog. The model automatically sets the first time of the simulation to the start of simulation.

**Flow (Sanitary Time Series)**

The input flow at the time in the adjacent column, in ft<sup>3</sup>/s [m<sup>3</sup>/s].

**Concentration (Sanitary Time Series)**

The pollutant concentration at this time. The concentration is given in units consistent with the pollutant, as defined in the Pollutants Global Database.

**Left Previous Pollutants (>>)**

This button scrolls the pollutants to the left by a screenful, to allow editing of data for more pollutants than can be accommodated in this dialog.

**Right Next Pollutants (<<)**

This button scrolls the pollutants to the left by a screenful, to allow editing of data for more pollutants than can be accommodated in this dialog.

**Dry Weather Flow Flag**

This flag allows the estimation of dry-weather sewage flow and quality from residential, commercial and industrial urban areas. If the EPA-SWMM methods are disabled, they can be enabled by setting the [Global DWF \(EPA SWMM Method\)](#) flag in the [Sanitary Layer Job Control](#).

**Dry Weather Flow : Node MH-04**

**Dry Weather Flow Generation Method**

Direct Flow     
  Unit Flow Rate     
  Census-Based  
 EPA SWMM     
  EPA SWMM Water Use     
 EPA SWMM Residential

**Units**

cfs   
 mgd   
 gpm   
 gpd   
 l/day   
 l/s   
 l/m   
 cms

**Predominant Landuse**

Residential  
 Commercial  
 Industrial  
 Parkland

**DWF Data**

Flow Rate =  x Area  x Density

Peaking Factor

Winter Water Use      
 1000 gal/mth   
 1000 ft<sup>3</sup>/mth

Temporal Variation      
 Process Flow

OK      Cancel

Dry weather flow can be generated using one of 6 methods:

**Direct Flow**

The Flow Rate, Peaking Factor and Temporal Variation are the only mandatory data required. The flow rate is in the units specified in this dialog. The peaking factor is dimensionless. The flow rate and peaking factor are multiplied together to give the total flow, which is multiplied by the hourly and daily temporal variation to give the model flow.

**Unit Flow Rate**

The Flow Rate, Area and Peaking Factor and Temporal Variation are the only mandatory data required. The flow rate is in the units specified in this dialog per area unit. The area is in the same units as the flow rate and the peaking factor is dimensionless. The flow rate, area and peaking factor are multiplied together to give the total flow, which is multiplied by the hourly and daily temporal variation to give the model flow.

**Census-Based**

The Flow Rate, Area, Density, Peaking Factor and Temporal Variation are all required for this method. The flow rate is in the units specified in this dialog per area unit. The area is in the same units as the flow rate and the peaking factor is dimensionless. The flow rate, area and peaking factor are multiplied together to give the total flow, which is multiplied by the hourly and daily temporal variation to give the model flow.

For example, using the data from the dialog above:

If the method was Direct Flow then:

$$Q = 300 \text{ litres/day} \times 1 \text{ (peaking factor)} = 0.000003 \text{ m}^3/\text{s}$$

If the method was Unit Flow Rate then

$$Q = 300 \text{ litres/day/hectare} \times 4.21 \text{ hectares} \times 1$$

$$= 1,263 \text{ litres/day} = 0.000015 \text{ m}^3/\text{s}$$

If the method was Census-Based then:

$$Q = 300 \text{ litres/day/person} \times 4.21 \text{ persons/hectares} \times 21 \text{ hectares} \times 1$$

$$= 26,523 \text{ litres/day} = 0.307 \text{ m}^3/\text{s}$$

Regardless of the units selected in this dialog, the units presented in the output after the simulation will be ft<sup>3</sup>/s or m<sup>3</sup>/s.

**EPA-SWMM Methods**

EPA-SWMM methods are primarily provided for backward compatibility with EPA-SWMM. The EPA-SWMM methods are only available if the [Global DWF \(EPA SWMM Method\)](#) flag is enabled in the Sanitary layer **Job Control**. The Peaking Factor and Temporal Variation are not supported for any of the EPA-SWMM methods. The units are ft<sup>3</sup>/s or m<sup>3</sup>/s.

Dry weather flow is computed for each sub-area on the basis of the following priorities:

- measured average sewage flow,
- measured water use, and
- regression equations for residential land use only.

The **EPA-SWMM** method and the **EPA-SWMM Water Use** method are really equivalent since dry weather flow is simply equated to either measured sewage flow or water use, in that order. Regression equations are employed as a third choice for the **EPA-SWMM Residential** method only.

**Area**

The total area within the sub-area, in acres [ha]. This parameter is used in the calculation of dry weather flow for residential land use, and indirectly to calculate the total population from all sub-areas.

**Population Density**

The population density within the sub-area, in persons/acre [persons/ha]. The population density will be used to compute the number of dwellings in the sub-area, if the number of dwellings is not input directly and to generate loads where the pollutant type is based on a per capita basis.

**Dry Weather Flow Computation**

These parameters define the priority basis for computing dry weather flows for the sub-area. Flows can either be entered directly, or estimated (if residential land use).

**Direct Sewage Flow of.** This option defines sewage inflows directly, for any land use. This option is equivalent to the 'Winter Water Use' option.

The measured average sewage flow from the sub-area, in cfs [cms], does not include process flows. In the case of a factory or commercial establishment, estimates can be made by multiplying the number of employees by an established coefficient.

**Direct Winter Water Use of.** This option defines sewage inflows by means of a measured water use, for any land use. This option is equivalent to the 'Sewage Flow' option. If units are U.S. Customary, then the units of this parameter are specified in this dialog. For Metric units, the units of water usage are 1000 cu.m/month.

**Estimated Water Use.** This option defines sewage inflows by means of an estimated water use, for residential land use only.

**Water Unit - 1000 gal/mth.** This option indicates that the units in which the water usage estimate is made are in 1000 gallons/month. This option is only relevant if overall units are specified as U.S. Customary.

**Water Unit - 1000 ft^3/mth.** This option indicates that the units in which the water usage estimate is made are in 1000 gallons/month. This option is only relevant if overall units are specified as U.S. Customary.

**EPA SWMM Residential**

This option defines the predominant land use to be residential for the purposes of generating dry weather flow. Dry weather flow can be generated by built-in equations for this land use only. For the other land uses, the sewer flow and pollutant loads must be entered directly.

This dialog deals with additional data to allow for computation of generated dry weather flow from residential areas using built-in regression equations.

Computed residential dry weather flow is based on the number of dwellings within the sub-area, and other parameters. The number of dwellings is computed on the basis of the following priorities:

Priority	Method
1	Directly Input
2	Uses population density, area, family size
3	Defaults to 10 units/acre

Dry weather flow is then computed using the number of dwellings calculated, the value of each dwelling and, depending on the water usage parameters, the following additional parameters:

Water Usage	Price of Metered Water	Additional Data Used
No	zero	None
No	non-zero Water Price	Consumer Price Index
Yes		Family Size

Note that the residential flow calculations will be over-riden if the sewage or water flows are entered directly in the previous dialog.

**No of Dwelling Units.** This flag determines whether the number of dwellings in the sub-area is to be entered directly or computed. If the flag is ON, then the number of dwelling units in the sub-area must be entered directly into the item on its right. If the flag is OFF, the number of dwellings will be calculated from the population density, family size, and area of the sub-area.

**Garbage Grinder Percentage.** The percentage of dwelling units in the sub-area possessing garbage grinders. This value is used in adjusting pollutant concentrations for residential flows.

**Single Family Residential.** This option defines the residential area as consisting of predominantly single family use per average dwelling unit.

**Multi-Family Residential.** This option defines the residential area as consisting of predominantly multiple-family use per average dwelling unit.

**No of People (Family Size).** The number of people living in the average dwelling unit within the sub-area. This value will be used to compute the number of dwellings within the sub-area, in conjunction with the population density and sub-area area, if the 'No. of Dwelling Units' flag is OFF. This value is also used in the residential flow calculation where water use is not metered.

**Family Income.** The income of the average family living within the sub-area, in thousands of dollars per year. The value is adjusted for the 1963 Consumer Price Index. The strength of residential flow is adjusted for this value.

**Market Value.** The market value of the average dwelling unit, in thousands of dollars. This value is used in computation of residential flows, regardless of water metering or water price. The value is adjusted to the 1960 Composite Construction Index.

**Metered Water Use.** This flag controls whether or not water usage within the sub-area is metered, and affects the residential flow calculations. Depending on this flag, the following parameters are required for water flow calculations:

Water Usage	Price of Metered Water	Additional Data Used
No	zero	None
No	non-zero Water Price	Consumer Price Index
Yes		Family Size

**Cost of Water.** The cost of the last thousand gallons [thousand cubic metres] of water per billing period for an average consumer within the sub-area, in cents/1000 gal [cents/1000 cu.m]. This data is used in the water flow calculations and is only required if water usage is metered.

**Predominant Landuse**

For each sub-area, a predominant land use should be defined. Sub-areas should include land with uniform land use and property valuation.

Each sub-area must be assigned to a single land use class for the purposes of generating dry weather flows. The land use types are pre-defined and classed as either residential, commercial, industrial, or parkland/open space. Residential land use is further subdivided into single-family and multi-family. Sub-areas should be reasonably homogenous in land use.

**Residential.** See [EPA-SWMM Residential Method](#).

**Commercial.** This option defines the predominant land use to be commercial for the purposes of generating dry weather flow. For commercial areas, sewage flows or water use must be entered directly. The average concentrations of pollutants is multiplied by 0.9 for a Commercial Landuse type.

In the case of a factory or commercial establishment, estimates of water use can be made by multiplying the number of employees by an established coefficient. A guide to these coefficients is given in the table below for commercial sub-areas:

Commercial Mean annual water use		
Category	Parameter	gpd/unit of Parameter
Barber Shops	Barber Chair	97.5
Beauty Shops	Station	532.0
Bus-Rail Depots	Sq ft	5.0
Car Washes Inside	Sq ft	4.78
Churches	Member	0.14
Golf-Swim Clubs	Member	33.3 - 100.0
Bowling Alleys	Alley	200.0
Colleges Resid.	Student	179.0
Hospitals	Bed	150.0 - 559.0

Hotels	Sq ft	0.256
Laundromats	Sq ft	6.39
Laundries	Sq ft	0.64
Medical Offices	Sq ft	0.62
Motels	Sq ft unit	0.33
Drive-In Movies	Car Stall	8.0
Nursing Homes	Bed	75.0 - 209.0
New Office Bldgs.	Sq ft	0.16
Old Office Bldgs.	Sq ft	0.27
Jails and Prisons	Occupant	10.0 - 15.0
	Person	200.0
Restaurants	Seat	10.0 - 90.0
Drive-In Restaurants	Car Stalls	109.0
Night Clubs	Person Served	2.0
Retail Space Sale	Sq ft	0.16
Schools, Elementary	Student	6.0 - 15.0
Schools, High	Student	10.0 - 19.9
YMCA-YWCA	Person	50.0
Service Stations Inside	Sq ft	0.49
Theatres	Employee	30.0
	Seat	5.0
Apartments Dwelling	Unit	50.0 - 195.0
Shopping Centres	Sq ft	0.20

**Industrial.** This option defines the predominant land use to be industrial for the purposes of generating dry weather flow. For industrial areas, sewage flows or water use must be entered directly. The average concentrations of pollutants is also multiplied by 0.9.

A guide for establishing water usage in industrial sub-areas is given in the following table:

<b>Standard Industrial Mean Annual Usage Coefficients</b>		
<b>Industrial Category</b>	<b>Classification Number</b>	<b>gpd/employee</b>
Meat Products	201	903.890
Dairies	202	791.350
Can, Frozen Food	203	784.739
Grain Mills	204	488.249
Bakery Products	205	220.608
Sugar	206	1433.611
Candy	207	244.306
Beverages	208	1144.868
Miscellaneous Foods	209	1077.360
Cigarettes	211	193.613
Weaving, Cotton	221	171.434

Weaving, Synthetics	222	344.259
Weaving, Wool	223	464.439
Knitting Mills	225	273.429
Textile Finish	226	810.741
Floor Covering	227	297.329
Yarn-Thread Mill	228	63.558
Miscellaneous Textile	229	346.976
Whl. Apparel Industry	230	20.000
Saw-Planing Mill	242	223.822
Millwork	243	326.420
Wood Containers	244	230.000
Miscellaneous Wood	249	144.475
Home Furniture	251	122.178
Furniture Fixture	259	122.178
Pulp Mills	261	13494.110
Paper Mills	262	2433.856
Paperboard Mills	263	2464.478
Paper Products	264	435.790
Paperboard Boxes	265	154.804
Building Paper Mills	266	583.355
Whl. Print Industry	270	15.000
Basic Chemicals	281	2744.401
Fibres, Plastic	282	864.892
Drugs	283	457.356
Soap-Toilet Goods	284	672.043
Paint Allied Products	285	845.725
Gum-Wood Chemicals	286	332.895
Agricultural Chemicals	287	449.836
Miscellaneous Chem.	289	984.415
Petroleum Refining	291	3141.100
Paving-Roofing	295	829.592
Tires, Tubes	301	375.211
Rubber Footware	302	82.592
Reclaimed Rubber	303	1031.523
Rubber Products	306	371.596
Plastic Products	307	527.784
Leather Tanning	311	899.500
Flat Glass	321	590.140
Pressed, Blown Glassware	322	340.753
Products of Purchased Glass	323	872.246
Cement, Hydraulic	324	279.469

Structural Clay	325	698.197
Pottery Products	326	326.795
Cement, Plaster	327	353.787
Cut Stone Products	328	534.789
Non-Metallic Mineral	329	439.561
Steel Rolling	331	494.356
Iron, Steel Foundries	332	411.052
Prime Non-Ferrous	333	716.626
Secondary Non-Ferrous	334	1016.596
Non-Ferrous Rolling	335	675.475
Non-Ferrous Foundries	336	969.586
Prime Metal Industries	339	498.331
Metal Cans	341	162.547

**Parkland.** This option defines the predominant land use to be parkland or open space for the purposes of generating dry weather flow. For parkland areas, sewage flows or water use must be entered directly.

**Process Flow Flag**

This option allows the addition of a process flow originating from the sub-area. The Process flow is added to the dry weather flow defined in this dialog or calculated for residential sub-areas. Process flow loads are added to generated dry weather flow loads.

The screenshot shows a dialog box titled "SubArea Process Flow: MH-04". At the top right are standard window controls (minimize, maximize, close). Below the title bar, there is a "Flow:" label followed by a text input field containing the number "0". Underneath the input field is a table with two columns: "Pollutant" and "Concentration". The table is currently empty. At the bottom of the dialog box are two buttons: "OK" and "Cancel".

**Flow.** Process flows in cfs [cms], with their pollutant concentrations, are additional measured point source inflows into the sewer system. When study area data is used to adjust dry-weather flow estimates from sub-areas, process flows are subtracted from measured total flows to compute the average dry weather flow from the total study area.

**Pollutant Name.** Pollutant name reference. These pollutants are defined from the 'Pollutant List' item in Job Control.

**Pollutant Concentration.** The constant concentration of the given pollutant in the constant or process inflow. The concentration is given in units consistent with the pollutant, as defined in the Sanitary Pollutants Global Database POLLUTANT\_TRANSPORT>(w95sec).

## Save Options

### ***Save Results for Review Flag***

When this flag is ON, model results are saved in a special file for graphical post-processing, via the Review Results menu command. The Save ALL Results for Review flag in **Sanitary Job Control** overrides this option.

### ***Save Outflows to SWMM Interface File Flag***

This flag will store outflows and concentrations at this node to a SWMM interface file. The interface file can be used as input into other networks or other layers of the name network.

## Print Control

### ***Print Input Hydrographs and Pollutographs Flag***

When this flag is ON, the Input Hydrographs and Pollutographs at this node are printed to the output file.

### ***Print Output Hydrographs and Pollutographs Flag***

When this flag is ON, the Output Hydrographs and Pollutographs at this node are printed to the output file.

## Gauged Data

Measured time series data can be entered directly at a node or link for comparison with model results. This time series is displayed on graphs created with the [Review Results](#) tools. Note that the scales of the x (time) and y (values) axes on the review results graphs are based on the ranges of the model results. Gauged data outside the ranges of the model results will not appear on the plots.

Read more about this option in the [Gauged Data](#) section.