

Missouri Department of Natural Resources
 Watershed Management Planning Grant
**Information Relating to EPA's Nine Critical Elements
 of a Watershed Management Plan**

Key Elements	Explanation
<p>a. Impairment - An identification of the causes and sources of pollution (point and nonpoint), and pollutant(s) that will need to be controlled to fix the water body (lake, river, stream) impairment, and to achieve any other watershed goals.</p>	<p>Your watershed plan should also include a map of the watershed that locates the major causes and sources of impairment. You will need to determine if there is historical data for your watershed (e.g. water quality, population demographics, aerial photographs, land use maps, etc.).</p> <p>This element includes inventorying all the significant point and nonpoint sources. Research should be conducted to determine the natural background conditions and the levels that make up the pollutant loads causing problems in the watershed. You should determine the location and extent of impairment for each pollutant and tie it to the source(s) contributing to the impairment (e.g. excess nutrients impacting 6 miles of stream resulting from dairy cow feedlot and/or row crops; excess sedimentation due to streambank erosion along 10 miles/linear feet of stream due to channel alterations).</p> <p>If a TMDL exists, this element may be adequately addressed. If not, you will need to conduct a similar analysis to do this. A watershed assessment may include mapping, modeling, monitoring, and field assessments to make the link between the sources of pollution and the extent to which they cause the water to exceed relevant water quality standards.</p> <p>To address the water quality impairments, you will set goals that will include (at a minimum) meeting the appropriate water quality standards for pollutants that threaten or impair the physical, chemical, or biological integrity of the watershed covered in the plan.</p>
<p>b. Load Reductions - An estimate of the pollutant load reduction(s) expected for a water body. Modeling can be simple or quite complex depending upon the application. Spreadsheets and landcover mapping are typically employed in these models to estimate load reductions.</p>	<p>Based on the information provided in element a, you will estimate the pollutant source loads and determine the nonpoint source pollutant load reductions needed to meet the water quality standards. Doing so will help you identify and prioritize the various nonpoint source best management practices that are needed for elements c and d below. Choose various best management practices that can be implemented throughout the watershed that will help reduce the pollutant loads. For each best management practice</p>

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	<p>estimate the load reductions expected if implemented - recognizing the difficulty in precisely predicting the performance of management measures over time.</p> <p>For waters for which EPA has approved or established TMDLs, the plan should identify and incorporate the TMDLs. Applicable loads for downstream water should be included so that water delivered to a downstream or adjacent segment does not exceed the water quality standards for the pollutant of concern at the water segment boundary. The estimate should account for reductions in pollutant loads from point and nonpoint sources identified in the TMDL as necessary to attain the applicable water quality standards.</p>
<p>c. Management Measures – A description of the nonpoint best management practices necessary to achieve the pollutant load reductions identified in element b.</p>	<p>The plan should describe the best management practices that need to be implemented to achieve the load reductions estimated under element b, as well as to achieve any additional pollution prevention goal stated in element a (e.g., water quality standard, habitat conservation and protection, etc).</p> <p>Load reduction estimates per management measure should be provided at the same scale and scope component discussed element a above (e.g., X % of nutrients load reduction expected for dairy cattle feedlots, row crops by implementing X # best management practices, or X % of sedimentation load reduction expected for 10 miles of eroded streambanks by stabilizing 10 miles/linear feet of streambank).</p> <p>Pollutant loads will vary even within land use types, so the plan should also identify the priority and critical areas in which those best management practices will be needed to implement the plan. This description should be detailed enough to guide implementation activities and can be greatly enhanced by mapping priority areas and practices.</p>
<p>d. Technical & Financial Assistance – An estimate of the amounts of technical and financial assistance that is needed and/or the sources and authorities that will be relied on to implement the best management practices identified in element c.</p>	<p>Determine who needs to be involved in the plan so that the best management practices are implemented and goals are achieved. You should estimate the financial and technical assistance needed to implement the entire plan. This includes implementation and long-term operation and maintenance of the best management practices, information and educational activities, monitoring, and evaluation activities.</p>

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	<p>Document which relevant authorities might play a role in implementing the plan. Plan sponsors should consider the use of federal, state, local, and private funds or resources that might be available to assist in implementing the plan. Shortfalls between needs and available resources should be identified and addressed in the plan.</p>
<p>e. Public Information & Education – An information/education component designed to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing nonpoint source best management practices that will be implemented.</p>	<p>This element identifies the education and outreach activities that will be implemented. These information and educational activities may support the adoption and long-term operation and maintenance of management practices and support stakeholder involvement efforts.</p> <p>Determine who is your main audience(s) – citizens, local governments, river/stream/lake side property owners, etc. What changes in knowledge, behavior, concern or policy needs to occur? Identify barriers to BMP adoption and possible solutions to overcome barriers. How will the plan engage the targeted audience(s)?</p>
<p>f. Schedule – A detailed schedule for implementing best management practices identified in element c.</p>	<p>You should include a schedule for implementing the management measures outlined in you watershed plan. For example what will be implemented by year 2, year 3, and year 4. The schedule may need to be long-term to achieve water quality goals. The schedule should reflect the milestones you will develop in element g. This element should include a schedule of review for the watershed plan.</p>
<p>g. Milestones – A description of interim, measurable milestones for determining whether nonpoint source best management practices or other controls are being implemented.</p>	<p>Develop interim, measurable milestones to measure progress in implementing management measures for your watershed plan. These milestones will measure the implementation of the best management practices, whereas element h (below) will measure the effectiveness of the best management practice, by documenting improvements in water quality.</p>
<p>h. Performance – Criteria to determine whether loading reductions are achieved over time, and if progress is being made towards attaining water quality standards and, or the criterion used to determine if this plan, or a</p>	<p>As the projects are implemented in the watershed, you will need water quality benchmarks to track progress. The criteria in this element are the benchmarks to measure against through monitoring. These interim targets can be direct measurements (e.g. fecal coliform, nutrient concentrations) or</p>

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<p>related total maximum daily load, needs to be revised.</p>	<p>indirect indicators of load reduction (e.g., number of beach closings). You should also indicate how you will determine whether the watershed plan needs to be revised if interim targets are not met. These revisions could involve changing management practices, updating loading analyses, and reassessing the time it takes for pollution concentrations to respond to treatment.</p>
<p>i. Monitoring – A monitoring component to evaluate the effectiveness of the implementation efforts over time.</p>	<p>The watershed plan should include a monitoring component to determine whether progress is being made toward attaining or maintaining the applicable water quality standards. The monitoring program should be fully integrated with the established schedule and interim milestone criteria identified above. The monitoring component should be designed to determine whether loading reductions are being achieved over time and substantial progress in meeting water quality standards is being made. Watershed-scale monitoring can be used to measure the effects of multiple programs, projects, and trends over time. Instream monitoring is particularly relevant to the project.</p>