

4. Framework for Spring Creek One Water Plan Goals, Objectives, Metrics and Desired Outcomes

Goals are statements that describe the fundamental endpoints or outcomes we are aiming to achieve through activities across all sectors of management. Goal statements are expressed in broad, aspirational terms.

Objectives are statements about desired outcomes and support the high-level goals.

Metrics can be considered performance indicators. They can be regarded as benchmarks that can be measured to track how well we are achieving our desired outcomes. For example, “tons of sediment eliminated.”

Outcomes are specific changes we are trying to achieve. They should be measurable and realistic but challenging. If outcomes are unrealistic and too difficult to achieve, they may discourage people rather than motivate them. On the other hand, outcomes that are too easy to achieve can lead to complacency.

Goals 1: Protect, Enhance and Sustain Healthy and Resilient Coldwater Stream Ecosystems

Objective	Description	Suggested Metric (s)	Outcome(s)
Objective 1A: Protect Ecosystem Flows	Rivers, streams, wetlands, and springs need certain amounts of water to support healthy aquatic ecosystems. Improve water quality and quantity for resiliency to ensure the capacity of the ecosystem to respond to a disturbance by resisting damage and recover quickly. This is especially critical given the unique and coldwater ecosystem supported by the Spring Creek Watershed and highlighted by the exceptional wild trout populations and fishery, which require cold, clean water to flourish. Management must consider the impacts of point and nonpoint discharges, development, stormwater, and water withdrawals.	<p>The Nature Conservancy Ecosystem Flow Recommendations</p> <p>Acres of mitigated impervious surface</p> <p>Lbs. of nitrogen, phosphorus, and sediment reduced</p> <p>Number of miles of riparian buffers installed</p> <p>Miles of stream improved that meet criteria to be delisted from impairment</p> <p>Development of a proactive nonregulatory TMDL to determine the maximum amount of pollutants allowed to occur in spring creek and tributaries in the future.</p>	<p>Restore High, Seasonal and Low Stream Flows</p> <p>Maintain and improve existing hydrology</p> <p>Impaired stream sections improved to meet criteria for removal from impairment designation on the 303D list</p> <p>Voluntary Total Maximum Daily Loads Met.</p>

Goals 1: Protect, Enhance and Sustain Healthy and Resilient Coldwater Stream Ecosystems

Objective	Description	Suggested Metric (s)	Outcome(s)
Objective 1B: Create Resilient Habitats	Stream habitat is one of the important factors that affect aquatic communities. This includes physical habitat and water quality. Based on the macroinvertebrate diversity and sensitivity to pollution, and wild trout population dynamics and densities, we gain an understanding of our streams' health. Degraded in-stream habitat often results from uncontrolled stormwater runoff and uncontrolled runoff from cultivated agricultural land. Other reasons for poor stream habitat include altered stream flows, excess sediment, and a loss of surrounding trees and shrubs that help slow the erosion of the stream banks and provide shade to help maintain cool water temperatures during critical summer months. Chemicals and pollutants also negatively impact stream habitat/water quality.	Index of Biological Integrity Scores DO, water temperature, sediment loads, stream channel surveys (fluvial geomorphology) Number of trout, biomass, sizes, and redds % of Impervious surface mitigated Miles of riparian buffers installed	Diversity of macroinvertebrates. Improved water quality and thermal regime Wild trout populations at or above current levels. Maintain and improve existing water quality, including water temperature and D.O. Acres and/or # of Green Infrastructure

Goal 2: Maintain and improve water quality and quantity to sustainably meet the needs of the human community.			
Objective	Description	Suggested Metric (s)	Outcome(s)
Objective2A: Maintain a reliable water supply for residents, agriculture, and industry	Protecting, maintaining, improving, and developing existing and new water supply sources and recharge/storage areas ensures a supply for future uses. Water management must consider the multiple uses of groundwater to ensure reliability. Recycled water can offer a reliable source that can displace a portion of the need for additional surface or groundwater withdrawals	% loss from water systems, #gallons of drinking water from new sources, % stormwater volume directed to recharge areas; % reduction in treatment costs	% water use served by recycled water # new large-scale storage areas developed
Objective 2B: Implement a water demand strategy	Water demand management involves the adoption of policies and investments by water utilities to achieve efficient water use by all members of the watershed community. This strategy requires a major paradigm shift from conventional supply management to the management of demand. The aim is to promote the use of the right quantity of water on the farm, industry, household, and by the watershed community as a whole.	# of tributaries with water budgets, # of critical supply areas identified % critical contribution areas with practices/policies in place to support sustainable yield/withdrawal scenarios # of effective ordinances/policies Gallons of water from natural systems, withdrawals per capita	No exceedance of sustainable withdrawal rates. Number of new sources to mitigate impact. % of public water supply loss reduced. Drinking water needs met Maintain low flows at or above long-term monthly median flows at each of the 3 USGS gages on Spring Creek and on its tributaries while meeting daily drinking water needs
Objective 2C: Sustain and protect groundwater	Groundwater accounts for 86% water supply. Aquifers provide critical storage to meet needs during droughts. The amount of groundwater in storage in each basin is dependent on the precipitation, recharge, and the total extraction of all the wells. A groundwater plan designed for the political, institutional, legal, and technical specifics can help maintain supply.	# of BMP's to minimize recharge loss # of source water plans updated # of emergency water supply plans developed, % change in well levels % flow in and out of the watershed % deviation from historic baseflows	sustained well yields, groundwater management plan % attainment on meeting historic base flows

Goal 3: Integrate and Coordinate Management for Sustainability, Economic Growth, Recreation and Quality of Life

Objective	Description	Suggested Metric (s)	Outcome(s)
Objective3A: Implement an Integrated Water Management Network/Governance Model	This network would promote the coordinated development and management of water, land, and related resources, to maximize environmental, economic, and social results in an equitable manner without compromising the sustainability of the watershed. Participation would involve applying knowledge from various disciplines and insights from diverse stakeholders to devise and implement efficient, equitable, and sustainable solutions to water and development problems. Network members could include the Spring Creek Watershed Commission, municipal governments, water utilities, Penn State, state and federal agencies, industry, and planning organizations.	Build capacity of Spring Creek Watershed Commission to administer the network Utilize Penn State to evaluate existing networks in other states or other governance options Include MS4 Partnership and Central PA Source Water Protection Partnership	cross-agency and cross-scale interaction and communication Administrative process implemented Network charter in place
Objective 3B: Implement network subcommittee for technical support, data driven science, education, and information exchange.	Diversity of membership includes utility personnel, academia, government employees (federal, state, local), non-governmental organizations, industry representatives, and consultants. Review, evaluate, and disseminate information on best practices on integrated watershed management. Encourage adoption of new advances and applications for watershed management, develop workshops, and organize/moderate technical discussion and educational events.	#of members representing diverse capabilities #of educational events Data-driven science metrics % economic growth % biological growth Centralized data sets	Science based collaboration Land Use plans coordinated Online searchable database

Goal 3: Integrate and Coordinate Management for Sustainability, Economic Growth, Recreation and Quality of Life			
Objective	Description	Suggested Metric (s)	Outcome(s)
Objective 3C: Promote the value of the watershed's recreation, aesthetic and cultural assets	Ecosystems provide recreational opportunities and cultural and aesthetic value. Communities rely on clean air, water, green space, and other natural amenities for economic sustainability and quality of life, yet their benefits are not always fully understood or considered in local decisions. Recreation and tourism associated with outdoor environments can play a massive role in local economies. Many citizens place a high value on historically or culturally important landscapes because of their significance. However, human activities can stress natural areas where people recreate or visit cultural sites.	#of clean up events # of recreational users # cultural sites # of groups involved % value of ecosystem services Reenergize "Spring Creek Day" Recreational growth and economic value	Stewardship

