ENVIRONMENT

OLNEY MASTER PLAN

Montgomery County Maryland

ENVIRONMENT

The Olney Planning Area is rich in natural resources. Several streams and rivers, including the Patuxent, Hawlings and North Branch of Rock Creek, flow through the area. Despite recent development, over 35 percent of the land is still covered by mature trees. Gently rolling hills and steeper slopes near river beds create an interesting landscape and provide sweeping vistas of rich farmland. As previously noted, Olney's soils are so productive that the County has designated portions of the planning area as an important agriculture area and nominated it as a State Critical Area.

To preserve this diverse and important resource base, a sensitive balance must be struck between the need for new homes and businesses in Olney and the need to protect the natural environment. Everybody today understands that we are on a limited planet with limited resources. A master plan for an area such as Olney is a good place to start to delineate the bounds of environmental encroachment. This chapter analyzes three areas of environmental concern. They are:

- Geology and Soils - the land beneath us;
- Stormwater Management - the water we see and use;
- Noise Analysis - the sound of our community.

If the Plan recommendations are implemented, human activities will be compatible with these natural systems.

GEOLOGY AND SOILS

An important issue in planning is not where to build, but where not to build. The geologic data shown in the Environmental Composite Map is a useful guide for making these types of land use decisions. A description of the factors used in the suitability analysis may be found in Table 14.

The most severely restrictive soils for building in Olney are in stream valleys where the streams have cut steep slopes and deposited alluvium. Floodplains, seasonally high water tables, soils that have problems of a very shallow depth to bedrock, and severely eroded soils with slopes over 15 percent are all included in the severely restricted area.

Using the Environmental Composite Map as a guideline, the following land use recommendations are proposed for the Town Center, Greater Olney and Rural Area.

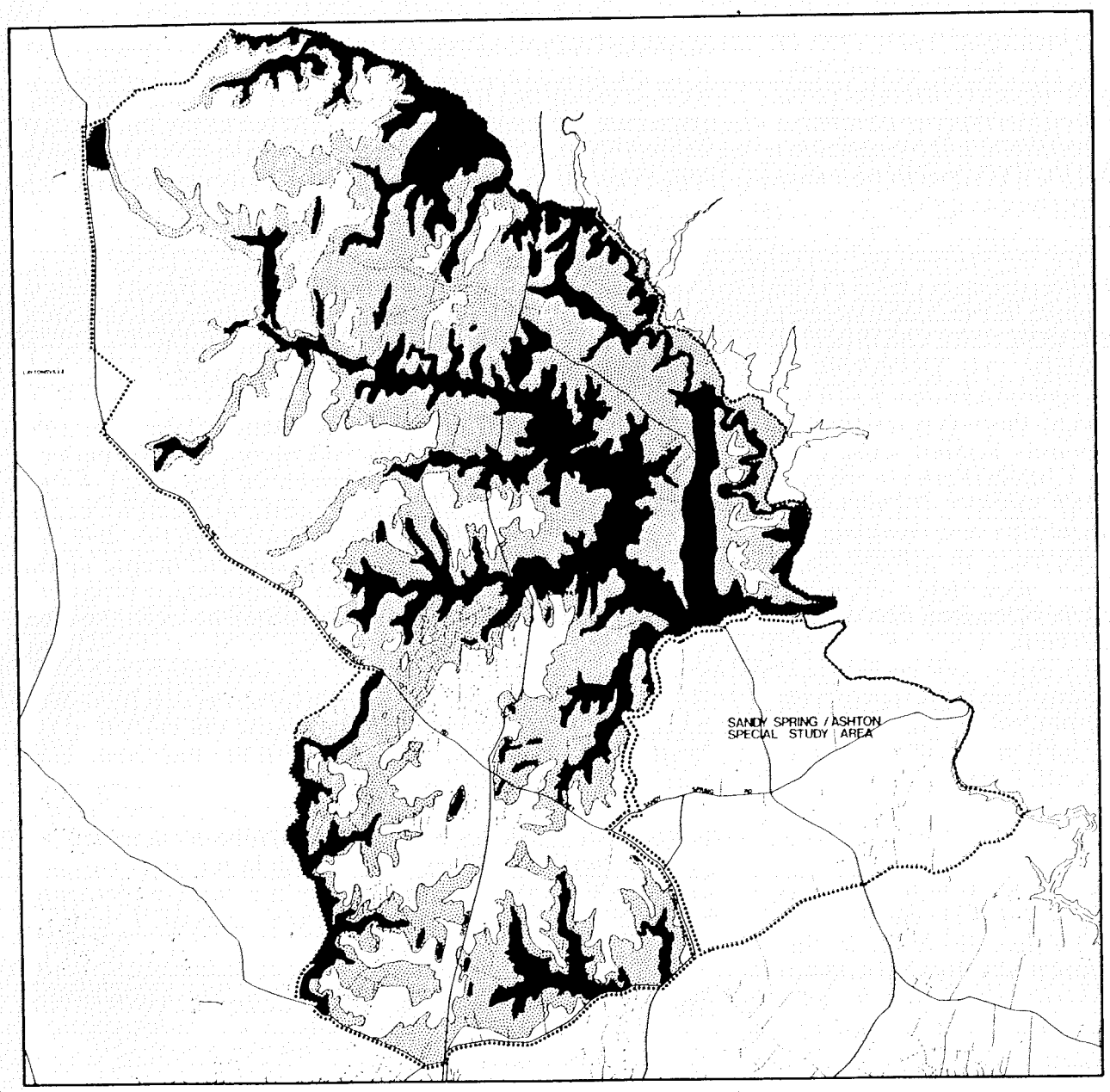
Town Center

The Town Center has soils which are generally well suited for moderate to high density development, except for the northeastern quadrant of the town center. This area of

TABLE 14

ENVIRONMENTAL COMPOSITE MAP:
FACTORS USED IN SOIL SUITABILITY ANALYSIS

FACTOR	DESCRIPTION
Thickness of overburden	Refers to the depth of soil. The greater the amount of overburden, the more suitable the area is for development. Shallow bedrock (less than twenty feet) may severely limit construction. A range of 20-50 feet thickness may moderately limit development. Areas having 20-50 feet overburden are generally suited for low-density subdivision development with septic tanks. Construction is generally well suited in areas of thick overburden (greater than 50 feet).
Shallow depth to bedrock	Refers to soils where there is less than 20 feet of overburden. The effectiveness of septic tank operation in areas of shallow bedrock is often impaired due to the absence of enough suitable soil for filtering of effluent. Extensive blasting is often required for basements, which may then experience problems of excessive moisture build-up.
Alluvium (water deposited material)	Increases the potential for construction problems and septic tank drainage field malfunction. Because alluvium soils generally coincide with floodplains, they indicate areas subject to high water and property damage.
Steep slopes (over 15%)	Poses serious environmental and economic problems. The disturbance of steep slopes accelerates erosion and increases the sediment load to receiving waters. This is especially true when the steep slope occurs in areas of shallow bedrock and severely eroded soil. Protection of the natural vegetative cover, especially mature trees, in these areas is important to hold the soil in place and to maintain normal erosion levels.



ENVIRONMENT COMPOSITE

- Severe Limitations (Multiple Factors) Steep slope and/or shallow bedrock and alluvium
- Moderate Limitations (One Factor) Steep slope or 20'- 50' overburden thickness
- Slight Limitations (No Factors)
- Planning Area Boundary

Approved and Adopted : June 1980

OLNEY MASTER PLAN

Montgomery County, Maryland

higher density development will require special attention to problems of stormwater management and sedimentation control. (Additional analysis will be provided regarding stormwater issues in the Stormwater Management section.) Areas of steep slopes should be protected from development. If basements are constructed, care should be taken to protect against any potential moisture build-up.

Greater Olney

Existing subdivisions west of Georgia Avenue are located on generally thick, well drained soils. As construction continues within the sewer envelope, the tributaries of Rock Creek should be protected against erosion and sedimentation. East of Georgia Avenue, there is a mixture of well suited and moderately to severely limited soils. The principal limiting condition in the southeast area is created by the cutting action of the upper reaches of Northwest Branch. Overall density here should be one dwelling per two acres but clustering of development on suitable soils with protection of more sensitive areas may allow for higher density (one acre) in certain areas (see Residential Land Use section for further discussion).

In the northeast portion of Greater Olney, the tributaries to James Creek should be protected from extensive development. The remaining portion of the area is generally suited for large lot residential uses.

Rural Area

A major portion of severely limited land in this area is already included in the Reddy Branch and Hawlings River Stream Valley Parks. When subdivisions are built in this region, sensitive environmental land should be protected as private conservation areas.

WATERSHED MANAGEMENT

One area of particular concern when discussing water resources is stormwater runoff. Stormwater runoff poses several interrelated watershed problems; generally speaking, these problems fall into three major categories:

- water quality
- erosion and sedimentation, and
- flooding

Water Quality. The quality of stormwater runoff is primarily affected by two major generalized land use types: urban/suburban and rural/agricultural.

In the urban/suburban areas stormwater flows over sidewalks, streets, parking lots, and other highly impervious areas, washing off substances such as petroleum derivatives (gas, oil, grease, etc.) road salt, de-icers, litter, pet animal wastes, lawn and garden products, and disintegrated asphalt. In rural/agricultural areas, stormwater flows over cultivated fields, feedlots and pastureland, washing off pesticides, fertilizers and livestock wastes.

While the rate at which these substances are washed-off is much quicker in urban/suburban areas, the overall effect from both types of land uses is essentially the same. Once carried into natural watercourses in various concentrations, all of the above mentioned substances become instream polluting agents. It is widely documented and acknowledged that they are responsible for the subsequent deterioration of water quality in the form of increased bio-chemical oxygen demand and excessive nutrient levels.

Erosion and Sedimentation. If stormwater runoff is left

unmanaged, it may create problems stemming from accelerated erosion and sedimentation rates. There not only exists the potential loss of valuable topsoil but, additionally, many other adverse impacts result from the transport and deposition of sediment in natural waterways. These include accelerated erosion of streambanks; increased turbidity; increased treatment costs at water filtration facilities; and, the blanketing of fish and shellfish food supplies and nesting areas. Sedimentation diminishes water storage capacity in the reservoirs, creating a need for more frequent dredging at higher costs.

Flooding. Uncontrolled stormwater runoff can increase the occurrence and intensity of flooding, especially in urbanizing areas. As the percentage of impervious land increases (due to expanding development in the form of housing, highways, shopping centers, etc.), on-site infiltration of stormwater decreases, resulting in higher volumes and peak runoff in stream channels over relatively short periods of time. As a result, flooding is increased, as the channel capacity is more frequently exceeded, creating in-stream erosion, and potential flood damages.

Stormwater Management Recommendations

To preserve and improve the quality of streams in the Olney Planning Area and to reduce the harmful effects of flooding, erosion and sedimentation, new development must be channeled and phased in accord with a stormwater management program.

This Plan endorses and is complementary to the recommendations contained within M-NCPPC's "Functional Master Plan for Conservation and Management in the Rock Creek Basin," which outlines recommendations concerning water quantity, water quality, erosion and sedimentation and general environmental quality. The Drainage Basin map delineates the portion of the Rock Creek basin contained within the Olney Planning Area.

One of the areas designated as a Transferable Development Rights receiving area lies in the Rock Creek basin. The TDR program will allow an increase in density (from 1 dwelling per acre to 2 dwellings per acre) in receiving area "B" - Upper Rock Creek. To help assure that residential development does not impair the quality or quantity of stormwater runoff in the Rock Creek basin, the Plan proposes a stormwater management facility be constructed prior to or in conjunction with development of the receiving area. The Land Use Plan map shows the approximate location of the facility; the exact location and size should be determined by the Montgomery County Soil Conservation Department at time of subdivision. A well-managed maintenance program and a water quality monitoring program is recommended to reduce and monitor potential negative effects from development.

The proposed structure will control downstream channels only. Development plans will also be reviewed for adequate stormwater management facilities to provide adequate protection of upstream channels.

While detailed recommendations require site specific analysis, the following recommendations will serve to reduce the negative impact of man's activities upon the watershed and help protect the Olney Planning Area's natural stream systems. Those recommendations with universal application within the Olney Planning Area are designated as area-wide. Other recommendations are either keyed to Olney Town Center, Greater Olney or to the rural/agricultural area. Recommendations are coded to indicate their respective position in the water resource management process:

P = Planning
D = Design
C = Construction
M = Maintenance
E = Education

Area-Wide Recommendations

The following recommendations are not tied to any particular land use category and may apply, where appropriate, anywhere within the Olney Planning Area:

1. Divert stormwater flows from particularly erosive areas, as identified by the Natural Systems Analysis, through the use of standard diversion techniques such as interceptor berms or diversion dikes. (C)

2. Identify, for the residents of the Olney Planning Area, those service stations which accept old engine oil for recycling to present an alternative to improper disposal through the storm sewer system. (E)

3. Require approved spill-control plans to be filed with the Department of Environmental Protection for regular commercial carriers of potential pollutants and toxins. (P)

4. Avoid development of areas of steep slope, poorly-drained soils, floodplain areas, groundwater recharge areas and environmentally sensitive areas. (C)

Olney Town Center and Greater Olney Recommendations

The following recommendations pertain primarily to areas of existing, on-going, or proposed development in Olney Town Center.

1. Reduce the negative watershed impacts that may be associated with Town Center development in the headwaters of the Hawlings River by (P, D):

   - Requiring stormwater managment techniques, structural and non-structural, to control the quality and quantity of runoff from new development (D, C, M);

   - Clustering proposed development to accommodate holding ponds (D).

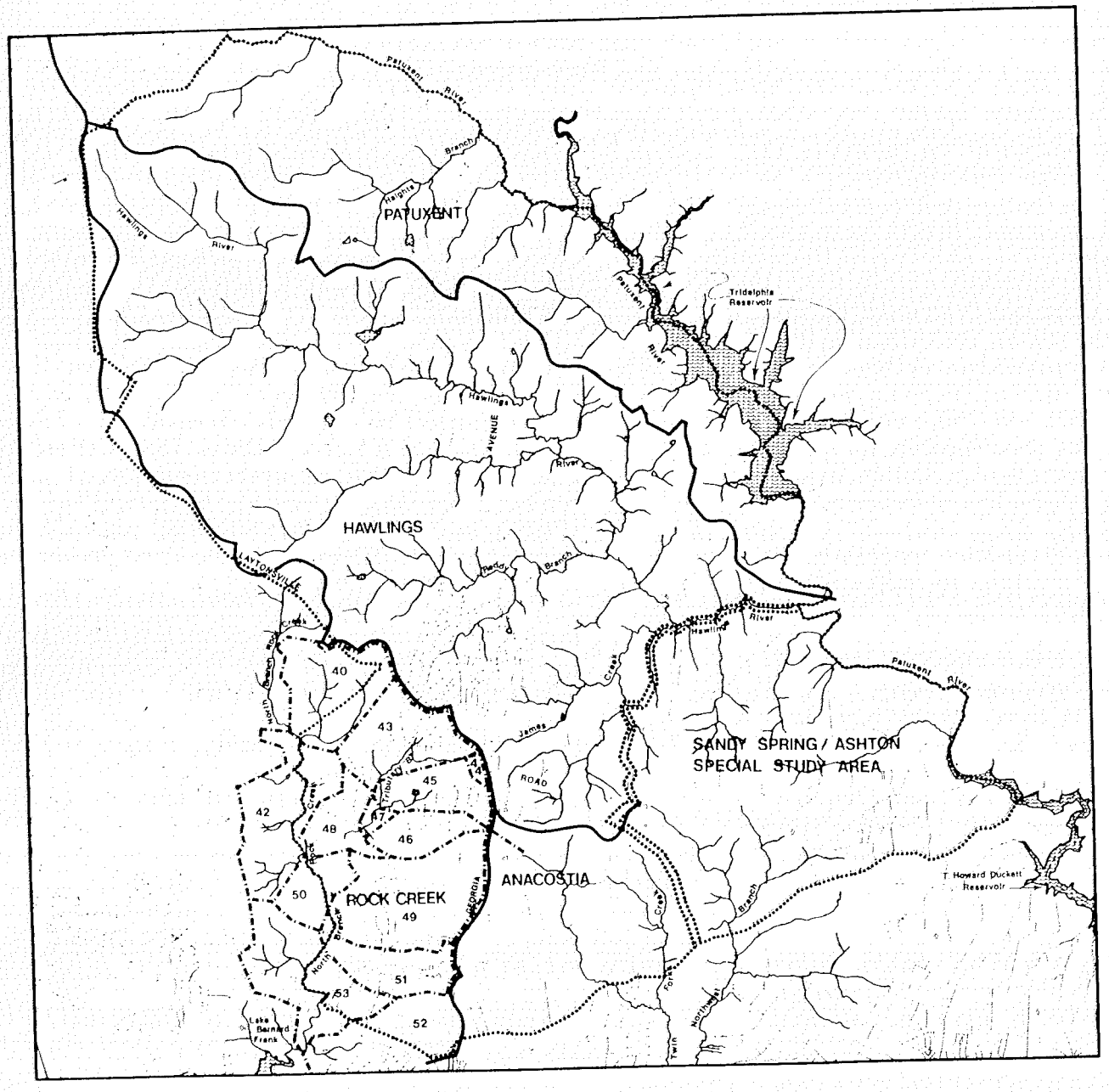
2. Prohibit development in the 100-year floodplain. Utilize and expand upon the floodplain buffer required by the subdivision regulations and building codes to help protect natural waterways in Olney Town Center from potential degradation as the Town Center is built. (D)

3. Avoid unnecessary and potentially massive upland erosion by phasing land clearing operations with the actual start of construction to preclude lags where plots of land are stripped weeks in advance of the initial stage of construction. Maintain as much natural vegetation as possible to protect against erosion and to trap sediment generated on site. (C)

4. During construction-related activities, cover spoil piles with plastic or other protective material when not in use to reduce off-site sediment transport during rainfall events. (C)

5. Include expanses of impervious surfaces to reduce the volumes and velocities of stormwater runoff. These systems might include:

   a) dutch drains (gravel-filled ditches with an optional pipe in the base) used as dividing strips between parking lots, or as a drain for small parking lots or driveways;



DRAINAGE BASIN MAP

53 — Hydrologic Land Segment Number (See Functional Master Plan for Preservation and Conservation of Rock Creek Watershed)

Ridge lines

Planning Area Boundary

Approved and Adopted : June 1980

OLNEY MASTER PLAN

Montgomery County, Maryland

b) drainage swales; or

c) grass-lined ditches.

Emphasis must be placed upon the necessity of proper design, construction and maintenance of the above-mentioned alternative drainage systems to avoid on-site flooding and health problems related to ponding. (D)

6. Storage above that normally required by the Montgomery Soil Conservation District should be considered on a case-by-case basis, in the areas of intensive development, such as shopping centers. Joint funding of facilities may be considered, if feasible. Such measures should serve to reduce the degree of environmental degradation associated with runoff from large impervious areas. (D)

7. Employ standard energy dissipation techniques, at all stormwater drainage outfalls to reduce upland and channel erosion. (D)

8. Implement an effective street cleaning and parking lot maintenance program, using vacuum sweepers, where possible,[1] to reduce the biochemical loading of waterways. (D)

9. Educate the general public in the proper application of fertilizers and pesticides through posted notices at fertilizer and pesticide retail outlets to reduce washoff of these potentially polluting substances. (E)

10. Implement regulations requiring vegetative debris, such as leaves and grass clippings which can contribute oxygen demanding and nutrient sources to runoff, be bagged, bundled or put out no more than one day prior to pickup and increase the frequency of pickups to coincide with escalating domestic yard work in the spring and fall. (M)

11. Establish a Department of Environmental Protection water quantity and water quality monitoring station or stations downstream of the northeast quadrant of the Olney Town Center to assess the impacts of development as it proceeds. This concept would allow for land use staging in the northeast quadrant and should provide sufficient lead time to correct problems, if and when they arise. (P)

12. Implement an efficient sewer maintenance program to monitor and correct any polluting overflows or extra filtration. (M)

13. Upgrade the Cashell Road Bridge crossing so that it will have sufficient capacity to handle the 25-year peak flow under ultimate land use conditions. (C)

Rural Area

The following recommendations relate to the large, low-density land use areas in Upper Olney:

1. Advocate the use of fencing in conjunction with grass or forest buffer strips to protect natural

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[1] To reduce the potential of groundwater contamination, grease traps and vacuum sweeping become increasingly important measures where dutch drains are situated downslope of parking lots.

watercourses from shock waste loadings and trampling and subsequent destruction of protective adjacent streambank vegetation by livestock. (C)

2. Encourage the diversion of runoff away from feedlot areas through standard techniques such as interceptor berms or diversion dikes to reduce waste loadings of natural waterways. (C)

3. Promote the use of grass or forest buffer strips to protect streams from the washoff of fertilizer or pesticide applications. (E)

4. Require that agriculturalists leasing Commission or County-owned land implement widely acknowledged land conservation practices as promoted by the U.S. Soil Conservation Service, such as strip-cropping and contour plowing; especially for crops like corn with poor soil-holding characteristics.

5. Establish an effective monitoring program to detect and correct any septic tank failures. (M)

NOISE ANALYSIS

Noise levels are becoming an increasingly significant factor in the quality of our living environment. Growing concern about noise and its effects was demonstrated by the Maryland General Assembly when they adopted the 1974 Environmental Noise Act, stating "A substantial body of knowledge exists concerning the adverse effects of noise on the public health, welfare and property; this knowledge should be used to establish environmental noise standards which will protect the public with an adequate margin of safety." This Plan attempts to reduce the effects of noise through the use of setbacks, site plan review, and noise performance guidelines.

In the Olney area, Georgia Avenue and Route 108 are the major noise sources. Residential land uses along them will require special consideration to avoid excessive noise impacts.

Human response to noise varies according to the type of activity in which a person is involved. While 70 dBA[2] might be desirable at a social gathering or sporting event, it would be undesirable while carrying on an important discussion or trying to relax. Since high noise levels restrict certain types of human activity, each land use category has a naturally determined, fixed limit which cannot be exceeded if the land use is to maintain its proper function. Guidelines and development policies should be based upon these natural limits.

An LDN[3] of 70 dBA is equivalent to a person sitting 10 feet from a continuously operating vacuum cleaner all day, and sleeping 30 feet away from it all night. A continuous sound level of 70 dBA will not permit normal conversation at a distance of 3 feet. Studies have shown that at this level, pupils of the eyes dialate, blood vessels constrict, causing increased arterial pressure, nervous-

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2 dBA is the standard expression for "decibels," with a weighting to account for the sensitivity of the human ear.

3 LDN stands for "Day/Night Noise Level" which indicates an average sound pressure level, reflecting the variations in noise over time, including a weighting for nighttime (10 P.M. - 7 A.M.) levels to account for the greater degree of distraction experienced at night and while trying to sleep. This descriptor is currently being used by the U.S. EPA and the State of Maryland for their noise standards.

ness, fatigue and hearing loss. Further, it has been shown that the body does not adapt to these physiological phenomena, even though a person might become "accustomed" to the noise.

Commercial and office uses require a fairly constant exchange of information and ideas, necessitating noise levels that will permit speech communication (about 65-dBA).

Residential land use is the most sensitive due to noise interference with sleep and relaxation.

Fifty-five (55) dBA has been found to be an acceptable residential exterior noise level for several reasons.

Normal conversation is unimpaired, physiological and psychologi cal symptoms do not generally occur, task performance is nearly optimum and annoyance is slight. Noises at this level will awaken many people from sleep, however.

An exterior level of 60 dBA can usually be reduced to 50 dBA inside with windows open or 45 dBA inside with windows closed. Forty-five (45) dBA is considered to be an acceptable interior level and will not cause sleep interference in most people.

State Noise Regulations

Pursuant to the Environmental Noise Act of 1974, the State of Maryland has established noise standards by zoning categories. These standards are goals to protect human health and welfare. They are to be achieved through application of regulations relating to land use management, as well as isolation of noise producing equipment, insulation, and equipment modification. These standards (goals) are as follows:

STATE OF MARYLAND
NOISE COMPATIBILITY GUIDELINES

ZONING DISTRICT	LEVEL	MEASURE[1]
Industrial	70 dBA	L_{eq} (24)
Commercial	64 dBA	L_{DN}
Residential	55 dBA	L_{DN}

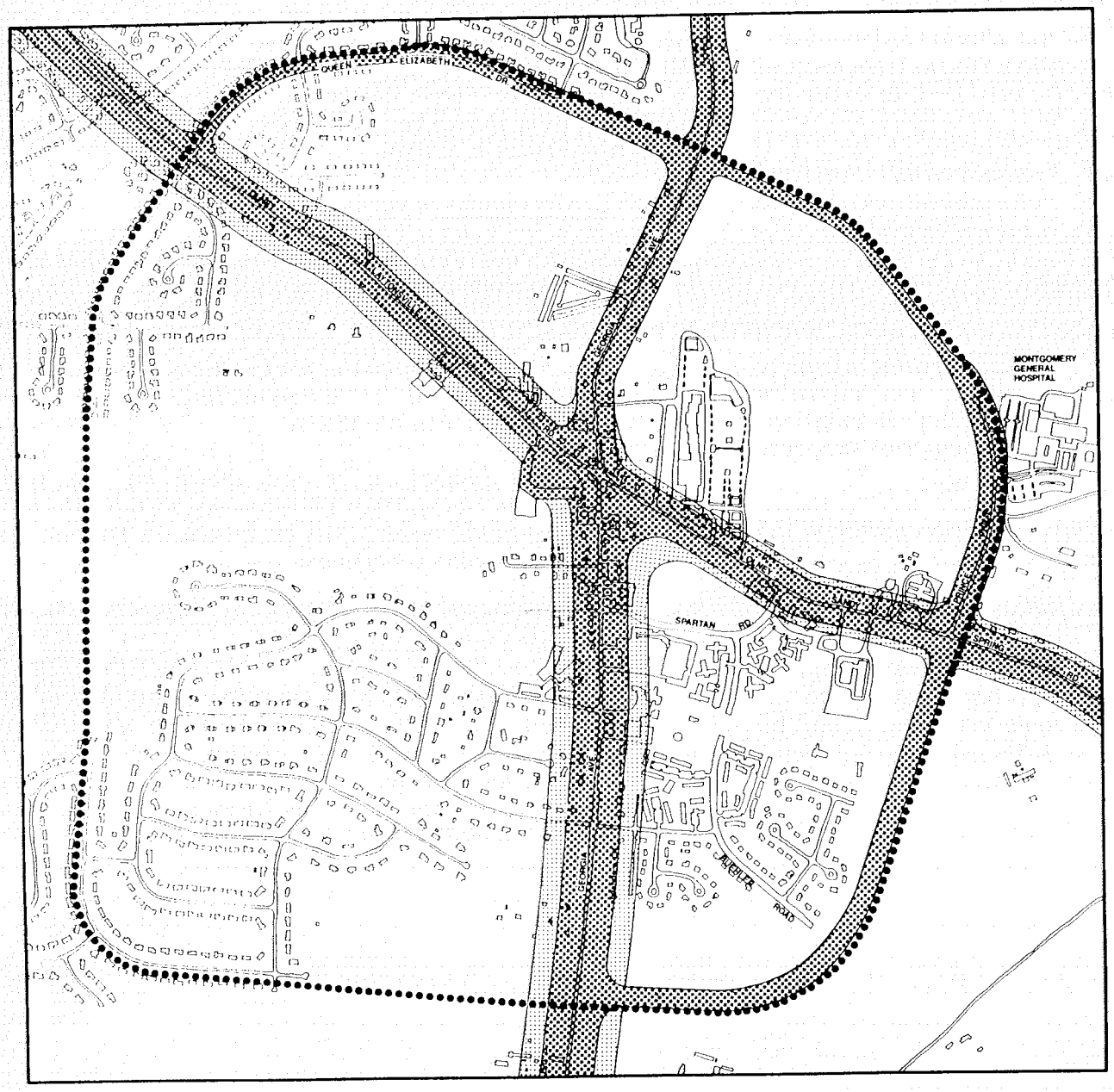
[1] L_{eq} (24) represents an all day, 24-hour average noise level; L_{DN} indicates the all day average noise levels with a 10 dBA weighting during the night time hours (10 P.M. - 7 A.M.).

In order to achieve these standards, the State Department of Health and Mental Hygiene has adopted regulations enforceable by a penalty of up to $10,000 per day for exceeding the limits specified in the following table:

MAXIMUM ALLOWABLE NOISE LEVELS
BY ZONING CATEGORY (dBA)[1]

DAY NIGHT	INDUS- TRIAL	COMMER- CIAL	RESIDEN- TIAL
Day	75 dBA	67 dBA	60 dBA
Night	75 dBA	62 dBA	50 dBA

[1] The complete regulations appear in Section 10.03.45 of The Rules and Regulations of the Maryland Department of Health and Mental Hygiene. The legislative basis for this was Senate Bill 870, and appears as Article 43, subsections 822-833, Annotated Code of Maryland. The law specifies that the regulations appear on all zoning maps and master plans.



TOWN CENTER

NOISE IMPACT AREAS

- 1985 Traffic Noise Impact Area (55 dBA L_{DN})
- 1996 Traffic Noise Impact Area (55 dBA L_{DN})
- Town Center Boundary

Approved and Adopted : June 1980

OLNEY MASTER PLAN

Montgomery County, Maryland

0 100 M 200 300 400
0 400 FT. 800 1,200 1,600

Measurements must be made at the property line of the most sensitive land use. Construction limits, frequency of occurrence, and exemptions are also provided for under the regulations.

The Maryland Department of Transportation regulates noise emissions from individual automobiles and trucks; allowable emissions will decrease in future years.

Montgomery County Noise Guidelines

Montgomery County has adopted a Noise Ordinance which establishes 55 dBA as the limit at residential property lines, with a 62 dBA limit at commercial and industrial property lines. Portions of the Zoning Regulations incorporate performance standards at industrial property lines, broken down by octave band analysis.

The Department of Environmental Protection enforces the Montgomery County Noise Ordinance.

Noise Recommendations for Olney Planning Area

The Olney Plan identifies "noise impact zones" along the main highways in the Olney area based on State of Maryland noise guidelines. These zones are areas inside the 55 decibel contour line, based on 1996 traffic projections, and do not account for existing or proposed natural or man-made buffers.

These guidelines can be achieved through the use of setbacks, buffer areas, berms, walls, or vegetation. Where exterior levels cannot be practically achieved, interior levels should be met through the use of acoustical insulation and site design.

Noise Control Implementation

In order to meet the noise guidelines shown in the Plan, the following measures will be implemented:

1. Design of Georgia Avenue and the loop roads will be reviewed with the State Highway Administration in order to incorporate noise reduction measures into the plans.

2. Noise impact areas are shown on the Town Center Noise Impact Areas map so that prospective home buyers will be aware of existing and future noise conditions.

3. Subdivision plans will be reviewed for conformance with noise guidelines.

4. Noise generation from commercial areas and facilities will be reviewed with the applicant at the time of site plan review for conformance with the Montgomery County noise control ordinance as enforced by the Department of Environmental Protection.