

## Document Review for Water Resource Protection

Name of Entity

Date

Criteria	Yes/ No	Comments
		List page number in Master Plan and list the section of the Zoning Ordinance
<b>Watershed Issues</b>		
<b>I. Watershed Activities</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan identify the watershed(s) in which the community is located?		
2. Does the Master Plan call for protection of watershed resources in order to protect the health, safety and welfare of residents?		
<b>Stream Corridors and Flood Plains</b>		
<b>I. Stream Corridors</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan indicate the importance of any of the following: riparian buffers to assist in flood control, protect the streambank from erosion, remove pollutants from storm water runoff, provide food and habitat for wildlife, prevent sediment from settling in the water course, provides tree canopy to shade streams, and promote desirable aquatic organisms, scenic value and recreational opportunities?		
2. Does the Master Plan state that protection of stream corridors is important in promoting the health, safety and welfare of residents through flood control, and water quality and riparian corridor preservation?		
<b>B. Development / Redevelopment Regulations:</b>		
1. Are regulations coordinated with regulations protecting County drains?		
2. Does the community require naturally-vegetated buffers along drainage way corridors?		
a. What is the width of the corridor?		
3. Does the community restrict development adjacent to stream corridors to those which do any of the following: offer no danger of topographical disturbance to the corridor, degradation to water quality, increased runoff, sedimentation, stream channel alterations, or degradation of dependent, non-hydrologic resources (i.e. flora and fauna)?		
4. Are waterbody setbacks in place of at least 30-50 feet?		
<b>II. Flood Control</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan identify floodplain protection as important for any of the following to promote the health, safety and welfare of residents: flood control, stream bank protection, pollutant filter, wildlife habitat, reduce sedimentation, shade watercourse and provide scenic value and recreational opportunities?		
2. Does the community call for coordination of their efforts to protect the floodplain with adjoining communities and the County?		

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<b>B. Development / Redevelopment Regulations:</b>		
1. Does the community participate in the National Flood Insurance Program?		
2. If yes, does the community have an overlay zone or other ordinance language that protects floodplains from undesirable development?		
3. Do the community's floodplain regulations address the following:		
a. Provide for assessing the impacts of flood management projects on water quality?		
b. Provide for adding BMP's to existing projects?		
4. Is there a variable width, naturally vegetated buffer that encompasses the 100 year floodplain area?		
<b>Impervious Surface Reduction</b>		
<b>I. Reducing Impervious Surfaces</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan call for minimizing impervious surfaces in new construction and redevelopment projects to reduce the amount of runoff and improve infiltration?		
2. Is the Master Plan goal of reducing impervious surface tied to protecting the health, safety and welfare of residents through protection of water quality, natural features and open space?		
<b>II. Parking Lots/Driveways/Sidewalks</b>		
<b>A. Development / Redevelopment Regulations:</b>		
1. Does the community have flexibility in the parking ordinance to reduce the number of spaces constructed if warranted by the proposed development?		
2. Is some portion of a parking lot required to be planted with trees/vegetation within the parking lot paving?		
3. Does the community require stormwater treatment for parking lot runoff in landscaping areas?		
<b>B. Design Standards:</b>		
1. Are shared parking facilities encouraged?		
2. Is 30% of the parking area required to have spaces with smaller dimensions for compact cars? (9ft-width and 18ft - length or less)?		
3. Is there a maximum on parking spaces size (9ft-width and 18ft - length or less)?		
4. Are developers encouraged to use parking lot islands as stormwater infiltration areas?		
5. Are driveways or overflow parking areas allowed to be pervious or porous pavements?		
6. Are maximum spaces given instead of minimum (for office bldgs - 3spaces/1000ft <sup>2</sup> ; shopping - 4.5 spaces/1000ft <sup>2</sup> ; residential - 2 spaces/single family home)?		
7. Are sidewalks only allowed to be on one side of the road?		
8. Are sidewalks eliminated if an alternative path is provided?		

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<b>III. Street and Access</b>		
<b>A. Development / Redevelopment Regulations:</b>		
1. Does the community have jurisdiction over roads or allow private roads?		
2. If yes, do regulations pertaining to roads include the following standards:		
a. Are streets to be designed with the minimum required pavement width needed to support travel lanes, emergency, maintenance and service vehicles (18-22 ft for low traffic roads)?		
b. Are right-of-way widths minimized to avoid mass clearing and grading (less than 45 feet)?		
c. Are there required landscaped areas in cul-de-sacs?		
d. Are the minimum radii of cul-de-sacs no more than 35 feet?		
e. Are hammerheads allowed instead of cul-de-sacs?		
f. Are the use of open swales allowed instead of curb and gutter?		
g. If curb and gutter is used, are perforated curbs (allows water to flow into swales) or invisible curbs (flush with road surface) required?		
<b>IV. Lot Setbacks / Lot Width / Lot Coverage</b>		
<b>A. Development / Redevelopment Regulations:</b>		
1. Does the Zoning Ordinance allow for the relaxation of side yard setbacks and narrower frontages to reduce the total road length (and overall site imperviousness)?		
2. Does the Zoning Ordinance allow for the relaxation of front yard setbacks to reduce driveway lengths (and overall site imperviousness)?		
3. Does the Zoning Ordinance allow the location of bioretention, rain gardens, filter strips and swales in required setback areas and common areas?		
4. In rural, low density areas are there limits on impervious lot coverage (15% maximum includes all impervious surfaces not just the house)?		
5. Are there limits on the extent of lawn area on residential lots in rural areas?		
<b>The Development Review Process</b>		
<b>I. Site Plan Review</b>		
<b>A. Development / Redevelopment Regulations:</b>		
1. Is the review process coordinated with the receipt of applicable County and State permits?		
2. Does the Zoning Ordinance require that developers preserve natural features, such as lakes, ponds, streams, floodplains and floodways, wetlands, woodlands, steep slopes, and natural drainage patterns to the fullest extent possible?		
3. Are BMP's required to be labeled and shown, in detail, on the site plan so that they can be reviewed for effectiveness during the site plan review process?		

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4. Is a Soil Erosion and Sedimentation Control Plan required as part of the site plan review process?		
5. Are developers required to show all natural features on site plans, such as lakes, ponds, streams, rivers, floodplains and floodways, wetlands, woodlands, steep slopes, and natural drainage patterns?		
<b>II. Pre-Construction Meetings</b>		
<b>A. Development / Redevelopment Regulations:</b>		
1. Is the construction sequence required to start with a pre-construction meeting?		
<b>III. Construction</b>		
<b>A. Plans and Policies:</b>		
1. Does the community chart the progress of all construction projects to ensure that they are in compliance with the approved site plan?		
<b>B. Development / Redevelopment Regulations:</b>		
1. Is a Pre-winter meeting required to assess whether the existing soil cover will provide adequate soil erosion and sedimentation control during winter months?		
<b>Land Conservation and Development Techniques</b>		
<b>I. Open Space / Park Acquisition</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan and/or Recreation Master Plan call for community acquisition of open space?		
2. Does the Master Plan and/or Recreation Master Plan recognize the importance of open space preservation as a way to protect the health, safety and welfare of residents, protect vital air, land and water resource quality, to buffer air and noise pollution, preserve wildlife habitat, and preserve aesthetic values and the community's beauty?		
<b>II. Conservation Easement and Similar Tools</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan call for the use of conservation easements or other tools to conserve open space in the community?		
<b>III. Clustering and Open Space Developments</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan include goals to preserve natural features and protect the quality of vital air, land, and water resources while accommodating development?		

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<b>B. Development / Redevelopment Regulations:</b>		
1. Does the community have a Clustering and/or Open Space Ordinance?		
2. Are flexible site design criteria available for developers that use open space or cluster design options? (Ex. Relaxed setback widths and lessened sidewalk requirements.)		
3. Are open spaces required to be consolidated into larger units (contiguous), or required to be a minimum size or width?		
4. Does the open space have to be managed in a natural condition?		
5. Are the types of uses allowed in the open space restricted to low impact uses?		
6. Is open space required to be protected through a conservation easement or other similar mechanism?		
7. Are incentives put into place to encourage open space development?		
a. Are bonus densities utilized as an incentive?		
8. Do all Planned Unit Developments require open space?		
<b>IV. Urbanized Communities</b>		
<b>A. Plans and Policies:</b>		
1. Are infill developments encouraged in areas that already have significant development?		
<b>B. Design Standards:</b>		
1. Are infill and redevelopment projects encouraged to promote conservation and natural resource preservation?		
2. Are re-development projects required to coordinate improvements with existing facilities and infrastructure?		
<b>V. Rural Communities</b>		
<b>A. Plans and Policies:</b>		
1. Is agriculture described in the Master Plan as an economically viable profession in the community?		
2. Have prime and unique agricultural lands been identified and mapped in the Master Plan?		
<b>B. Development / Redevelopment Regulations:</b>		
1. Has the community designated an Agricultural Zoning District?		
2. Does the agricultural zoning district utilize a method such as sliding scale to limit fragmentation of farmland and to less conflicts between farming and residential uses?		
3. Does the agricultural zoning district utilize setbacks or buffers for any new residential development?		
4. Does the Agricultural Zoning District also consider the preservation and protection of natural features, such as wetlands or groundwater?		

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<b>Wetland Preservation</b>		
<b>I. Inventory</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan include a map of wetlands?		
<b>II. Wetlands Protection</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan recognize the importance of wetlands, and the functions they play in protecting residents' health, safety and welfare from problems such as flooding and poor water quality?		
2. Does the Master Plan call for the protection of wetlands within an ecosystem context (protecting adjacent uplands, waterways, and vegetated buffers as well)?		
<b>B. Development / Redevelopment Regulations:</b>		
1. Has the community adopted a local wetlands ordinance that protects wetlands less than five acres in size?		
2. Is this ordinance coordinated with the State's wetlands regulations?		
3. Are there building and a no-disturbance setback requirements from wetland areas (at least 20-30 feet)?		
<b>Lake Management</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan have a map of lakes?		
2. Does the Master Plan discuss the values of lakes such as recreation, economic development, habitat, fisheries?		
<b>B. Development / Redevelopment Regulations</b>		
1. Does the zoning ordinance include an anti-funneling provision for waterbodies?		
<b>Habitat Preservation</b>		
<b>I. Natural Area Preservation / Restoration</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan call for preservation of natural areas for wildlife habitat protection?		
2. Does the Master Plan link habitat preservation to protection of the health, safety and welfare of residents through natural resource preservation?		
3. Has the community identified high quality natural areas to be preserved?		
4. Does the community have a plan to protect the high priority areas?		

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Criteria	Yes/ No	Comments
<b>II. Native Plant Species</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan recognize the importance of native vegetation in the protection of vital air, land and water resource quality, to buffer air and noise pollution, preserve wildlife habitat, and preserve aesthetic values and the community's beauty?		
<b>B. Design Standards:</b>		
1. Do the Design Standards specify the use of native plant species in the storm water system to help reduce storm water velocities, filter runoff and provide additional opportunities for wildlife habitat?		
2. Are invasive and exotic plants prohibited from being used?		
3. Does the site plan review process require developers to consult with the Michigan Department of Environmental Quality about Threatened/Endangered Species on site?		
<b>Woodlands Preservation</b>		
<b>I. Inventory</b>		
<b>A. Plans and Policies:</b>		
1. Has the community conducted a woodlands inventory and mapped this information?		
<b>II. Woodlands Protection</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan recognize the importance of woodlands to protect any of the following: water, air and soil quality, to buffer air and noise pollution, to moderate local climate and storm hazards, to preserve wildlife habitat, and to preserve aesthetic values and community beauty?		
2. Does the Master Plan recognize the importance of woodlands for storm water infiltration, thus reducing flooding and minimizing water pollution?		
3. Does the Master Plan identify woodlands as an important landscape feature that protects the health, safety and welfare of residents?		
<b>B. Development / Redevelopment Regulations:</b>		
1. Has the community adopted a local woodlands or tree protection ordinance?		
2. Are woodlands defined in a broad manner so that existing trees and remnant woodlands are also protected?		
3. Does the ordinance require replacement of trees that are removed?		
4. Does the ordinance minimize the clearing of a site?		
5. Are permits required to clear a site?		

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<b>Greenways/Green Infrastructure</b>		
<b>I. Greenway/Green Infrastructure Plan</b>		
<b>A. Plans and Policies:</b>		
1. Does the community have a greenway plan or support greenways/green infrastructure through its Master Plan or Recreation Master Plan?		
2. If yes, does this plan do the following:		
a. Identify greenways/green infrastructure as important natural transportation corridors for wildlife, and for the protection of other natural features?		
b. Connect many natural areas within the community?		
c. Connect the community's greenway/green infrastructure plan with adjacent communities', County's or regional greenway plans?		
<b>Groundwater</b>		
<b>I. Mapping</b>		
<b>A. Plans and Policies:</b>		
1. Do Master Plan goals call for the identification and mapping of groundwater recharge areas?		
2. Is a map of groundwater resources or groundwater recharge areas included in the Master Plan?		
<b>II. Groundwater Protection</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan recognize the importance of the groundwater to the health, safety and welfare of its residents?		
2. Does the Master Plan identify groundwater as an important natural resource, and call for its protection?		
<b>B. Development / Redevelopment Regulations:</b>		
1. Is ground water considered in the zoning designations of parcels?		
2. Are there additional requirements for site plan submittals in groundwater recharge areas?		
<b>III. Wellhead Protection</b>		
<b>A. Plans and Policies:</b>		
1. Does this community have municipal well fields?		
2. If yes, has the community done the following:		
a. Developed a wellhead protection program?		
b. Restricts high risk land use activities in wellhead protection areas?		



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<b>Storm Water Management</b>		
<b>I. Storm Water Management Standards</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan call for the preservation of natural features as parkland and/or in open space developments to help alleviate problems associated with storm water runoff?		
2. Does the Master Plan identify storm water management as an important community goal or policy?		
3. Does the Master Plan state both the quality and quantity of storm water are important issues to address in storm water management policies?		
4. Does the Master Plan relate storm water management to the protection of health, safety and welfare of the community's residents? (For example, storm water management can reduce flooding, improve water quality, etc.)		
<b>B. Development / Redevelopment Regulations:</b>		
1. Does the Zoning Ordinance require that developers preserve natural drainage patterns to the fullest extent possible?		
2. Do you regulate storm water in your community?		
3. If yes, are your regulations coordinated with the County's storm water regulations so that your rules do not contradict the County's?		
4. If your community regulates storm water, do your regulations address the following:		
a. Are there storm water guidelines that fully detail specific storm water design criteria?		
b. Maintain or establish buffer strips (between 30 and 100 feet wide) from the top of bank of any watercourse or surface water?		
5. Does the Zoning Ordinance include flood control and water resource protection performance standards?		
6. If yes, do they address the following to reduce the quantity of runoff and improve runoff quality:		
a. Limit land disturbance and grading?		
b. Maintain vegetated buffer strips and other existing vegetation to improve infiltration of storm water?		
c. Minimize impervious surfaces?		
d. Encourage the use of infiltration devices (such as filter strips, vegetated swales, sand filters, rain gardens, etc and allow for 72 hour ponding prior to infiltration?		
7. Are all development/redevelopment plans required to go to the County Drain Commissioner for review?		
<b>II. Engineered Best Management Practices (BMP's)</b>		
<b>A. Plan and Policies</b>		
1. Does the Master Plan include goals / policies that encourage the use of Best Management Practices (BMP's) to minimize, collect, and treat storm water?		

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<b>B. Development / Redevelopment Regulations:</b>		
1. Does the Zoning Ordinance require the use of BMP's when possible?		
2. Does the Zoning Ordinance require the use of above ground BMP's instead of belowground storm water conveyance systems?		
3. Does the Zoning Ordinance prohibit direct discharge of storm water into wetlands, streams or other surface waters without pre-treatment?		
4. Does the Zoning Ordinance call for periodic monitoring of BMP's to ensure they are working properly?		
5. Does the Zoning Ordinance require that all storm water management systems and / or BMP's be maintained?		
<b>C. Design Standards:</b>		
1. Do the Design Standards provide minimum guidelines for BMP's that pre-treat and filter storm water, and retain storm water in a bio-retention facility?		
<b>III. Infiltration</b>		
<b>A. Plans and Policies</b>		
1. Does the Master Plan call for the preservation of natural features for the purpose of preserving the existing infiltration of storm water?		
<b>B. Development / Redevelopment Regulations:</b>		
1. Does the Zoning Ordinance call for the use of BMP's that improve a site's infiltration potential?		
<b>Erosion and Sedimentation Control</b>		
<b>I. Erosion and Sedimentation Control (ESC):</b>		
<b>A. Plans and Policies:</b>		
1. Is erosion and sedimentation control identified in the Master Plan as an important mechanism to protect the health, safety and welfare of residents through protection of water and soil resources?		
<b>B. Development / Redevelopment Regulations:</b>		
1. Does the Zoning Ordinance address erosion and sedimentation controls?		
2. If yes, is the program coordinated with the County's program?		
3. If yes, does the community's program include the following standards?		
a. Require that soil erosion control measures be in place before granting a building permit?		
b. Protect waterways and stabilize drainage ways by requiring mechanisms, such as silt fencing, at the edge of the waterway buffer and special crossing and diversion techniques at waterway crossings?		
c. Require that all erosion and sedimentation controls be maintained?		
d. Require that all erosion and sedimentation controls be monitored on a periodic basis?		

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e. Methods to respond to public complaints regarding construction site erosion control?		
4. If no, does the community staff report erosion problems to the County enforcing agency?		
5. Are there any references in the Zoning Ordinance about compliance with the County Soil Erosion and Sediment Control Standards?		
<b>Sanitary Sewer Planning and Infrastructure</b>		
<b>I. Sanitary Sewer Planning and Infrastructure</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan address sanitary sewer planning?		
2. If yes, does the Master Plan tie sanitary sewer planning to protection of the health, safety and welfare of residents?		
3. If yes, does the Master Plan address the following:		
a. Has the community delineated a Sewer Service Area?		
b. Has the Sewer Service Area been mapped, including all the facilities in the system (such as manholes, pipes, etc.)?		
c. Is the map to be used in zoning decisions?		
<b>II. Septic Systems</b>		
<b>A. Plans and Policies:</b>		
1. Does the Master Plan identify areas that are suitable and unsuitable for septic systems?		
2. Does the Master Plan state that community involvement in placement and maintenance of septic systems is critical to the health, safety and welfare of residents?		
<b>B. Development / Redevelopment Regulations:</b>		
1. Are regulations that pertain to septic systems coordinated with the County's regulations?		
2. Does the Zoning Ordinance require that a septic system location be at least 100 feet from a lake, wetland, stream, or other water feature?		
3. Does the Zoning Ordinance specify a minimum isolation distance from residential and community wells?		
4. Does the Zoning Ordinance create septic maintenance districts?		
<b>III. Minimizing Inflow</b>		
<b>A. Development / Redevelopment Regulations:</b>		
1. Does the community prohibit connecting downspouts to the storm water system?		
2. Does the community have a program to identify and disconnect footing drains from sanitary sewer lines?		
3. Does the community promote rain barrels and rain gardens?		

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<b>IV. Illicit Discharge Elimination</b>		
<b>A. Plans and Policies:</b>		
1. Has the community identified and/or mapped the community's drainage system, including all points of discharge and locations of illicit discharges to the drainage system?		
2. Does the community have a program for identifying illicit discharges, and eliminating them?		
3. Does the community have a program to identify sanitary sewer or septic systems that are seeping into the storm water system, surface waters or groundwater?		
<b>Public Education</b>		
<b>I. Public Education Efforts</b>		
<b>A. Plans and Policies:</b>		
1. Does the community have a system in place to distribute environmental education information?		
2. Has the community encouraged residents to report illicit discharges or improper disposal of materials into storm drains or natural water bodies?		
3. Has the community educated commercial, industrial and institutional owners and tenants on how to reduce significant storm water pollutants?		
<b>Pollution Prevention and Housekeeping Practices</b>		
<b>I. Storm Water System Maintenance</b>		
<b>A. Plans and Policies:</b>		
1. Does the community have a program in place to regularly clean out, maintain and/or inspect structural controls (such as catch basins, vegetated swales, infiltration basins, sedimentation basins, etc.)?		
2. Does the community have a program that labels outfall structures that discharge runoff to natural systems?		
<b>II. Roadways</b>		
<b>A. Plans and Policies:</b>		
1. Does the community have jurisdiction over streets?		
2. If yes,		
a. Does the community sweep the streets monthly or more often in high construction areas?		
b. Does the community evaluate the amount of salt and/or sand that is applied to its roads in the winter?		
c. Does the community provide leaf collection in the fall?		

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<b>III. Public Facilities Maintenance</b>		
<b>A. Plans and Policies:</b>		
1. Does your community have a maintenance building?		
2. If yes, does the following occur:		
a. Confirm that floor drains are connected to a sanitary sewer, or sealed?		
3. Does the community maintain its own vehicles?		
4. If yes, is a regular schedule of maintenance followed?		
5. Are vehicles or other equipment maintained and cleaned where fluids and/or cleaning water will not flow into the street, gutter, storm drain or water body?		
<b>IV. Landscaping Practices</b>		
<b>A. Plans and Policies:</b>		
1. Does the community have a schedule of landscape maintenance practices for municipal property?		
2. Are employees trained on the proper application of chemical pesticides, herbicides and fertilizers?		
3. Are soils tested on municipal property before fertilizers are applied?		
4. Does the community use native vegetation in landscaping their properties?		
5. Does the community encourage landscaping with native plant species throughout the community?		
<b>B. Development / Redevelopment Regulations</b>		
1. Is a fertilizer ordinance in place that only permits zero-phosphorus fertilizer to be used?		
<b>Capital Improvement Plan</b>		
<b>I. Capital Improvement Plan</b>		
<b>A. Plans and Policies:</b>		
1. Does the community have a Capital Improvement Plan?		
2. If yes, does the Master Plan link the Capital Improvement Plan with the protection of the health, safety and welfare of residents?		
3. If a Capital Improvement Plan is in place, does the plan:		
a. Include policies related to natural resource protection?		
b. Include standards as the basis for design of storm water and sanitary systems?		
c. Include capital improvement for installation, maintenance and replacement of storm water utilities?		
d. Include capital improvement for installation, maintenance and replacement of sanitary sewer utilities?		
e. Call for the use, maintenance and replacement of storm water BMP's?		