

**COMMON QUESTIONS:
ESTABLISHING LOCAL
GOVERNMENT WETLANDS
AND WATERSHED
MANAGEMENT PROGRAMS**



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PREFACE

This guide concerning frequently asked questions was prepared for the Association of State Wetland Managers (ASWM) by Jon Kusler with the assistance of Nan Stolzenberg, and Jennifer Brady-Conner. It is based upon several more detailed reports available from ASWM including Wetlands and Watershed Management, A Guidebook for Local Governments and Wetlands and Watershed Management: A Collection of Papers. Contact the Association if you are interested in these publications at 1434 Helderberg Trail, Berne, NY 12023; 518-872-1804; Fax: 518-872-1804; aswm@aswm.org.

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What is a “wetlands and watershed management”? What is unique about it?

A. Wetlands and watershed management is an approach that integrates ecosystem management with traditional water and watershed management goals and techniques. It manages water resources taking into account the functions and values of wetlands and other aquatic ecosystems. It manages wetlands and related ecosystems in broader water regime and ecosystem contexts.

What are the benefits to a community of integrating wetlands into watershed management?

A. Benefits include (a) improved achievement of traditional watershed management goals, (b) improved protection and restoration of wetlands and related ecosystems, (c) improved ability to allocate lands throughout a community to their most appropriate uses and protect overall “quality of life” through greenways, recreation areas, and open spaces, and (d) improved ability to meet landowner needs through increased coordination and reduced duplication and costs in regulations. See more discussion below.

Why is integration of wetlands into watershed management important to the achievement of traditional watershed management goals?

A. Integration of wetlands into watershed management can cost-effectively achieve watershed management goals such as water supply, floodplain management, stormwater management, pollution control, and recreation by:

(1) Protecting and restoring the natural “services” provided by wetlands and related ecosystems thereby reducing water resources and watershed management costs by:

- Protecting water quality by intercepting pollutants before they reach lakes and streams,
- Treating polluted water in water bodies,
- Reducing river, lake, and coastal erosion,
- Trapping sediments,
- Storing flood waters and slowly releasing them,
- Conveying flood waters from upstream to downstream points (river adjacent wetlands),
- Providing fish spawning and feeding areas,
- Providing waterfowl nesting and feeding areas,
- Enhancing scenic beauty and use of adjacent water bodies for canoeing, boating, and other uses,
- Enhancing ground water recharge, and
- Protecting natural biodiversity.



Wetlands can reduce downstream flooding

(2) Facilitating overall planning, Environmental Impact Statement analysis, and regulatory permitting for various watershed management measures such as detention basins, channels, and reservoirs by avoiding permitting problems and compensating for wetland and related ecosystem losses.

Why is integration of wetlands into watershed management important to protection and restoration of wetlands and related ecosystems?

A. All wetland functions and values depend in part upon water regimes including water depth, quantity, sediment regimes, high and low flows, and water quality. Watershed management can help protect and restore natural water regimes and the wetland and related ecosystems that depend upon them.

Integration of wetlands with watershed planning and management can also facilitate wetland assessment. It can help predict and maintain future water regimes--essential to evaluation of wetland functions and values and wetland restoration potential.

How can integration of wetlands into watershed management help communities allocate lands to their most suitable uses?

A. Most state land use planning enabling statutes require local governments to allocate lands to their most “appropriate” and “suitable” uses. Identification and analysis of wetlands and related ecosystems as part of broader watershed information gathering and analysis can not only identify natural functions and values relevant to suitable and appropriate use but determine natural hazards (e.g., flooding), property ownership, the costs of public services and other features also relevant to the most appropriate and suitable use of wetlands and other lands and waters.

Integration of wetlands into watershed management can also help communities plan and establish greenways, trails, and corridors on a landscape basis and protect overall quality of life.



Greenway planning for floodplains and wetlands

How can integration of wetlands into watershed management help meet landowner needs?

A. Integration of wetlands into watershed management can provide an overall, scientifically rationale and predictable framework for land and water planning and regulation. It can help integrate wetland protection and restoration with stormwater, floodplain, water supply, water quality, and other traditional water resources management programs. It can help coordinate and reduce duplication between water management and ecosystem management effort and between various types of regulations.

In what contexts is a wetlands and watershed management approach particularly needed?

A. Wetlands and watershed management approach can be useful in all contexts. However, an integrated wetlands and watershed approach is particularly needed for urban, agricultural, and other areas with large numbers of headwater and semi-isolated wetlands and where significant changes in natural runoff have taken place or may take place. A wetland/watershed approach is also particularly needed for semi-isolated wetlands and wetlands along smaller rivers and streams where the quality and quantity of wetland water depend upon activities in the immediate watershed.

Is local government wetlands and watershed management a new concept?

A. No, partial integration of wetlands into watershed management has been undertaken by thousands of communities in the last two decades. These communities have adopted protection and restoration policies for wetlands and other waters as part of broader land use planning and watershed management efforts taking into account natural functions and values, flood hazards, suitability of soils for onsite waste disposal, costs of public services and other factors. General land use planning approaches such as “McHarg” overlay analyses have been used.

More recently, hundreds of communities have undertaken more detailed wetlands and watershed management programs with wetlands and related ecosystems as one component (e.g., King County, Washington; Portland, Oregon). Others have undertaken more detailed wetland inventories and planning efforts such as West Eugene, Oregon. Hundreds of communities have also undertaken detailed, multiobjective floodplain management and greenway efforts with wetlands as one component.

Wetlands and watershed management has not been confined to communities. Many state and federal land management agencies have adopted land and water use plans with wetland and related ecosystem protection and assessment as one component.

What size watershed is appropriate for wetlands and watershed management?

A. All sizes. Consideration of wetland and aquatic ecosystems can and should be integrated into parcel-level watershed planning for small, subwatersheds of only a few acres (e.g., stormwater management, water supply planning, etc.). Consideration of ecosystem functions should be integrated into mid-size watershed unit planning and for large watershed systems (e.g., the Mississippi watershed). A hierarchy of watershed sizes is appropriate for assessment, management, and data gathering purposes, depending upon the circumstances and the water bodies and geographical area “targeted” by a watershed management effort.

Does a wetland and watershed effort need to be called a “wetlands and watershed management”?

A. No. It is not important what it is called. What is important is what is done and how. It can be called watershed management, river basin planning, water planning, advanced identification of wetlands, wetlands planning, multiobjective floodplain management, or by another name. What is important is that wetland and related ecosystems are sustainability planned and managed in a broader landscape/watershed context.

What should be the goals of wetlands/watershed management?

A. Typical goals for wetlands/watershed management include both traditional watershed management goals--water quality protection, flood loss reduction, stormwater management, water supply and other goals—and sustainable protection and restoration of wetland and related ecosystems. These goals are consistent with the overall goal of the Clean Water Act Amendments of 1972--the “restoration and maintenance of the chemical, physical, and biological integrity of the Nation’s waters.” (Section 101, Clean Water Amendments of 1972). Many state, federal, and local planning and management efforts to date have incorporated a more specific “no net loss” of wetland function and value or function, or value and acreage goal as well.

Other common goals include restoration of degraded wetlands and related ecosystems and improved certainty, predictability, flexibility, and lower costs for landowners including reduced duplication and increased consistency and fairness in wetland and water policies.

Are wetlands the only areas considered in wetlands and watershed management?

A. No. Wetland and watershed management efforts consider wetlands in broader ecosystem and hydrologic system contexts. Aquatic ecosystems (lakes, streams, estuaries), floodplains, riparian areas and related ecosystems are considered. Adjacent upland ecosystems are also considered.

Why is it important to protect and restore wetland/stream/floodplain/and riparian corridors?

A. Stream corridors often contain not only the stream but adjacent wetlands, riparian areas and floodplains. All of these components are ecologically significant to particular types of plants and animals. All are subject to flood flows and important in storing flood waters. All are important to control of pollution from adjacent lands and in reducing pollutants in waters.

How important are assessment activities (information gathering and analysis) in wetlands and watershed management?

A. The mapping of wetlands and related ecosystems is essential in wetlands and watershed management because this information, combined with broader hydrologic and ecosystem information, provides a starting point for “visioning”, planning, and plan implementation. Multiobjective and joint assessment of wetlands, floodplains, riparian areas, lakes, rivers, streams, estuaries, and other lands between engineers, water planners, and biologists can not only develop data bases useful to all but build common understanding and cooperation.



“Other common goals include restoration of degraded wetlands and related ecosystems and improved certainty, predictability, flexibility, and lower costs for landowners...”

Does wetlands and watershed management require detailed analysis of functions and values of all wetlands?

A. No. Community-wide wetland and watershed protection efforts to date have been based upon overall, general assessment of wetland functions and values, natural hazards, soil suitability for development, costs of public services, and other factors. More detailed analysis of the functions and values of specific wetlands is typically undertaken by communities only if fills or drainage are proposed for specific wetlands.

Can geoinformation systems and hydrologic models facilitate wetlands and watershed management?

A. Increasingly local governments, consultants, state and federal agencies and others are using geoinformation systems and computer-based hydrologic models to assist analysis of water regimes, the mapping of wetlands (where digital data is available), the assessment of the functions and values of wetlands and related ecosystems, and the design of projects including assessment of the impacts of alternative designs. Such systems are proving useful as more digital data becomes available and the costs of data storage and analysis are reduced. However, there are financial and other limits to accuracy and types of ecosystem and hydrologic data typically available for GIS analysis. And, GIS analysis must, therefore, be combined with some measure of continued on-site data gathering and analysis.

How does a community initiate a wetlands and watershed planning and management effort?

A. A wetlands and watershed planning and management effort can be initiated by a single individual, a group (e.g., an environmental not for profit corporation), an agency, an academic institution, or any other entity or individual with the ability to draw other individuals, groups and organizations together to form and implement a common vision for wetlands and water resources.

Communities can often best start from “where they are” in terms of water resource related issues and problems, land use planning goals, etc. Many communities have found it useful to begin efforts by inventorying “problems” such as flooding, water quality, loss of habitat, and other water problems. Such a survey may provide the basis and incentive for more detailed mapping of wetlands and related resources and more detailed water resources/ watershed assessment and planning to remedy problems and meet future needs.

Who are the critical actors in wetlands and watershed management?

A. Critical actors in a specific context are the individuals and groups with significant decision-making power over the future of wetlands and waters within the geographical area. Actors include public and private land management, planning and regulatory groups and agencies.

For a small watershed owned by a single public or private landowner, wetlands and watershed management might be undertaken by a single landowner. For larger areas, critical actors will often include (a) local (and sometimes state and federal) water and water-related land and water management agencies including wetland, stormwater, floodplain management, water supply, and point and nonpoint pollution control; (b) private landholders and developers; (c) not for profits, and (d) the general public.

What ecosystem protection standards should be applied in wetlands and watershed management?

A. Federal, state, and local government have broadly applied the sorts of general standards already described above. More specific standards for development and other activities which may damage wetland and related ecosystems include:

- Development, fills, structures, etc. should be located outside of wetlands and related ecosystems to the extent practical,
- Where avoidance is not possible, measures should be taken to reduce the impact of activities upon wetlands and related ecosystems, and
- Where it is not possible to avoid all impacts through impact reduction, measures should be taken to compensate for residual losses to wetland ecosystems through wetland restoration and creation and other techniques.
- To protect the ecological integrity of wetlands and related ecosystem, efforts are made to maintain the natural hydrologic regime including natural flood cycles.
- Fragmentation should be avoided and connectivity between wetlands, other waters and upland ecosystems maintained.

What are the critical steps or components of community wetland/watershed management?

A. Essential steps vary somewhat but generally include:

- Identification of watershed and wetland problems, issues, and goals;
- Identification and involvement of key actors;
- Definition of the planning/management area;
- Inventory and mapping of wetland and other water resources on a watershed basis;
- Evaluation of hydrologic and ecological interrelationships;
- Creation of a future different “vision” (or alternative visions) and plans for such wetland/water resources;
- Review of this vision or visions and plans by key actors; and
- Implementation.

How can wetlands and watershed inventories and plans facilitate case-by-case regulatory permitting?



Restoration can reduce pollution

A. Inventory and planning efforts can establish an overall framework for more specific permitting and planning of specific areas. Plans can coordinate regulations and reduce duplication and conflicts.

What role can restoration of wetlands and related ecosystems play in wetlands and watershed management?

A. Restoration can help solve existing problems and prevent future ones. Restoration can reduce water pollution, restore flood storage and conveyance, and provide habitat. It can also be used to compensate for future losses.

What are the major barriers to wetlands/watershed management?

A. The major impediments to wetlands and watershed management are institutional rather than scientific. Wetland, stormwater, floodplain management, water supply, pollution control, and other programs have typically been authorized by separate enabling legislation. Programs have separate budgets, are often located at separate locations, have different “client” groups, and have separate bureaucracies. These barriers can best be overcome by bringing people and programs with common interests together in a common mapping assessment, and planning effort.

Why is wetlands and watershed management important to long term land and water use?

A. Integrating wetlands and related ecosystems into water resources/watershed management is not easy. But, there are strong economic, scientific and institutional reasons to make wetlands and watershed management work. Wetlands and watershed management is the only practical way to achieve multiobjective, water resources management goals and reduce conflicts between traditional water resources management and aquatic ecosystem protection and management.

SUGGESTED READINGS

Association of State Floodplain Managers. 1997. Using Multi-Objective Management to Reduce Flood Losses In Your Watershed. Association of State Floodplain Managers, Madison, WI.

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Mitch, W. & J. Gosslink, 2nd Ed., 1993. Wetlands. Van Nostrand Reinhold, New York

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- National Wildlife Federation. 1999. Higher Ground. Washington, D.C.
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- Tiner, R. 1999. Wetland Indicators: A Guide to Wetland Identification, Delineation, Classification, and Mapping. Lewis Publishers, Washington, D.C.
- U.S. Environmental Protection Agency. 1993. Proceedings, Watershed '93, A National Conference on Watershed Management. March 21-24, 1993, Alexandria, Virginia.
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- U.S. Environmental Protection Agency. 1996. Proceedings, Watershed '96: Moving Ahead Together, Technical Conference and Exposition, June 8-12, 1996, Baltimore, Maryland. 1165 pp.
- U.S. Environmental Protection Agency. 1996. Protecting Natural Wetlands: A Guide to Stormwater Best Management Practices, Washington, D.C.
- U.S. Environmental Protection Agency, 1997. Top Ten Watershed Lessons Learned. Environmental Protection Agency, Washington, D.C.
- World Wildlife Fund. 1992. Statewide Wetlands Strategies: A Guide to Protecting and Managing the Resource. Published by Island Press, Covelo, California

SUGGESTED WEB SITES

http://aswm.org/pdf_lib/tiner_2002_wshed.pdf

Tiner (ed.) Watershed-Based Planning and Evaluation (Papers from a symposium.)

http://wetlands.fws.gov/Pubs_Reports/Md_Watershed/Md_watershed.htm

Watershed-based wetland characterization for Maryland's Nanticoke River and Coastal Bays Watershed: A preliminary assessment report.

<http://lawr.ucdavis.edu/classes/hyd143/HGM.pdf#search='Technical%20Report%20WRPDE9'> Smith, D.m R., Ammann, A., Bartoldus, C., and Brinson, M. M. (1995). "An approach for assessing wetland functions using hydrogeomorphic classification, reference wetlands, and functional indices," Technical Report WRP-DE-9, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. NTIS No. AD A307 121.

http://www.nwi.fws.gov/mapper_tool.htm

National Wetland Inventory Wetland Mapper

http://wetlands.fws.gov/Pubs_Reports/Other_Pubs/LANDSPRES.pdf
Adapting the National Wetland Inventory for Preliminary Assessment of Wetland Functions.

http://wetlands.fws.gov/Pubs_Reports/Other_Pubs/WET%20CLASS%20AND%20ASSESSMENT%20TEMPLATE.pdf:
Enhancing National Wetland Inventory Data for Watershed-based Wetland Characterizations and Functional Assessment.

<http://www.epa.gov/OWOW/watershed/wacademy/itsannot.html>
EPA Watershed Academy. Many publications can be obtained from this site.

<http://www.epa.gov/owow/wetlands/restore/links>
River Corridor and Wetland Restoration. Wetlands Restoration Links for State and Local Governments.

<http://www.cicacenter.org/swift.html>
Construction Industry Compliance Assistance, State Wetlands Information Tool.

<http://wetlands.fws.gov/>
U.S. Fish and Wildlife Service National Wetland Inventory.

www.nwi.fws.gov/bha
U.S. Fish and Wildlife Service. Branch of Habitat Assessment. National Wetland Plant List.

www.pwrc.usgs.gov/wli/
USDA Natural Resource Conservation Service, Wetland Science Institute.

www.epa.gov/owow/wetlands
U.S. Environmental Protection Agency. Wetlands. Section 404 regulations.

www.wes.army.mil/el/wetlands/wetlands.html
U.S. Corps of Engineers Environmental Laboratory Wetlands. Access to many reports including the 1987 Wetland Delineation manual.

<http://www.soils.usda.gov/use/hydric/>
USDA. Natural Resources Conservation Service. Access to hydric soils list.

<http://plants.usda.gov/>
USDA National Plant Data Base.

<http://www.nwrc.usgs.gov>
U.S. Geological Survey. National Wetlands Research Center. Online publications.

<http://www.water.ncsu.edu/watershedss/info/wetlands/types3.html>
North Carolina State University. Types of Wetlands and Their Roles in the Watershed

<http://www.ecy.wa.gov/programs/tcp/smu/sediment.html>
Washington State Sediment Management web page. Many good references.

http://aswm.org/pdf_lib/wetlandswatershed.pdf

A Guide for Local Governments: Wetlands and Watershed Management, Association of State Wetland Managers, Berne, New York

<http://www.angelfire.com/nh/cpkumar/hydrology.html>

Kumar Links to Hydrology Resources. Web site has extensive links to other hydrology sites.

<http://ci.fort-worth.tx.us/dem/stormcontacts.htm>

Stormwater web site for the city of Fort Worth, Texas. This site also lists (links) web sites for other cities with stormwater programs.

http://cfpub1.epa.gov/npdes/home.cfm?program_id=6

U.S. Environmental Protection Agency. National Pollutant Discharge Elimination System (NPDES). Stormwater Program. Many links.

<http://www.ci.berkeley.ca.us/pw/Storm/storm.html>

Berkley Stormwater program site including many links and ordinances.

<http://www.ci.eugene.or.us/wewetlands/>

Eugene Parks and Open Space. West Eugene Wetlands. Many excellent references and links including description of the West Eugene wetlands and related resource management programs (e.g., stormwater). Photo tour of wetlands.

<http://www.ci.tulsa.ok.us/Public+Works/Flood+Control/stormwater+management+program.htm>

The Tulsa Stormwater Management Program which incorporates many innovative water-shed based elements and exceeds the FEMA standards in many ways.

<http://www.charmeck.org/Departments/LUESA/Water+and+Land+Resources/Programs/Floodplains/home.htm>

Charlotte and Mecklenburg County. Water & Land Resources. Floodplains & Flooding. Excellent site with many good links. Flood maps are available online.

<http://dnr.metrokc.gov/wlr/watersheds.htm>

King County Watersheds. Much information available.

<http://www.fema.gov/fima/floodplain.shtm>

Federal Emergency Management Agency, Floodplain Management.

<http://www.fema.gov/fima/>

Federal Emergency Management Agency, Mitigation Division. Hazard mitigation success stories (listed on FEMA Mitigation site).

<http://www.floods.org/home/default.asp>

Association of State Floodplain Managers. Many excellent links here.

<http://www.floods.org/publications/mit%20succ%20stories/mssiv1.htm>

Association of State Floodplain Managers, Inc. Community flood hazard mitigation success stories, Part 1V

<http://www.floods.org/publications/mit%20succ%20stories/mssiii1.htm>
Community flood hazard mitigation success stories, Part 111.

<http://www.epa.gov/owow/NPS/Success319/>
U.S. Environmental Protection Agency, Polluted Runoff (Nonpoint Source Pollution) Section 319 Nonpoint Source Success Stories.

<http://www.epa.gov/safewater/>
U.S. Environmental Protection Agency. Ground Water and Drinking Water. Many excellent links.

<http://www.epa.gov/safewater/protect.html>
U.S. Environmental Protection Agency. Source Water Protection.

<http://www.ctic.purdue.edu/KYW/Brochures/Wetlands.html>
Know Your Watershed. Web site generally addressing wetlands and watershed management.

<http://www.water.ncsu.edu/watershedss/info/wetlands/index.html>
Watersheds. Information on Wetlands. Good summary site.

<http://www.water.ncsu.edu/watershedss/info/wetlands/manage.html>
Watersheds. Wetland Management. Good summary.

<http://books.nap.edu/books/0309067774/html/98.html#pagetop>
The National Academy Press. Watershed Management for Potable Water Supply: Assessing the New York City Strategy (2000). Commission on Geosciences, Environment and Resources (CGER).

<http://www.ci.bloomington.mn.us/cityhall/dept/pubworks/engineer/wetland/wetplan.htm>
The City of Bloomington Wetland Protection and Management Plan.



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An electronic version of this brochure is available in PDF at:
http://aswm.org/pdf_lib/3_watershed_6_26_06.pdf