Minimum flows and levels

Determining minimum water flows and levels — hydrologic conditions — necessary to protect water resources from significant harm

FAST FACT

Minimum flows and levels are set to prevent significant harm to water resources resulting from permitted water withdrawals.

Introduction

One of the ways in which the St. Johns River Water Management District (District) is working to protect and conserve Florida's water resources is through the minimum flows and levels (MFLs) program. Establishing MFLs is an important step in the District's work of planning for adequate water supplies for today and for future generations while also protecting water resources from significant harm. The District is setting MFLs for lakes, streams, rivers, wetlands, springs and aquifers.

What are MFLs?

MFLs are the minimum water levels and/or flows adopted by the District Governing Board as necessary to prevent significant harm to the water resources or ecology of an area resulting from water withdrawals permitted by the District. MFLs define how often and for how long high, average and low water levels and/or flows should occur to prevent significant harm. Three to five MFLs are usually defined for each aquatic system — minimum infrequent high, minimum frequent high, minimum average, minimum frequent low and minimum infrequent low (see Figure 1).

Figure 1

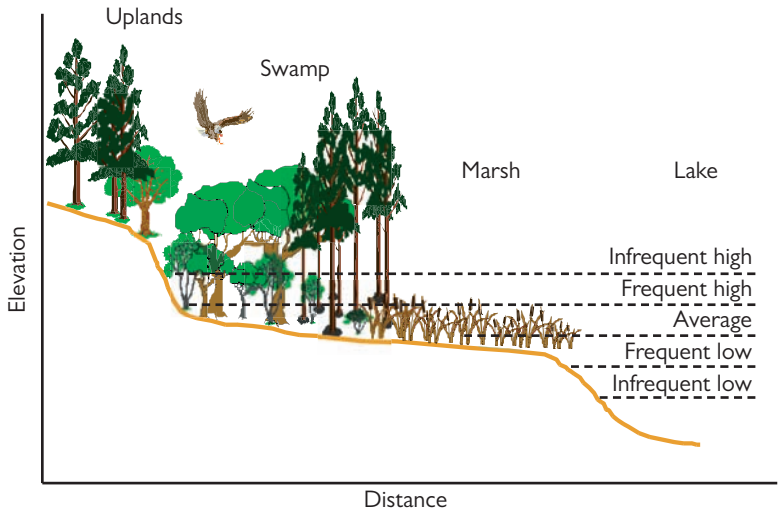
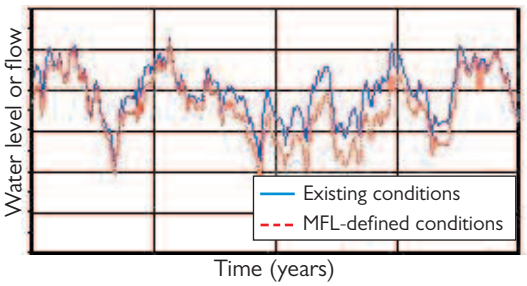


Figure 2 represents two hydrographs depicting the fluctuation of high and low water levels or flow in a typical stream or lake over a long time period. The upper line represents the existing hydrologic conditions and the lower line represents the hydrologic conditions defined by the MFLs. The hydrologic conditions defined by the MFLs are similar to, but are usually lower than, the existing hydrologic conditions.

Figure 2



These two hydrographs can be summarized as the percentage of time each water level or flow is equaled or exceeded; this is called a water level or flow duration curve (Figure 3, on back). The area below the MFLs curve (the diagonally shaded area in Figure 3) represents the water reserved for protection of fish and wildlife or public health and safety. When use of water resources shifts the water levels below that defined by the MFLs, significant ecological harm is expected to occur.

The distance between the two curves (the purple shaded area in Figure 3) represents the water available for "reasonable-beneficial uses" that will not result in harm to the water resources. State law identifies reasonable-beneficial use as the use of water in such quantity as is necessary for economic and efficient use for a purpose and manner which is both reasonable and consistent with the public interest.

Continued on back

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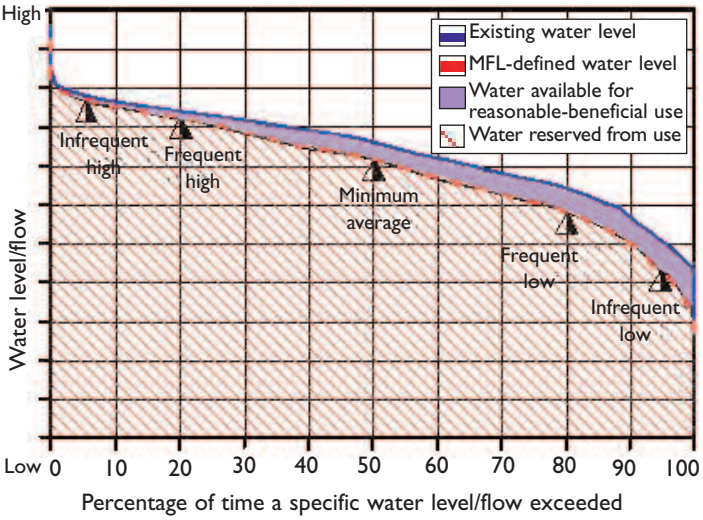
Figure 3



Why set MFLs?

MFLs are established to protect water resources from significant harm resulting from permitted water withdrawals. Establishing MFLs is a requirement of the state Legislature under Subsection 373.042(2), *Florida Statutes (*F.S.*)*. In addition, establishing MFLs is required by the state Comprehensive Plan, the water resources implementation rule (formerly state water policy), and a 1996 Governor's executive order for priority water bodies.

Why are MFLs important?

The MFLs program provides technical support to the District's regional water supply planning process (section 373.0361, F.S.), and permitting criteria for the consumptive use permitting program (Chapter 40C-2, F.A.C.) and the environmental resource permitting (ERP) program. MFLs identify a range of water levels and/or flows above which water could be permitted for consumptive use.

In addition, MFLs protect nonconsumptive uses of water. Nonconsumptive uses include quantities of water necessary for navigation and recreation, and for fish and wildlife habitat and other natural resources.

How are MFLs determined?

Florida law states that the District's Governing Board "shall use the best information and methods available to establish limits which prevent significant harm to the water resources or ecology." MFLs are determined based on evaluations of topography, soils and vegetation data collected within plant communities and other pertinent information associated with the water resource.

MFLs take into account the ability of wetlands and aquatic communities to adjust to changes in hydrologic conditions. MFLs allow for an acceptable level of change to occur. When use of water resources shifts the hydrologic conditions below levels defined by MFLs, significant ecological harm can occur.

How are MFLs adopted?

MFLs are adopted as water management district rules (Chapter 40C-8, *Florida Administrative Code*) by the governing boards of the water management districts. This is a four- to six-month process that involves public workshops, review by the Florida Department of Environmental Protection, and publication in the *Florida Administrative Weekly*. MFLs are to be reviewed periodically and revised as necessary under Subsection 373.0421(3), F.S.

How are MFLs applied?

MFLs apply to decisions affecting permit applications, declarations of water shortages and assessments of water supply sources. Computer simulation models for surface and groundwaters are used to evaluate the effects of existing and/or proposed consumptive uses and the likelihood they might cause significant harm. The District's Governing Board is required to develop recovery or prevention strategies in those cases where a water body currently does not or will not meet an established MFL. Water uses cannot be permitted that cause any MFL to be violated.

To learn more

If you would like additional information on MFLs in the 18-county jurisdiction of the St. Johns River Water Management District, you may contact Dr. G.B. (Sonny) Hall, Division of Water Supply Management, at (386) 329-4368 or e-mail at *shall@sjrwmd.com*.

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