



WinSLAMM v 10.2 User's Guide

Parameter Files

Parameter Files

The model uses several parameter files to describe the runoff volume and pollutant load generation. The parameter files are based on years of research data from source area and control device monitoring. The user can view each of these files through the Parameter File Editor.

Model files can be calibrated to project-site monitoring data through modification of the parameter files.

Documentation describing the calibration process can be found at:

http://www.winslamm.com/Select_documentation.html

Parameter Files

Particle Size Distribution Editor

Critical Particle Size Parameter File

Use Shift plus the arrow keys to move through the grid

Select File

C:\PROGRAM FILES\WINSLAMM\MIDWEST.CPZ

File Description:

Save File Enter Particle Size (100 - 0)

Save File As...

Print to Text File

View Text File

Continue

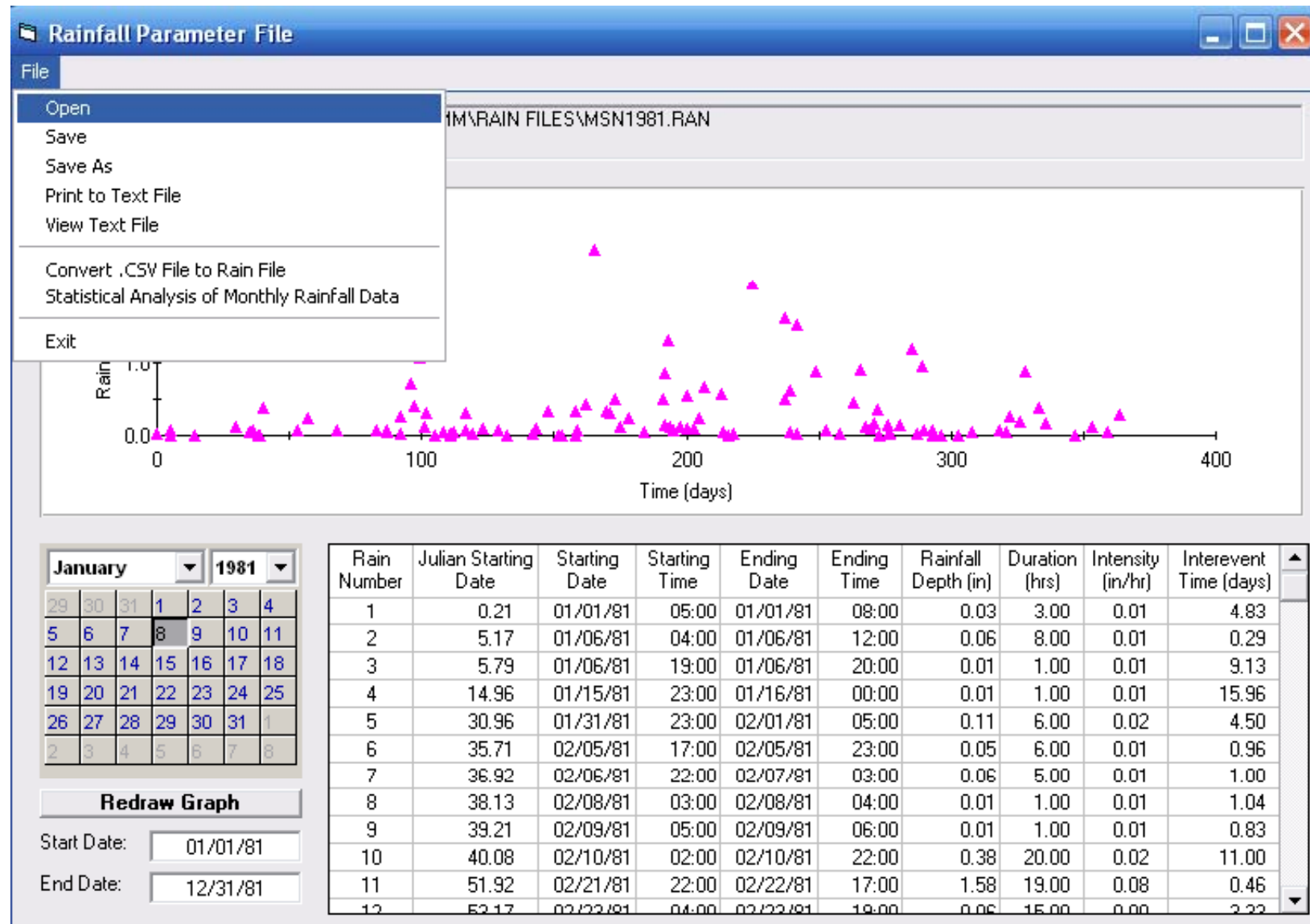
Cancel

Percent Greater Than Particle Size

Entry Number	Particle Size (microns)	Percent Greater Than Particle Size
1	1	100
2	2	97
3	3	93
4	4	91
5	5	89
6	6	86
7	7	84
8	8	82
9	9	80
10	10	78
11	11	75
12	12	73
13	13	71
14	14	69
15	15	68
16	20	62
17	25	57
18	30	53
19	35	49
20	40	47

Parameter Files

Rainfall File Editor



Average Annual Rainfall Analysis

The program will calculate a series of statistics for the rainfall data entered. The user can review the rainfall data and statistics and determine the average annual year of rainfall.

Parameter Files

Rainfall File Editor

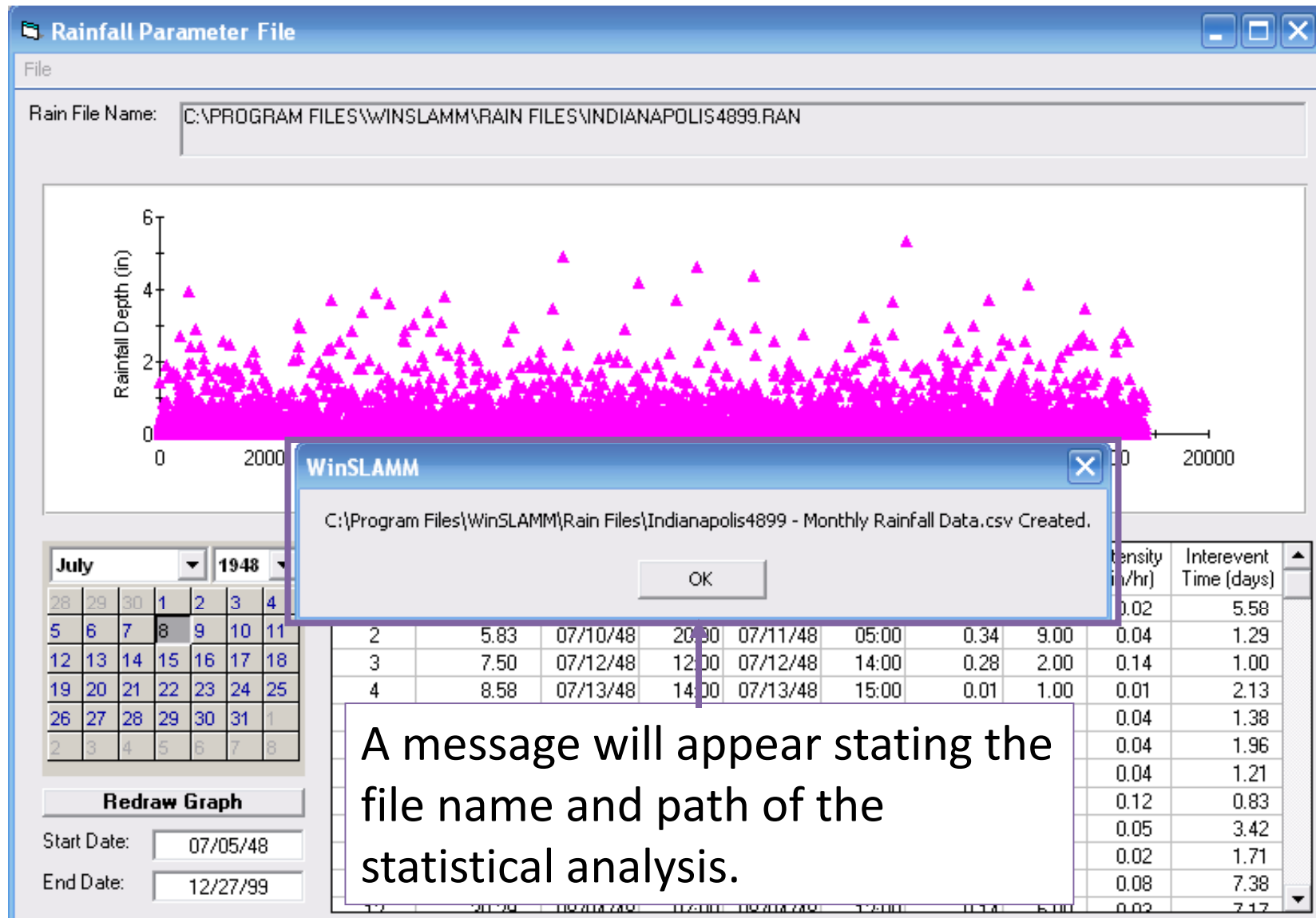
For areas where an Average Annual Year of Rainfall Data file is not available, the user can perform a statistical analysis to determine an Average Annual Year of Rainfall.

First, open the rainfall file with the long term rainfall data in it. Next, select Statistical Analysis of Monthly Rainfall Data.

Rain Number	Julian Starting Date	Starting Date	Time	Amount (inches)
1	0.08	07/05/48	22:00	0.12
2	5.83	07/10/48	10:00	0.83
3	7.50	07/12/48	12:00	0.12
4	8.58	07/13/48	06:00	5.00
5	10.75	07/15/48	11:00	0.24
6	12.29	07/17/48	01:00	4.00
7	14.50	07/19/48	00:00	0.08
8	15.92	07/20/48	01:00	4.00
9	17.25	07/22/48	22:00	0.32
10	20.88	07/25/48	18:00	4.00
11	22.75	07/27/48	07:00	0.14
12	20.29	08/04/48	12:00	5.00

Parameter Files

Rainfall File Editor



A message will appear stating the file name and path of the statistical analysis.

Parameter Files

Rainfall File Editor

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Deviation From Average	Absolute Deviation
1949	0.00	2.38	3.16	1.62	2.75	4.18	2.95	6.64	2.52	4.25	0.89	4.32	35.66	-4.41	4.41
1950	12.72	5.29	3.89	3.43	2.68	6.55	2.15	4.08	4.96	0.98	5.52	3.00	55.25	15.18	15.18
1951	3.07	3.64	3.16	3.26	2.78	5.77	3.12	2.43	2.39	3.28	5.21	4.68	42.79	2.72	2.72
1952	3.69	2.71	5.77	3.99	3.90	6.17	2.45	2.46	4.62	0.64	3.87	3.01	43.28	3.21	3.21
1953	2.57	1.93	5.41	3.22	4.46	4.86	6.19	1.76	1.44	1.70	2.29	2.42	38.25	-1.82	1.82
1954	3.40	2.64	2.99	2.34	2.47	0.66	2.40	2.73	0.96	3.92	1.32	2.10	27.93	-12.14	12.14
1955	2.09	2.36	2.24	3.31	3.37	1.79	5.24	1.21	6.01	4.27	5.32	0.70	37.91	-2.16	2.16
1956	1.05	3.99										3.86	34.64	-5.43	5.43
1957	2.97	1.85										6.70	55.68	15.61	15.61
1958	1.48	0.41										0.66	38.30	-1.77	1.77
1959	4.49	3.22										2.90	39.41	-0.66	0.66
1960	2.35	3.28										1.88	33.41	-6.66	6.66
1961	1.22	3.15										3.05	46.64	6.57	6.57
1962	4.58	2.27										1.09	41.26	1.19	1.19
1963	1.20	0.53										0.86	32.78	-7.29	7.29
1964	2.04	2.01										3.05	36.35	-3.72	3.72
1965	3.86	4.33										3.17	38.31	-1.76	1.76
1966	0.93	2.92										5.23	32.52	-7.55	7.55
1967	1.81	1.84										4.92	34.75	-5.32	5.32
1968	2.96	1.51										4.18	41.05	0.98	0.98
1969	6.19	1.23										2.09	42.82	2.75	2.75
1970	1.12	1.86										2.07	32.93	-7.14	7.14
1971	1.98	5.35										6.02	37.48	-2.59	2.59
1972	1.57	1.15										2.83	40.27	0.20	0.20
1973	2.27	1.11										4.27	42.31	2.24	2.24
1974	3.39	2.58										2.62	41.31	1.24	1.24
1975	4.37	4.13										3.71	46.72	6.65	6.65
1976	2.29	2.90										0.45	33.72	-6.35	6.35
1977	4.59	2.69	2.99	4.91	2.78	2.86	2.57	4.47	4.69	4.57	2.84	4.44	39.45	4.99	4.99

This shows an example of the data provided by the Statistical Analysis for each year of rainfall in the rainfall file. The top part of the spreadsheet calculates statistics for the rainfall values in each month. The bottom part of the spreadsheet calculates statistics for the number of rain events in each month.

Parameter Files

Rainfall File Editor

May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Deviation From Average	Absolute Deviation	Count	Average	Std Deviation	COV	Min	Max
10	14	7	9	10	8	5	11	103	-14.14	14.14	12	8.58	3.53	0.41	0	14
15	13	9	9	14	5	11	11	145	27.86	27.86	12	12.08	3.37	0.28	5	17
11	16	8	7	7	6	10	11	128	10.86	10.86	12	10.67	3.47	0.33	6	16
17	12	7	8	4	5	10	14	116	-1.14	1.14	12	9.67	3.89	0.40	4	17
14	8	6	6	5	4	8	8	113	-4.14	4.14	12	9.42	4.83	0.51	4	20
14	5	7	16	5	11	10	12	127	9.86	9.86	12	10.58	3.37	0.32	5	16
9	10	11	7	7	8	8	5	111	-6.14	6.14	12	9.25	2.34	0.25	5	13
15	9	12	7	5	3	7	11	116	-1.14	1.14	12	9.67	3.65	0.38	3	15
15	20	8	8	9	4	9	11	133	15.86	15.86	12	11.08	4.52	0.41	4	20
12	13	15	8	9	7	9	6	113	-4.14	4.14	12	9.42	3.45	0.37	3	15
13	4	10										9.75	2.49	0.26	4	13
13	10	5										7.92	3.00	0.38	3	13
12	9	16										10.08	3.29	0.33	6	16
8	8	7										8.33	1.92	0.23	6	13
8	7	11										7.42	3.73	0.50	1	16
6	12	11										9.08	4.58	0.50	2	17
8	8	8										9.17	2.48	0.27	6	14
6	7	9										7.92	2.39	0.30	4	13
12	8	10										9.50	3.15	0.33	6	15
18	9	8										9.25	3.52	0.38	5	18
9	13	10										8.67	2.46	0.28	5	13
11	9	12										9.75	2.22	0.23	5	12
8	10	13										9.08	3.53	0.39	4	15
10	8	6										11.25	2.86	0.25	6	15
16	13	9										11.58	4.64	0.40	6	19
17	13	6										10.67	3.68	0.34	6	17
11	9	7										9.75	2.93	0.30	5	14
10	11	10	6	6	5	4	9	100	-17.14	17.14	12	8.33	3.08	0.37	4	15
8	11	7	12	9	8	16	14	127	9.86	9.86	12	10.58	3.03	0.29	7	16
13	6	11	12	6	12	7	13	131	13.86	13.86	12	10.92	3.12	0.29	6	16
9	11	16	13	2	14	12	10	146	28.86	28.86	12	12.17	4.26	0.35	2	18
..	..	-	..	-	-	..	-	-	..

This shows more data provided by the Statistical Analysis for each year of rainfall in the rainfall file. The user can use the data in this spreadsheet to determine which year of rainfall represents an average annual year.

Parameter Files

Street Delivery File Editor

Street Delivery Parameter File

C:\WINSLAMM FILES\WI_RES AND OTHER URBAN DEC06.STD

File Description: Adjustments on the street file where std vaules. Dec 2006.

Freeway Delivery File **Fraction Reduction in Street Washoff Yield for Different Sized Rains**

Rain Depth (in)	0.04	0.08	0.12	0.20	0.39	0.59	0.79	0.98	1.2	1.6	2.0	2.4	2.8	3.2
Rain Depth (mm)	1	2	3	5	10	15	20	25	30	40	50	60	70	80
Smooth Textured Streets	0.96	0.95	0.90	0.75	0.70	0.50	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Intermediate Textured	0.96	0.95	0.90	0.75	0.70	0.50	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rough Textured Streets	0.96	0.95	0.90	0.75	0.70	0.50	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Very Rough Textured	0.96	0.95	0.88	0.75	0.65	0.55	0.25	0.08	0.00	0.00	0.00	0.00	0.00	0.00

Use Shift plus the arrow keys to move through the grid


Fraction

This file contains the washoff coefficients for the various street textures and rainfall depths. This file is used for the Street Source Area only.

Parameter Files

Runoff Coefficient File Editor

Runoff Coefficient Parameter File



File Description:

Area Types (AT):

AT 1: Connected flat roofs AT 5: Pervious areas - Sandy soils AT 9: Intermediate textured streets
 AT 2: Connected Pitched Roofs AT 6: Pervious areas - Silty soils AT 10: Rough textured streets
 AT 3: Directly connected impervious areas AT 7: Pervious areas - Clayey soils AT 11: High Traffic Urban Paved Areas
 AT 4: Directly connected unpaved ar Pervious Areas

Runoff Coefficient Data
 Drainage Efficiency Coefficient Data

Volumetric Runoff Coefficients for Rains (in. and mm.)

Rain (in)	0.01	0.08	0.12	0.20	0.39	0.59	0.79	0.98	1.2	1.6	2.0	2.4	2.8	3.2	3.5	3.9	4.9
Rain (mm)	1	2	3	5	10	15	20	25	30	40	50	60	70	80	90	100	125
AT 1	0.00	0.15	0.45	0.64	0.77	0.79	0.83	0.84	0.86	0.88	0.90	0.91	0.93	0.94	0.94	0.95	0.96
AT 2	0.25	0.63	0.75	0.85	0.93	0.95	0.96	0.97	0.98	0.98	0.99	0.99	0.99	0.99	0.99	0.99	0.99
AT 3	0.35	0.44	0.49	0.56	0.64	0.69	0.73	0.77	0.81	0.86	0.89	0.91	0.92	0.93	0.94	0.94	0.95
AT 4	0.00	0.00	0.00	0.00	0.47	0.64	0.72	0.77	0.81	0.86	0.89	0.91	0.92	0.93	0.94	0.94	0.95
AT 5	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
AT 6	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.04	0.05	0.05	0.20	0.20	0.20	0.20	0.20	0.20	0.20
AT 7	0.00	0.00	0.00	0.00	0.02	0.04	0.06	0.07	0.08	0.12	0.20	0.20	0.20	0.20	0.20	0.25	0.30
AT 8	0.41	0.48	0.64	0.67	0.75	0.89	0.91	0.91	0.92	0.92	0.93	0.93	0.94	0.95	0.96	0.97	0.99
AT 9	0.41	0.48	0.64	0.67	0.75	0.89	0.91	0.91	0.92	0.92	0.93	0.93	0.94	0.95	0.96	0.97	0.99
AT 10	0.18	0.39	0.47	0.53	0.60	0.64	0.67	0.70	0.73	0.80	0.84	0.86	0.88	0.90	0.91	0.92	0.93
AT 11	0.55	0.73	0.77	0.83	0.87	0.97	0.97	0.97	0.98	0.98	0.98	0.98	0.99	0.99	0.99	0.99	1.00
AT 12	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.33	0.40	0.50	0.55	0.60	0.62	0.65	0.65	0.65	0.65

Fraction Use Shift plus the arrow keys to move through the grid

This file contains the runoff coefficients for the Source Areas in the model.

The program multiplies the area of the Source Area times the Runoff coefficient for each rainfall event times a conversion factor to determine the Runoff Volume for each source area and rainfall event.

Parameter Files

Particulate Solids Concentration File Editor

Particulate Solids Concentration Parameter File

Select File C:\WinSLAMM Files\WJ_AVG01.pscx

File Description: Change based on several source areas dec. 1999

Area Types (AT):

AT 1: Roofs	AT 5: Paved Driveways	AT 10: Other Pervious Areas
AT 2: Paved Parking	AT 6: Paved Sidewalks and Walks	AT 11: Other Directly Connected Impervious Areas
AT 3: Unpaved Parking, driveways, and walkways	AT 7: Large Landscaped Areas	AT 12: Other Partially Connected Impervious Areas
AT 4: Paved Playgrounds	AT 8: Small Landscaped Areas	AT 13: Paved Lane and Shoulder Areas
	AT 9: Undeveloped Areas	AT 14-23: Other Impervious Areas

Residential Land Use
 Commercial Land Use
 Other Urban Land Use
 Institutional Land Use
 Industrial Land Use
 Freeways Land Use

Area Type Multiplier ==> Enter Row Number - AT Enter Multiplier Fraction:

Particulate Solids Concentration (mg/L) Values for Rains (in. and mm.)

Rain (in):	0.04	0.08	0.12	0.20	0.39	0.59	0.79	0.98	1.2	1.6	2.0	2.4	2.8	3.2
Rain (mm):	1	2	3	5	10	15	20	25	30	40	50	60	70	80
AT 1	37	37	37	37	37	37	37	37	37	37	37	37	37	37
AT 2	130	130	130	130	130	130	130	130	130	130	130	130	130	130
AT 3	154	154	154	154	154	154	154	154	154	154	154	154	154	154
AT 4	154	154	154	154	154	154	154	154	154	154	154	154	154	154
AT 5	154	154	154	154	154	154	154	154	154	154	154	154	154	154
AT 6	75	75	75	75	75	75	75	75	75	75	75	75	75	75
AT 7	227	227	227	227	227	227	227	227	227	227	227	227	227	227
AT 8	227	227	227	227	227	227	227	227	227	227	227	227	227	227
AT 9	16	16	16	16	16	16	16	16	16	16	16	16	16	16
AT 10	227	227	227	227	227	227	227	227	227	227	227	227	227	227
AT 11	154	154	154	154	154	154	154	154	154	154	154	154	154	154
AT 12	154	154	154	154	154	154	154	154	154	154	154	154	154	154
AT 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AT 15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AT 16	0	0	0	0	0	0	0	0	0	0	0	0	0	0

This file contains the Particulate Solids Concentrations for each Source Area within each Land Use in the model.

The program multiplies the Runoff Volume of each Source Area within each Land Use times the Particulate Solids Concentration for each rainfall event times a conversion factor to determine the Particulate Solids Loading for each Source Area and rainfall event.

Parameter Files

Pollutant File Editor

Pollutant Parameter File

Select File C:\WinSLAMM Files\WI_GEO02.ppx

File Description: Update of the pollutant file using USGS monitored number from several projects.

Particulate Pollutants

Phosphorus

TKN

COD

Chromium

Copper

Filterable Pollutants

Lead

Zinc

Cadmium

Pyrene

Other 3

Other 4

Other 5

Other 6

Solids

Phosphorus

Nitrates

TKN

COD

Fecal Coliform Bacteria

Chromium

Copper

Lead

Zinc

Cadmium

Other 2

Other 3

Other 4

Other 5

Other 6

Other Label:

Pollutant Units: (mg/kg)

Land Use Multiplier ==> Enter Land Use Column Number: Enter Multiplier Fraction: **Apply Multiplier**

Pollutant: Particulate Phosphorus (mg/kg)

Land Use Column Number ==> 1 2 3 4 5 6

Land Use ==>	1 Residential	2 Institutional	3 Commercial	4 Industrial	5 Other Urban	6 Freeway
Roofs - Mean	3293.00	5573.00	5573.00	2226.00	3293.00	2226.00
Roofs - COV	1.11	1.24	1.24	1.41	1.11	1.41
Paved Parking/Storage - Mean	1423.00	1423.00	1423.00	1017.00	1423.00	1017.00
Paved Parking/Storage - COV	0.89	0.89	0.89	0.38	0.89	0.38
Unpaved Parking/Storage - Mean	2434.00	2434.00	2434.00	2434.00	2434.00	2434.00
Unpaved Parking/Storage - COV	0.79	0.79	0.79	0.79	0.79	0.79
Playground - Mean	2434.00	2434.00	2434.00	2434.00	2434.00	2434.00
Playground - COV	0.79	0.79	0.79	0.79	0.79	0.79
Driveways - Mean	2434.00	2434.00	2434.00	2434.00	2434.00	2434.00
Driveways - COV	0.79	0.79	0.79	0.79	0.79	0.79
Sidewalks/Walks - Mean	2434.00	2434.00	2434.00	2434.00	2434.00	2434.00
Sidewalks/Walks - COV	0.79	0.79	0.79	0.79	0.79	0.79
Streets or Freeway High Traffic Hwys - Mean	2305.00	1558.00	1558.00	1153.00	2305.00	1121.00

Print to Text File **Save File** **Save File As...** **Cancel** **Continue**

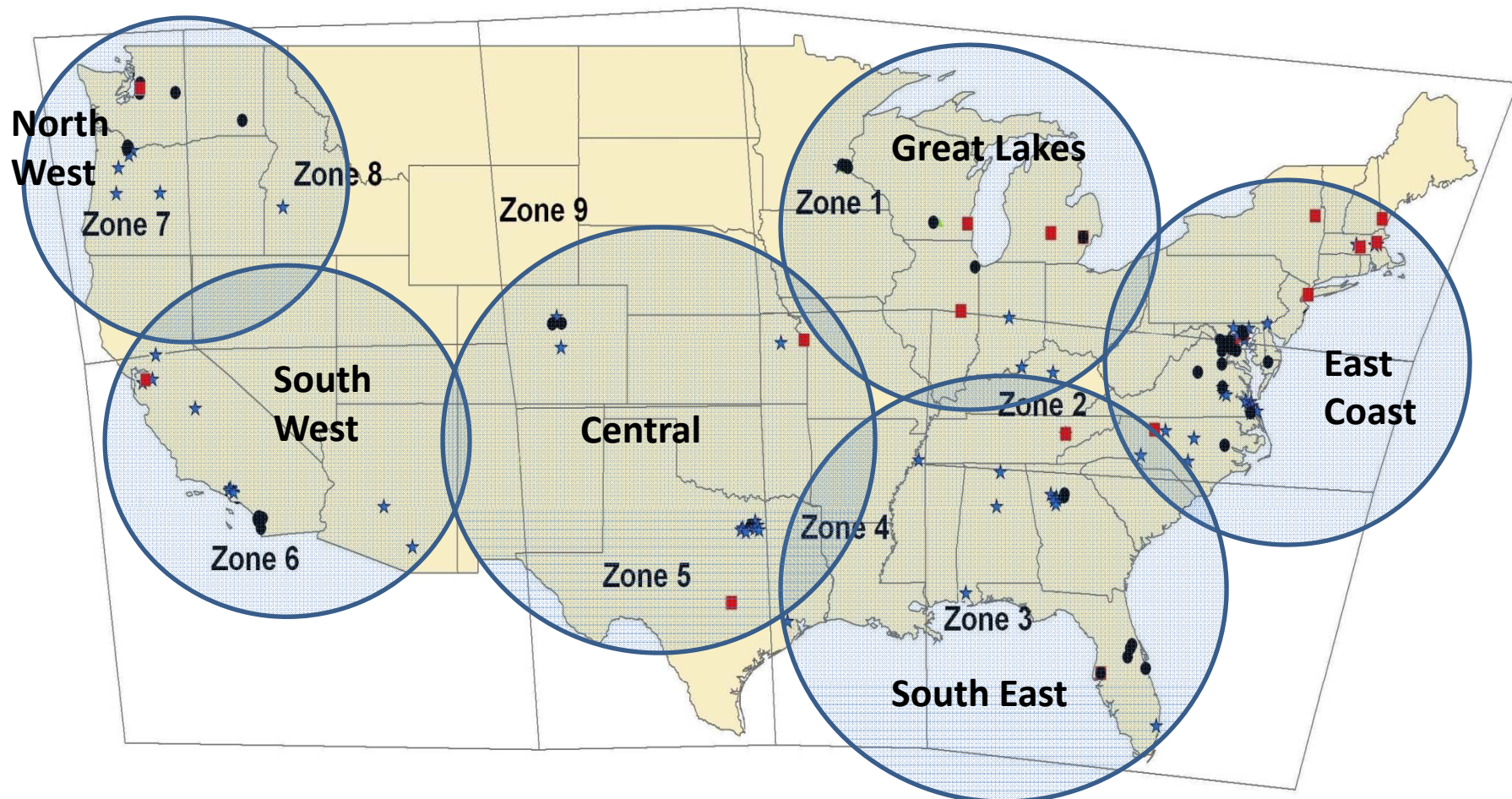
This file contains the Pollutant fractions for each Source Area within each Land Use in the model.

The program multiplies the Particulate Solids Loading of each Source Area within each Land Use times the Pollutant fraction for each rainfall event times a conversion factor to determine the Pollutant Loading for each Source Area and rainfall event.

Parameter Files

The program comes with several parameter files. Choose the parameter file closest to your project location. If using the program outside the United States, please contact PVA for the most appropriate parameter files for your geographic location.

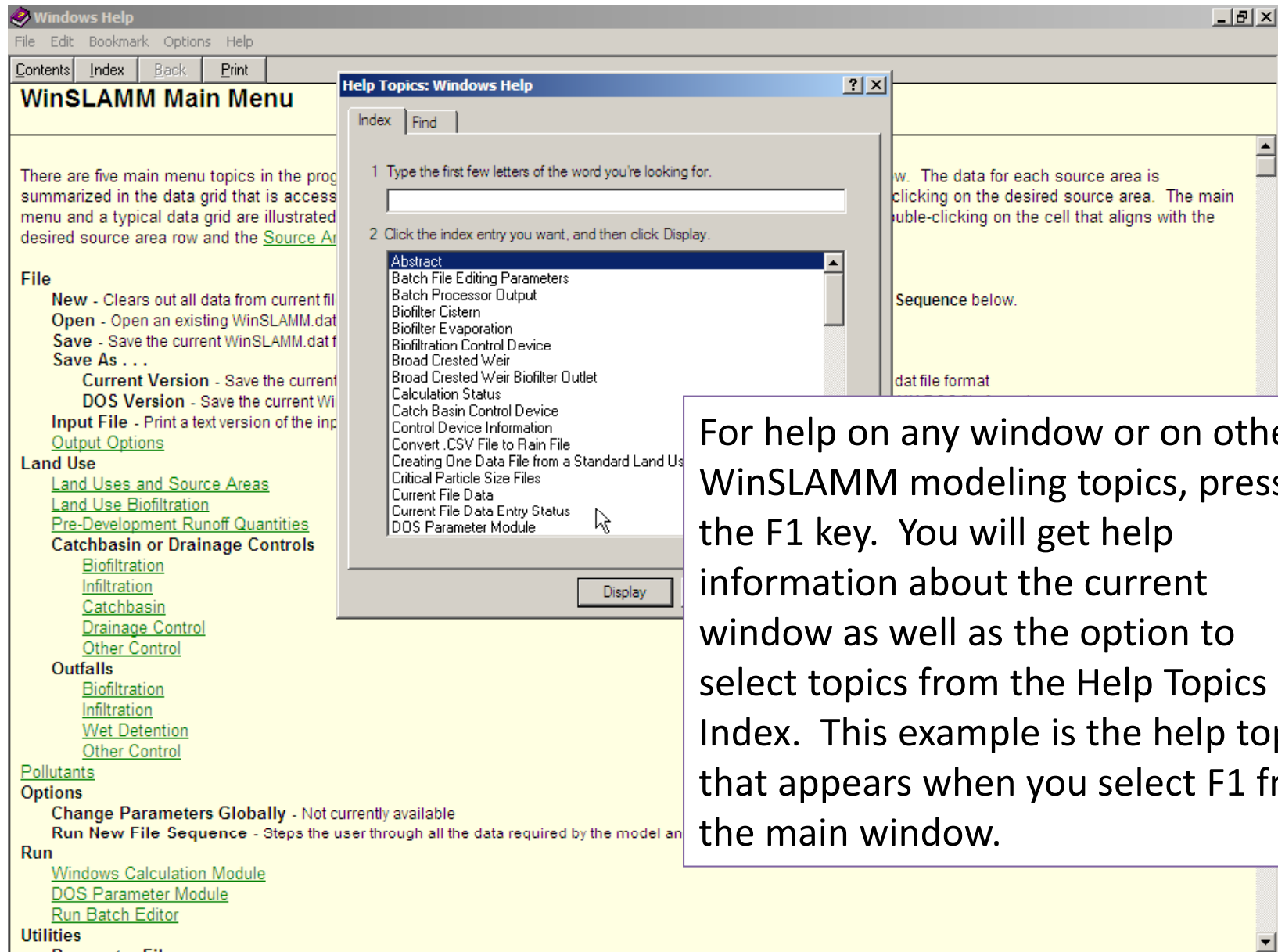
Information regarding the development of the parameter files can be found at:
http://www.winslamm.com/Select_documentation.html



National Stormwater Quality Database

For Additional Information
See . . .

The Context-Sensitive Help in the Program



For help on any window or on other WinSLAMM modeling topics, press the F1 key. You will get help information about the current window as well as the option to select topics from the Help Topics Index. This example is the help topic that appears when you select F1 from the main window.



Questions?

For model information, go to www.winslamm.com
Remember to Press the "F1" to access the Help File