

**40D-8.041 Minimum Flows.**

(1) Minimum Flows for the Lower Hillsborough River.

(a) For the purposes of Minimum Flows, the Lower Hillsborough River is defined as the River downstream of Fletcher Avenue. A tributary of the Lower Hillsborough River is Sulphur Springs, an artesian spring which enters the River via a short spring run at a point 2.2 miles downstream of the City’s dam.

(b) The Minimum Flows for the Lower Hillsborough River are based on extending a salinity range less than 5 ppt from the Hillsborough River Dam toward Sulphur Springs. The Minimum Flows for the Lower Hillsborough River are 20 cubic feet per second (“cfs”) freshwater equivalent from July 1 through March 31 and 24 cfs fresh water equivalent from April 1 through June 30 at the base of the dam as adjusted based on a proportionate amount that flow at the United States Geological Survey Gauge No. 01203000 near Zephyrhills, Florida (“Gauge”) is below 58 cfs. The adjustment is that for each one cfs that Hillsborough River flow at the Gauge is below 58 cfs, when 20 cfs freshwater equivalent is otherwise required, the Minimum Flow is adjusted by reducing it by 0.35 cfs; when 24 cfs freshwater equivalent is otherwise required, the Minimum Flow is adjusted by reducing it by 0.40 cfs. For purposes of this paragraph 40D-8.041(1)(b), F.A.C., freshwater equivalent means water that has a salinity concentration of 0.0 ppt for modeling purposes.

(2) Minimum Flows for the upper Hillsborough River.

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the river are met.

(b) Minimum Flows for the upper Hillsborough River at the USGS Hillsborough River near Morris Bridge Gage USGS # 02303330 (“Morris Bridge Gage”) are set forth in Table 8-12 below. The long-term compliance standards set forth in Table 8-13 are established based on the application of the Minimum Flows to the lowest anticipated natural flow conditions. Minimum Flows for the upper Hillsborough River are both seasonal and flow dependent. Two standards are flow based and applied continuously regardless of season. The first is a Minimum Low Flow threshold of 52 cfs at the Morris Bridge Gage. The second is a Minimum High Flow threshold of 470 cfs at the Morris Bridge Gage. The Minimum High Flow is based on changes in the number of days of inundation of floodplain features. There are also three seasonally dependent or Block specific Minimum Flows. The Block 1 and Block 2 Minimum Flows are based on potential changes in habitat availability for fish species and macroinvertebrate diversity. The Block 3 Minimum Flow is based on changes in the number of days of connection with floodplain features.

Period	Effective Dates	Where Flow on Previous Day Equals:	Minimum Flow Is
Annually	January 1 to December 31	≤52 cfs >52cfs and <470 cfs ≥470 cfs	52 cfs Seasonally dependent – see Blocks below Previous day flow minus 8%
Block 1	April 20 to June 24	≤52 >52cfs and <470 cfs ≥470 cfs	52 cfs previous day flow minus 10% Previous day flow minus 8%
Block 2	October 28 to April 19	≤52 >52cfs and <470 cfs ≥470 cfs	52 cfs previous day flow minus 11% previous day flow minus 8%
Block 3	June 25 to October 27	≤52 cfs >52 cfs and <470cfs ≥470 cfs	52 cfs previous day flow minus 13% previous day flow minus 8%

(c) Compliance – The Minimum Flows are met when the flows in Table 8-13 are achieved.

Minimum Flow	Hydrologic Statistic	Flow (cfs)
Annual Flow	10-Year Mean	190

Minimum Flow	Hydrologic Statistic	Flow (cfs)
	10-Year Median	96
	5-Year Mean	149
	5-Year Median	74
Block 1	10-Year Mean	74
	10-Year Median	62
	5-Year Mean	57
	5-Year Median	52
Block 2	10-Year Mean	153
	10-Year Median	89
	5-Year Mean	105
	5-Year Median	72
Block 3	10-Year Mean	287
	10-Year Median	150
	5-Year Mean	235
	5-Year Median	107

(3) Minimum Flow for Sulphur Springs – The Minimum Flow for Sulphur Springs is based on minimization of salinity incursions into the Upper Sulphur Springs Run (“Upper Run”) from the Lower Hillsborough River (“LHR”) and to moderate temperature levels within the manatee protection zone of the LHR.

(a) As of October 1, 2012, the City of Tampa shall maintain a Minimum Flow for Sulphur Springs of:

1. 18 cfs, as measured at the United States Geological Survey Sulphur Springs Gauge No. 02306000 at Sulphur Springs, Florida, or;

2. 13 cfs when water levels in the Hillsborough River reservoir fall below 19 feet NGVD; and

3. 10 cfs during low tide stages in the LHR, provided that salinity incursions from the LHR into the upper spring run do not occur. Salinity incursions shall be defined as when salinity values in the upper spring run as measured at the United States Geological Survey Gauge Sulphur Springs Run at Sulphur Springs, Florida (#023060003) are greater than 1 ppt than the concurrent salinity value in the spring pool as measured at the United States Geological Survey Gauge Sulphur Springs Run at Sulphur Springs, Florida (#023060000) for a period of greater than 1 hour.

(b) Notwithstanding paragraph 40D-8.041(2)(a), F.A.C., above, and beginning the effective date of this rule, when spring flow is available, a Minimum Flow of 18 cfs shall be required if the temperature of either surface or bottom waters in the LHR near the Spring Run’s outlet is below 15° C.

(c) The City of Tampa may propose to the District modifications to the weirs and gates located within the upper and lower spring run that affect the flow rates and salinity levels in the Upper Run and the LHR. The District shall evaluate the modifications to determine whether the flow resulting from the operating capabilities of the modifications and modeling simulations of the resulting salinity incursions into the Upper Spring Run achieve the salinity goal of the Minimum Flow for Sulphur Springs. If the District determines that flows different from the Minimum Flows (“Different Flows”) will achieve the salinity goal and otherwise protect the resources of the Upper Spring Run, the District, upon request by the City, will recommend to the Governing Board revision of the Minimum Flow to reflect the Different Flow.

(4) The Minimum Flow for the Tampa Bypass Canal at structure 160 shall be 0 cfs.

(5) Minimum Flows for Middle Peace Rivere.

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the river are met.

(b) Minimum Flows for the Middle Peace River at the USGS Peace River Arcadia Gage (“Arcadia Gage”) are set forth in Table 8-6 below. The long-term compliance standards set forth in Table 8-7 are established based on the application of the Minimum Flows to the lowest anticipated natural flow conditions. Minimum Flows for the Middle Peace River are both seasonal and flow-dependent. Two standards are flow-based and applied continuously regardless of season. The first is a Minimum Low Flow

threshold of 67 cfs at the Arcadia Gage. The second is a Minimum High Flow threshold of 1,362 cfs at the Arcadia Gage. The Minimum High Flow is based on changes in the number of days of inundation of floodplain features. There are also three seasonally dependent or Block-specific Minimum Flows. The Block 1 and Block 2 Minimum Flows are based on potential changes in habitat availability for fish species and macroinvertebrate diversity. The Block 3 Minimum Flow is based on changes in the number of days of connection with floodplain features.

Period	Effective Dates	Where Flow on Previous Day Equals:	Minimum Flow Is:
Annually	January 1 to December 31	<input type="checkbox"/> 67 >67 cfs and <1,362  >1,362	67 cfs Seasonally dependent – see Blocks below Previous day flow minus 8%
Block 1	April 20 to June 25	<input type="checkbox"/> 67 >67 cfs and <75 cfs >75 cfs and <1,362 >1,362	67 cfs 67 cfs previous day flow minus 10% previous day flow minus 8%
Block 2	October 27 to April 19	<input type="checkbox"/> 67 >67 cfs and <82 cfs >82 cfs and <1,362 >1,362	67 cfs  67 cfs  previous day flow minus 18%  previous day flow minus 8%
Block 3	June 26 to October 26	<input type="checkbox"/> 67 cfs >67 cfs and <73 cfs >73 cfs and <1,362 cfs >1,362	67 cfs 67 cfs previous day flow minus 13% previous day flow minus 8%

Minimum Flow	Hydrologic Statistic	Flow (cfs)
Annual Flow (January 1 through December 31)	10-Year Mean	547
	10-Year Median	243
	5-Year Mean	534
	5-Year Median	196
Block 1 (April 20 through June 25)	10-Year Mean	219
	10-Year Median	121
	5-Year Mean	160
	5-Year Median	64
Block 2 (October 27 through April 19)	10-Year Mean	359
	10-Year Median	182
	5-Year Mean	300
	5-Year Median	122
Block 3 (June 26 through October 26)	10-Year Mean	977
	10-Year Median	631
	5-Year Mean	790
	5-Year Median	382

(c) Compliance – The Minimum Flows are met when the flows in Table 8-7 are achieved.

(6) Minimum Flows for Myakka River.

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the

natural systems associated with the river are met.

(b) Minimum Flows for the Myakka River at the USGS Myakka River near Sarasota Gage USGS # 02298830 (“Sarasota Gage”) are set forth in Table 8-10 below. The long-term compliance standards set forth in Table 8-B are established based on the application of the Minimum Flows to the lowest anticipated natural flow conditions. Minimum Flows for the Myakka River are both seasonal and flow dependent. Two standards are flow-based and applied continuously regardless of season. The first is a Minimum Low Flow threshold of 0 cfs at the Sarasota Gage. The second is a Minimum High Flow threshold of 577 cfs at the Sarasota Gage. The Minimum High Flow is based on changes in the number of days of inundation of floodplain features. There are also three seasonally dependent or Block specific Minimum Flows. The Block 1 and Block 2 Minimum Flows are based on potential changes in habitat availability for fish species and macroinvertebrate diversity. The Block 3 Minimum Flow is based on changes in the number of days of connection with floodplain features.

Table 8-10 Minimum Flow for Myakka River at USGS Myakka River near Sarasota Gage			
Period	Effective Dates	Where Flow on Previous Day Equals:	Minimum Flow Is
Annually	January 1 to December 31	0 cfs <input type="checkbox"/> 0 cfs	0 cfs Seasonally dependent see Blocks below
Block 1	April 20 to June 25	0 cfs <input type="checkbox"/> 0 cfs	0 cfs previous day flow minus 15%
Block 2	October 27 to April 19	0 cfs <input type="checkbox"/> 0 cfs	0 cfs previous day flow minus 5%
Block 3	June 26 to October 26	0 cfs <input type="checkbox"/> 0 cfs and <input type="checkbox"/> 577 cfs <input type="checkbox"/> 577 cfs	0 cfs previous day flow minus 16% previous day flow minus 7%

(c) Compliance – The Minimum Flows are met when the flows in Table 8-11 are achieved.

Table 8-11 Compliance Standards for Myakka River at USGS Myakka River near Sarasota Gage		
Minimum Flow	Hydrologic Statistic	Flow (cfs)
Annual Flow	10-Year Mean	172
	10-Year Median	12
	5-Year Mean	149
	5-Year Median	5
Block 1	10-Year Mean	23
	10-Year Median	0
	5-Year Mean	4
	5-Year Median	0
Block 2	10-Year Mean	28
	10-Year Median	4
	5-Year Mean	15
	5-Year Median	3
Block 3	10-Year Mean	324
	10-Year Median	181
	5-Year Mean	241
	5-Year Median	133

(7) Minimum Flows for upper Peace River.

(a) Over the last several decades there has been a significant decline in flow in the upper Peace River, especially during the dry season. One of the major contributing factors is the elimination of baseflow as a result of ground water withdrawals that have lowered the potentiometric surface of the upper Floridan aquifer. In addition, surface-water drainage alterations, reduction in surface storage, long-term cyclical declines in rainfall and karst openings in the riverbed have played significant roles in reducing flow in the upper Peace River.

(b) The minimum flows are to ensure that the minimum hydrologic requirements of fish and natural systems associated with the river are met and not jeopardized by withdrawals. At this time only Minimum Low Flows are being established. It is anticipated that mid- and high-minimum flows will be established once the controlling factors that affect those flows are better understood.

(c) The Minimum Low Flows for the upper Peace River are set forth in Table 8-8 below. The Minimum Low Flows are established based on the lowest acceptable flow under the lowest anticipated flow conditions. This is determined by providing for the hydrologic requirements of biological communities associated with the upper Peace River system, as well as considering non-consumptive uses including fishing, wildlife observation, general recreation, aesthetic enjoyment, canoeing and boating. This determination uses professional experience and judgment to identify key habitats and hydrologic requirements for specific biotic assemblages. This approach results in establishing Minimum Low Flows for the upper Peace River based on maintaining the higher of the water elevations needed for fish passage (0.6 feet or 7.2 inches) or the lowest wetted perimeter inflection point (as much stream bed coverage as possible for the least amount of flow) as set forth below. A ninety-five percent annual exceedance occurs when the flow is greater than the Minimum Low Flow at least ninety-five percent of the days, or 350 days, of a calendar year.

Table 8-8 Minimum Flows for the upper Peace River	
Location/Gage	Minimum Flow (cubic feet per second)
Bartow / USGS Bartow River Gage No. 02294650	Annual 95% exceedance flow of 17 cfs
Ft. Meade / USGS Ft. Meade River Gage No. 02294898	Annual 95% exceedance flow of 27 cfs
Zolfo Springs / USGS Zolfo Springs River Gage No. 02295637	Annual 95% exceedance flow of 45 cfs

(d) Compliance – The Minimum Low Flow is achieved when the measured flow rate is at or above the Minimum Low Flow for three consecutive years. Once the Minimum Low Flow has been achieved for three consecutive years, the Minimum Low Flow is not met when the measured flow rate is below the Minimum Low Flow for two out of ten years commencing the year after achievement. If the two years below the minimum flow occur anytime before the ten year period is complete, the upper Peace River is deemed below its Minimum Low Flow and the three consecutive years above the Minimum Low Flow is again required for compliance. Once the ten-year period is complete, the period will roll forward one year each year.

(8) Minimum Flows for the Braden River.

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the river are met.

(b) Minimum Flows for the Braden River at the USGS Braden River near Lorraine Gage USGS # 02300032 (“near Lorraine Gage”) are set forth in Table 8-14 below. The long-term compliance standards set forth in Table 8-15 are established based on the application of the Minimum Flows to the lowest anticipated natural flow conditions. Minimum Flows for the Braden River are both seasonal and flow dependent. Two standards are flow based and applied continuously regardless of season. The first is a Minimum Low Flow threshold of 7 cfs at the near Lorraine Gage. The second is a Minimum High Flow threshold of 54 cfs at the near Lorraine Gage. The Minimum High Flow is based on changes in the number of days of inundation of floodplain features. There are also three seasonally dependent or Block specific Minimum Flows. The Block 1 and Block 2 Minimum Flows are based on potential changes in habitat availability for fish species and macroinvertebrate diversity. The Block 3 Minimum Flow is based on changes in the number of days of connection with floodplain features.

Table 8-14 Minimum Flow for Braden River at USGS Braden River near Lorraine Gage
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Period	Effective Dates	Where Flow on Previous Day Equals:	Minimum Flow Is
Annually	January 1 to December 31	$\leq 7$ cfs $> 7$ cfs and $< 54$ cfs $\geq 54$ cfs	7 cfs Seasonally dependent – see Blocks below Previous day flow minus 10%
Block 1	May 7 to June 19	$\leq 7$ $> 7$ cfs	7 cfs previous day flow minus 10%
Block 2	October 25 to May 6	$\leq 7$ $> 7$ cfs and $< 54$ cfs $\geq 54$ cfs	7 cfs previous day flow minus 11% previous day flow minus 10%
Block 3	June 20 to October 24	$\leq 7$ cfs $> 7$ cfs and $< 54$ cfs $\geq 54$ cfs	7 cfs previous day flow minus 19% previous day flow minus 10%

(c) Compliance – The Minimum Flows are met when the flows in Table 8-15 are achieved.

Table 8-15 Compliance Standards for Braden River near Lorraine Gage		
Minimum Flow	Hydrologic Statistic	Flow (cfs)
Annual Flow	10-Year Mean	31
	10-Year Median	3
	5-Year Mean	26
	5-Year Median	2
Block 1	10-Year Mean	5
	10-Year Median	1
	5-Year Mean	2
	5-Year Median	0
Block 2	10-Year Mean	20
	10-Year Median	3
	5-Year Mean	10
	5-Year Median	1
Block 3	10-Year Mean	65
	10-Year Median	23
	5-Year Mean	43
	5-Year Median	7

(9) Minimum Flows for Crystal Springs Located Within the Hillsborough River Basin, Hillsborough County, Florida

(a) The Minimum Flows are to ensure that the minimum hydrologic requirements of the water resources or ecology of the natural systems associated with the upper Hillsborough River are met.

(b) The Minimum Flow for Crystal Springs is stated as the flow measured by USGS physical measurements. Flows from Crystal Springs are calculated as the difference between upstream flow measurements at USGS Gage No. 02301990 – Hillsborough River Above Crystal Springs near Zephyrhills, FL and downstream flow measurements at USGS Gage No. 02302010 – Hillsborough River Below Crystal Springs near Zephyrhills, FL measurements and constitute the combined flow of the main spring vent and numerous smaller vents in the river channel. The minimum flow for the Crystal Springs complex is 46 cfs based on a 5-year running mean and median.

*Specific Authority 373.044, 373.113, 373.171 FS. Law Implemented 373.036, 373.0361, 373.042, 373.0421 FS. History–Readopted 10-5-74, Amended 12-31-74, Formerly 16J-0.15, 40D-1.601, Amended 10-1-84, 8-7-00, 2-6-06, 4-6-06, 1-1-07, 11-25-07, 2-18-08, 3-2-08.*