

Madison Watershed Planning: Concerns, Goals, and Example Strategies

Waterbody Type	Concern	Potential Implications	Goal	Example Management Strategies
Surface Water	Timing of runoff and changes in snowpack affecting water use and availability	Timing of runoff not aligning with optimal timing for irrigation	Capture early runoff and precipitation through natural storage, and manage vegetation appropriately for the available moisture	Enhance the function of existing wetlands
		Earlier and lower baseflow affecting fisheries, recreation, and late-season irrigation		Identify opportunities for restoring or creating new wetlands
				Manage and restore healthy riparian areas
				Assess time of use for existing water rights, and identify changes if necessary
				Assess the function of existing storage facilities, and identify efficiency improvements
				Improve water holding capacity in soils
				Planting appropriate vegetation species adapted for the available moisture
	Warm water temperatures affecting water quality	Fish kills	Lower water temperatures, and mitigate for potential temperature increases	Improve riparian shading where possible
		Changes in aquatic species composition		Limit heat sources to streams (ponds and reservoirs)
		Increased pathogens and water quality problems		Restore channels to achieve proper width and depth
		Economic impacts to recreation and business economy		
	Increased evaporation with warmer summers	Water is lost within the local system	Limit the amount of exposed water, and properly manage vegetative cover to reduce evaporative losses	Reduce evaporative losses from unnecessary ponds
		Stress to vegetation		Reduce evaporation from soil by eliminating bare ground and using no-till techniques
		Increased risk of forest fire		Reduce evaporative loss by using plant species requiring less water
	Changes in form of precipitation affecting water supply	Likelihood of more rain and less snowpack	Capture early runoff and precipitation through natural storage, and manage vegetation appropriately for the available moisture	Enhance the function of existing wetlands
Greater variability in timing and volume of peak streamflow		Identify opportunities for restoring or creating new wetlands		
Less surface water available during irrigation season		Manage and restore healthy riparian areas		
Possibility of increased rain-on-snow events		Assess time of use for existing water rights, and identify changes if necessary		
		Assess the function of existing storage facilities, and identify efficiency improvements		
		Improve water holding capacity in soils		
		Planting appropriate vegetation species adapted for the available moisture		
Insufficient water for instream flows	Reduced habitat for fish	Manage water for a diversity of beneficial uses	Understand the value of water for different uses	
	Warmer water temperatures		Efficiency improvements for diverted surface water (conveyance and application)	
	Increased water quality problems (the solution to pollution is		Voluntary water use agreements	
	Economic impacts to recreation and business economy		Water rights leasing for instream flow	
	Economic impacts to junior water rights users		Upland (forest restoration) management	
Poor water quality	Changes in aquatic life composition	Implement Best Management Practices and/or restoration efforts to maintain and enhance water quality	Upland management practices to reduce soil erosion and runoff	
	Reduced productivity of fisheries		Healthy riparian management to provide streamside buffers	
	Human health concerns		Managing streamflow to help dilute pollutants	
	Economic impacts to recreation and business economy		Maintaining roads to reduce runoff of sediment and other pollutants	

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Groundwater	Insufficient groundwater supply for future growth	Existing water users losing reliable water supply	Understand our groundwater capacity, and use it wisely	Utilize the MBMG groundwater investigation study to help make informed decisions	
		Vacant lots might be unbuildable		Encourage and/or require current and future development to restrict non-essential uses (e.g., lawn irrigation)	
		Increased cost of new wells		Develop water-savings incentive programs	
		Depletion of aquifer		Educate homeowners on responsible water use	
				Encourage non-sustainable recharge areas to limit development	
	Annual snowpack unable to recharge aquifers to current and historic levels	Long-term depletion of aquifers	Capture runoff and precipitation through natural storage	Enhance the function of existing wetlands	
		Economic impacts to ag producers, out-of-town residents, and municipality		Identify opportunities for restoring or creating new wetlands	
		Reduced groundwater contributions to streamflow (lower flows and higher water temps)		Manage and restore healthy riparian areas	
		Potential impacts to wetland areas		Assess time of use for existing water rights, and identify changes if necessary	
				Assess the function of existing storage facilities, and identify efficiency improvements	
	Septic systems and land management practices affecting quality water in surrounding wells	Bacteria and other contaminants affecting water supply making it unsuitable for human consumption	Prevent contamination from septic and land management activities from affecting nearby wells	Educate homeowners on septic maintenance and land management practices	
		Economic impacts to homeowners for relocation of drain field or water source		Incentive program to homeowners for upgrading failing septic systems (Lewis & Clark County septic loan program)	
				Proper planning of well and septic placement	