

APPENDIX C

Estimated Peak Flow Rates for Selected Plan at each POC

Methodology

Defining Points of Connection

- The Point of Connections (POCs) represents the physical connections that routes flow between the Municipal Collection System and ALCOSAN’s Conveyance and Treatment System. This typically occurs near a regional regulating structure or near a direct hydraulic connection to the regional interceptor system.
- A Point of Connection Sewershed (POC Shed) was defined as the sewer and overland runoff drainage area tributary to the POC. When an area was tributary to multiple POCs, the preferred hydraulic dry weather flow path was used to delineate the POC Shed.
- The Chartiers Creek Basin Planner identified several future developments with sewer expansion areas. A subset of these areas is not associated with any specific existing POCs and were grouped into a single representative line item in the table labeled “CC Growth Areas”.
- For ALCOSAN POC T-09, rather than one total flow rate the flow rates are provided for the municipal points of connection to the Thompson Run interceptor that connect to the ALCOSAN system at T-09.

Predicting Peak Municipal Flow Rates by Point of Connection upon Implementation of the WWP

- The Hydrologic and Hydraulic Model of the Selected Plan (as described in Section 9.6) was used to estimate the peak municipal flow rate at each POC to the Conveyance and Treatment System, upon implementation of the Wet Weather Plan. These flow rates are preliminary as they are based on the preliminary preferred/assumed municipal control strategies as described in Section 9.3.3 (as interpreted and applied in ALCOSAN’s model). These peak flows were used along with simulated contributing volumes for the preliminary sizing of downstream ALCOSAN facilities and conveyances. These downstream ALCOSAN facilities and conveyance receive attenuated hydrographs, where the peak flow for the composite hydrograph is expected to be reduced due to hydraulic routing losses and staggered timing of the peak flows for constituent hydrographs. Hence, the peak flows rates presented in this appendix do not represent the basis of design for ALCOSAN’s proposed facilities and conveyances.
- The typical year model simulations used future inflows (2046) and typical year precipitation.

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- For the design storm model simulations, the summer and winter 2-year design storms were applied to the following time periods, thus making use of actual dry weather flows and assumed evaporation for these time periods:
 - Summer – applied between August 16-24, 2003
 - Winter – applied between January 18-26, 2003, but with all precipitation treated as rainfall regardless of air temperature
- The reported peak flow rate for sanitary sewer points of connection represents the higher of the simulated summer and winter peak flow rates. The reported peak flow rate for combined sewer points of connection represent the peak flow rate in the typical year simulation.
- For POCs with ALCOSAN regulators, the peak municipal flow rates represent flows upstream of the regulator.
- For POCs where the model includes a proposed municipal sewer to bring more flow to an existing POC, the flow time series in the existing and proposed municipal sewer were added together and then the peak of the total flow time series was reported.
- For the “CC Growth Areas” POC, which collectively represents sewer expansion areas in the CC planning basin that are not associated with any specific existing POC, all the simulated flows from these areas were summed and then a single peak of the summed flow was reported.
- The flow rates represent the maximum 15-minute peak flow rate reported in the model during the simulation period.
- The peak flows reported in this appendix were based on model runs with simulated system boundary conditions, not a free discharge condition.
- For some POCs under some wet weather conditions, the hydraulic grade line in the ALCOSAN system may be higher than the crown of the municipal pipe at the point of connection. In some cases, this surcharge may result in estimated peak flow rates that are lower than predicted by the municipality using a free discharge assumption.

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Chartiers Creek Basin Estimated Peak Flow Rates for Selected Plan at each Point of Connection				
ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)		ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)
C-02 ¹	2.9		C-23	11
C-03	4.1		C-23-08	0.079
C-04	31		C-23-14	0.22
C-05	55		C-24	14
C-05A	63		C-25	300
C-06	4.3		C-26	3.5
C-07	49		C-26A	8
C-08	15		C-27	20
C-09	250		C-28	7.6
C-10	23		C-29	24
C-11	130		C-30	3.8
C-12	47		C-31	7.4
C-13	65		C-33	0.018
C-13-02	21		C-34	0.14
C-13-06	0.082		C-34A	44
C-13-12	5		C-35	18
C-13A-02	values presented with adjacent C-14		C-36	0.043
C-13A-04	values presented with adjacent C-14		C-37	6.8
C-14 ¹	38		C-38	0.01
C-14-06	0.51		C-38A	45
C-15	22		C-38B	34
C-15-04	1.1		C-39	NA
C-19	71		C-40 ¹	15
C-20	68		C-41	5.9
C-20-02	1.3		C-42	7.6
C-21	4.1		C-43	1.7
C-22	230		C-44	2.2

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ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)		ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)
C-44-08	98		C-53-08	0.17
C-44-12	0.042		C-53-10	45
C-45	0.79		C-54	3.8
C-45A	6.7		C-54-06	0.31
C-45B-04	9.3		C-54-07	0.3
C-45B-08	16		C-54-12	6.4
C-46	3.7		C-54-16	23
C-47	0.55		C-54-18	0.035
C-48	11		C-54-20	1
C-49	19		C-55	2.5
C-50	0.65		C-55-02	18
C-50A	0.067		O-06PS	110
C-50A-06	2.4		O-06TS	10
C-50A-12	0.39		O-08 ²	13
C-50B	3.3		O-09 ¹	9.1
C-51PS	0.98		O-10 ¹	5.4
C-51TS	NA		O-11 ¹	17
C-52	1.9		O-13 ²	150
C-53	25		CC Growth Areas	12
C-53-06	2			

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Lower Ohio Girty's Run Basin Estimated Peak Flow Rates for Selected Plan at each Point of Connection				
ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)		ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)
A-62PS	0.45		O-16	2.8
A-62TS	6		O-16Z	4
A-63	NA		O-17	0.019
A-64	16		O-18	25
A-65	6.1		O-18Y	0.32
A-66 ³	NA		O-18Z	1
A-67	97		O-19	9.7
O-01	3.2		O-20	4.6
O-01-08	1.3		O-21	5.2
O-02	4		O-22	1.8
O-03	19		O-23	0.52
O-03-02	1.6		O-24	2
O-04	41		O-25PS	6.9
O-05A	5.1		O-25TS	3.1
O-05B	3.5		O-26	42
O-15	26		O-26A	4.8

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Main Rivers Basin				
Estimated Peak Flow Rates for Selected Plan at each Point of Connection				
ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)		ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)
A-01	11		A-22	850
A-02	1.8		A-23	130
A-03	2.3		A-25	31
A-04	26		A-26	25
A-05	7.6		A-27	14
A-06	6.5		A-27Z	15
A-07	8.6		A-28	78
A-08	3.6		A-29	60
A-09	31		A-29Z	65
A-10	15		A-30	11
A-11	7		A-31	15
A-12	47		A-32	56
A-13	6.8		A-33	18
A-14	50		A-34	27
A-14Z	12		A-46	1.5
A-15	23		A-47	30
A-16	26		A-48	170
A-17	25		A-49	8.1
A-18	38		A-50	24
A-18X	18		A-51	48
A-18Y	3.8		A-55	NA
A-18Z	2.5		A-56	9.8
A-19X	40		A-58	160
A-19Y	18		A-59	15
A-19Z	4.7		A-59Z	7.7
A-20	52		A-60	150
A-20Z	0.27		A-61	17
A-21	41		M-01	11

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Main Rivers Basin				
Estimated Peak Flow Rates for Selected Plan at each Point of Connection				
ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)		ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)
M-02	4.5		M-19Y	44
M-03	76		M-20	7.8
M-04	6		M-21	31
M-04A	1.7		M-22	17
M-04B	0.47		M-23	4.5
M-04D	0.58		M-24	1.1
M-05	140		M-26	28
M-06	73		M-27	42
M-07	13		M-28	0.75
M-08	5.5		M-29	450
M-10	90		O-27	260
M-11	8.3		O-28	0.63
M-12	23		O-29PS	4.3
M-12Z	1.9		O-29TS	11
M-13	9.7		O-30PS	5.6
M-14	8.4		O-30TS	1.6
M-15	7.6		O-31	6.6
M-15Z	6.1		O-32	38
M-16	150		O-33	90
M-17	8.8		O-34	100
M-18	6.4		O-35	4.2
M-19	160		O-36	13
M-19-10	0.7		O-37	11
M-19B	52		O-38	57
M-19B-06	0.33		O-39	35
M-19B-10	0.84		O-40	3.5
M-19W	120		O-41	27
M-19X	18		O-43	13

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Saw Mill Run Basin Estimated Peak Flow Rates for Selected Plan at each Point of Connection				
ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)		ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)
MH-03A	0.13		S-30	1.9
MH-08	0.12		S-31	9.8
MH-09B	0.7		S-32	180
MH-11	6.4		S-33	64
MH-18	32		S-34	9.8
MH-21	0.11		S-35	29
MH-47	0.14		S-36	47
MH-55	0.74		S-37	14
MH-66	3.4		S-38	77
MH-68	7.9		S-39	36
MH-70	1.3		S-40	26
MH-77	5.6		S-41	18
MH-80	1.2		S-42	0.42
MH-88	2.7		S-42A	22
MH-89	24		S-46	32
MH-99A	1.1		SMR83	2.3
MH-N02	17		SMR-CS-02	2.1
MH-N03	3.2		SMR-CS-03	1.2
O-14Z	13		SMR-CS-06	0.75
S-15	57		SMR-CS-08	1
S-16LC	0.57		SMR-CS-14	3.7
S-18	5.7		SMR-CS-16	1.9
S-23	11		SMR-CS-20	2
S-24	81		SMR-CS-27	0.89
S-28	6.5		SMR-CS-31	2.1
S-29	120		SMR-CS-33	values presented under adjacent SMR-CS-31

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Main Rivers Basin				
Estimated Peak Flow Rates for Selected Plan at each Point of Connection				
ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)		ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)
SMR-CS-34	11		SMR-CS-50	0.54
SMR-CS-37	1.6		SMR-CS-52	1.8
SMR-CS-39A	values presented with adjacent SMR-CS-37		SMR-CS-54	6.6
SMR-CS-42	1.5		SMRE-40	53
SMR-CS-43	0.31		SMRE-61	0.76
SMR-CS-46	0.98			

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Turtle Creek Basin Estimated Peak Flow Rates for Selected Plan at each Point of Connection				
ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)		ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)
T-01	80		T-26A	6.2
T-02	88		T-26A-10	19
T-03	12		T-26B	6
T-04	29		T-27	4.2
T-04-02	9.1		T-27-02 ⁴	1.4
T-05-02	4.6		T-29	1.4
T-07	17		T-29A-02	1.4
T-08	0.66		T-29A-08	1.1
T-10	120		T-29A-10	24
T-11	2.5		T-31	5.4
T-12	16		T-32	0.59
T-13	4.4		T-33	0.72
T-14	12		TR-01 ⁵	5.4
T-15	9.7		TR-01-06z ⁵	39
T-16	1.9		TR-01-16 ⁵	1.8
T-16A	10		TR-02 ⁵	1.8
T-16-02	values presented with adjacent T-18		TR-02-04 ⁵	values presented with adjacent TR-03
T-17	20		TR-03 ^{2, 5}	4.5
T-18	57		TR-03-08 ⁵	0.94
T-19	9.8		TR-04 ⁵	2.6
T-21	3.2		TR-04-14 ⁵	1.2
T-22	47		TR-04-22 ⁵	0.84
T-23	14		TR-04-32 ⁵	2.3
T-24	15		TR-05 ⁵	1.8
T-25	13		TR-05-04 ⁵	0.099
T-25-10	0.86		TR-06 ⁵	10
T-26	13			

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Upper Allegheny Basin Estimated Peak Flow Rates for Selected Plan at each Point of Connection				
ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)		ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)
A-35	79		A-71	27
A-36	19		A-72	17
A-37	9.1		A-73	32
A-37Z	32		A-74	15
A-38	10		A-74A	3.1
A-40	13		A-75	71
A-41	430		A-76	37
A-42-02	11		A-77	20
A-42A	10		A-78	28
A-42A-30	3		A-78-02	7.9
A-42L	770		A-78-14	0.65
A-42U	490		A-80	1.9
A-44-02	0.25		A-81-10	0.74
A-45	4.9		A-82	7.2
A-68	170		A-83-02	0.44
A-69	21		A-84-08	0.63
A-70	40		A-85	2.6

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Upper Monongahela Basin Estimated Peak Flow Rates for Selected Plan at each Point of Connection				
ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)		ALCOSAN Point of Connection	Municipal Peak Flow Rate in the Selected Plan (mgd)
M-31	12		M-45	150
M-31Z	0.77		M-47	170
M-32 ²	7.4		M-48	44
M-33	1.7		M-49	25
M-34	26		M-50	150
M-35	30		M-51	99
M-36	61		M-52	39
M-37	7.7		M-53	14
M-38	12		M-54	72
M-39	12		M-55	52
M-40	86		M-56	12
M-42	46		M-57	28
M-43	26		M-58	18
M-44	40		M-60	50
M-44-02	0.19		M-61	2.7

Footnotes

1. This POC has been eliminated since the 2013 submission of the Wet Weather Plan.
2. The tributary area for this Point of Connection has changed since the reported flows were generated for the 2013 submission of the Wet Weather Plan.
3. Some of the area formerly tributary to A-66 is now tributary to a small new direct connection POC called A-66-02.
4. Includes flows from adjacent POC T-27-12.
5. This is a municipal point of connection to the Thompson Run interceptor which ties into ALCOSAN POC T-09.