

**general land use**



# SUMMARY SHEET

category

WATER QUALITY

sub-category

GENERAL  
LAND USE

BMP

LAND USE  
DISTRIBUTION

## OBJECTIVE

To arrange land uses, densities and land coverages to give maximum protection to groundwater quantity and quality by minimizing impervious coverage over aquifers and intake areas and preventing location of pollution.

## WHERE APPLICABLE

All areas of land within a municipality which overlie major aquifers of high yield and their recharge areas, aquifers of minor yield and their recharge areas, and areas where there is a possibility of confined aquifers of high yield overlain by thin sands of low yield.

## PROS

1. Helps to maintain balance of the water budget by restricting surfaces which prevent the penetration of precipitation into the ground and by maximizing recharge.
2. Arranges land uses to most appropriately accomodate the requirements for impervious surfaces in accordance with recharge requirements to ensure maintenance of natural groundwater levels with the overall determinant being the effective management of groundwater quantity and quality.

## CONS

1. There may be a short term disadvantage to local planning and governing bodies because of the need to revise existing land use control ordinances or add groundwater management ordinances to their existing codes.
2. Time will need to be invested in establishing policy towards site plans and subdivision applications which are pending for parcels located in designated protected areas.

## IMPLEMENTATION CONSIDERATIONS

1. Evaluation of Existing Conditions - Survey and map major and minor aquifers and their recharge areas.
2. Classification - Classify major and minor aquifers and their recharge areas into one or more levels of protection based on their relative susceptibility to contamination or depletion.
3. Conformity of Existing Ordinances - Re-evaluate master plan elements which relate economic and population growth with water supply (if any) and revise if necessary. Re-evaluate land development ordinances, revising and/or supplementing where necessary to incorporate the groundwater considerations and to conform them to the master plan.
4. Implement the legal adoption of the zoning and subdivision revisions and amendments, including public hearings.

Design criteria and specifications for the following measures will be discussed in detail in succeeding BMP fact sheets:

1. Porous Asphalt Pavement
2. Modular Paving
3. Collection of runoff from roofs

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LAND USE DISTRIBUTION

Aside from the designation of areas to be protected or managed, specific standards relating to impervious surfaces can be incorporated into land development ordinances. An example follows below. Note: The Figures used below are hypothetical and are for illustrative purposes only.

IS=Impervious surfaces  
PP=Porous pavements

	<u>GROUNDWATER MANAGEMENT AREAS</u>		
	<u>Level I</u>	<u>Level II</u>	<u>Level III</u>
% Lot Coverage IS	0-3	3-5	5-10
% Lot Coverage PP	5-10	10-15	15-20
% Predevel. Recharge	100	90	80

Unfortunately, there are very few municipal ordinances which have been formulated to date using the approach described above. However the planning agencies of Metro-Dade County, Florida, and Nassau and Suffolk Counties in Long Island, New York, have enacted such ordinances at the regional level. In New Jersey, counties do not possess the power to zone. That power is possessed by local municipalities alone. The procedure and composition of the ordinances mentioned are usable as models, however, and should be investigated.

Groundwater management is an integral part of the Comprehensive Management Plan developed by the Pinelands Commission, and may serve as a useful example as well.

1. Direct costs of effecting these measures would be the costs of hiring or retaining planning and legal consultation to amend the local officials.
2. Indirect costs may be incurred if less development occurs on designated areas and the tax revenue is not compensated for by an increase in development or density elsewhere.
3. Any added expense of using porous pavements will be borne by the developer, although these materials may prove to be cost effective.

Implementation takes place through the adoption of groundwater related master plans and zoning ordinances.

In general, the land use control techniques described above have gained legal acceptance. However, applying such techniques to major and minor aquifers and their critical recharge areas is still legally unproven. Dade County, Florida is fighting challenges to an ordinance of theirs which restricts development in well fields based on cones of influences. Their "overlay ordinance", which deals with levels of protection for management areas, as described above, is yet to be adopted formally.

For Additional Information

1. Lower Raritan/Middlesex County Water Resources Management Program. Groundwater Recharge Management Handbook. (author), March 31, 1981.
2. Tourbier, J. Toby, Westmacott, Richard. A Handbook of Measures to Protect Water Resources in Land Development. Washington: The Urban Land Institute, 1981.

category

WATER QUALITY

# SUMMARY SHEET

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GENERAL  
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BAR  
VARIANCES

## OBJECTIVE

To present a well constructed zoning ordinance which protects aquifer intake areas from being compromised by variances which corrode the effectiveness in promoting groundwater quality and quantity.

## WHERE APPLICABLE

Critical recharge areas which are the most productive for replenishing groundwater supply and/or directly over pervious major aquifers such as stratified drift aquifers.

## PROS

1. Low public cost-administration of the zoning ordinance is the only public cost incurred directly.
2. Potentially effective - protecting intake areas from development is a preventive measure which is more effective than corrective measures after the damage is done.

## CONS

1. Untested legality- no precedent for a prohibition of variances for environmental reasons.
2. Possible loss of tax ratables- if development is turned away, the municipality may collect less property taxes than might otherwise be the case.

## IMPLEMENTATION CONSIDERATION

The zoning ordinance would contain a provision which would prohibit granting of variances in the areas which are defined as critical to groundwater recharge. Especially important are prohibition of variances which would 1) introduce a potentially harmful use (e.g., toxic chemical processing) to the recharge area and/or 2) result in extensive impervious cover to the recharge area. The areas in which variances would be barred are most likely zoned for a low density or planned development. When development pressures increase, the demand for variances increases--thus the need for barring them.

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## BAR VARIANCES

To present a hypothetical example; the owner of a tract of land in an area recently zoned as Maximum Protection Critical Recharge Zone (MPCR) operates a farm (a permitted use) but applies for a bulk variance in order to subdivide a portion into one acre lots. The minimum allowable lot size is five acres in the zone. If the variance is granted, a precedent will be set which will encourage other land owners to apply for similar variances. The result will be a gradual erosion of the effectiveness of the area for recharge and a greater concentration of contaminants with direct access to the aquifer below.

Prohibiting variances is an untested area of legal practice. Applications for variances which meet hardship tests must be granted according to state law. There is no provision in state law for barring variances, but environmental causes are valid reasons for creating zones and zoning regulations. By extension, it may be valid to bar variances for environmental reasons.

To implement a provision to bar variances, the cost is that of amending zoning ordinances - attorneys fees and public hearing costs.

### For Additional Information

1. The Municipal Land Use Law Chapter 291, Laws of N.J. 1975. Compiled as 40:55D - 1 et seq.