KING'S MARK ENVIRONMENTAL REVIEW TEAM

REPORT FOR

BIRCH HILL RUN SUBDIVISION PLAN REVISIONS

WASHINGTON,
CONNECTICUT

King's Mark Resource Conservation and Development Area, Inc.

BIRCH HILL RUN SUBDIVISION
PLAN REVISIONS

WASHINGTON, CONNECTICUT

Environmental Review Team Report

Prepared by the King's Mark Environmental Review Team
of the King's Mark Resource Conservation
and Development Area, Inc.

Wallingford, Connecticut

for the

Washington Inland Wetlands Commission

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. This report identifies the existing resource base and evaluates its significance to the proposed development and also suggests considerations that should be of concern to the Inland Wetlands Commission and the Town. The results of the Team action are oriented toward the development of a better environmental quality and long-term economics of the land use. The opinions contained herein are those of the individual Team members and do not necessarily represent the views of any regulatory agency with which they may be employed.

JANUARY 1991

ACKNOWLEDGMENTS

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I would also like to thank Susan Anderson, Secretary of the King's Mark Environmental Review Team for assisting in the completion of this report.

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EXECUTIVE SUMMARY

Introduction

The Washington Inland Wetlands Commission requested that an environmental review be conducted on the revised plans for Birch Hill Run. Since the ERT report for this site prepared in March 1990, the developer has reduced the number of lots from 35 to 30. The proposed loop road will enter and exit the site across the large central swamp. Access from Route 202 has been denied, and both sections of the loop road will enter from Wilbur Road. The purpose of this review is to inventory and assess the changes in plans and discuss the impacts of development, particularly on wetland and water resources, traffic, access and planning.

The review process consisted of 4 phases: (1) inventory of the site's natural resources; (2) assessment of these resources; (3) identification of resource problem areas; and (4) presentation of planning and land use guidelines. Based on the review process, specific resources, areas of concern, development limitations and development opportunities were identified.

Stormwater Management

The subdivision uses curbed roads and concentrated runoff which then must be spread out in the wetlands. Non-curbed roads and roadside swales should be used where practical. There is no significant benefit to changing Detention Basin 1 to a retention basin, except that there will be less maintenance.

Road Construction

The construction of 2 improved roads from Wilbur Road will have a much larger impact on the wetland than necessary. An alternative is to have one improved access on the site's western boundary and an emergency access along the existing woods road. Many of the impacts of stormwater runoff could be reduced if the paved road width is reduced. Items which should be considered when building the western road include using a thick, permeable base to permit cross-flow of water, using rock that does not contain sulfide materials, reducing road width and installing E&S controls properly. The Town should review the maintenance requirements for the road. Suggestions for protecting the wetlands from silt and sediment include completing road construction early so vegetation can be started, minimizing the open construction period for the roads, temporary sediment basins and frequent monitoring of E&S controls.

Layout of Facilities on Lots

There are 11 lots which contain leaching fields uphill from the proposed houses. Pumped septic systems are a disadvantage and increase costs. These lots should be clearly labeled on the plans. Septic systems should at least be located so they are not directly uphill from the houses and wells.

Open Space

Consideration should be given to a pedestrian access toward the summit of Mount Rat. This could link up with other trails, resulting in a series of hiking trails. The inclusion of the access should be done during the planning approval.

Soil Resources

Recommendations for E&S controls from the previous report still apply. Other recommendations include incorporating the E&S control plan directly onto the site plans and providing additional silt fence along the proposed roads.

Wetland Considerations

Several alternatives to the proposed road layout exist which should be considered. The first is 1 rather than 2 roads to serve the subdivision. The relatively small number of lots could be served by 1 road, and a significant number of impacts could be reduced. A second alternative is to consider the woods road as an emergency access. A third alternative is to create one-way roads 1/2 the width of the planned roads. Regardless of the alternative chosen, mitigation measures should include using retaining walls to reduce the fill slopes, using squash pipes or box culverts to reduce the width of road crossings and maintain the integrity of the watercourses and staging the project into smaller phases.

Planning Considerations

There is a conflict posed by the road layout between the need to reduce wetland impacts and the subdivision regulation requirements. It would be preferable if the Town could be flexible with the regulations. The narrower road would be more consistent with the rural character, have less land in impervious surfaces and minimize wetland crossings. Items that still need to be addressed include contribution to Wilbur Road improvements, restrictions in open space and easement areas and minimum lot sizes in potential public water supply watersheds.

Traffic Considerations

Wilbur Road needs some maintenance at present. A pavement survey should be made to determine baseline conditions. If the subdivision requires school bus service, a bus turn-in should be constructed. The 2 intersections of Wilbur Road and Route 202 should be improved to facilitate left turns.

Rather than 2 roads, the proposed subdivision roads could be combined to reduce impacts to the wetland system. This will require an adjustment to the first connecting subdivision road. A single 24-foot wide road would be adequate. A single 30-foot wide road would provide adequate width in case of emergency. Another suggestion is to have a single 24-foot wide road and an additional emergency accessway. Several comments from the previous report still apply.

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The Washington Inland Wetlands Commission requested that an environmental review be conducted on the revised plans for Birch Hill Run, a site proposed for subdivision development. Since the ERT report for this site prepared in March 1990, the developer has reduced the number of proposed lots from 35 to 30. The proposed loop road will enter and exit the site across the large central swamp. Access from Route 202 has been denied, and both sections of the loop road will enter from Wilbur Road.

The purpose of this review is to inventory and assess the changes in plans and discuss the impacts of development, particularly on wetland and water resources, traffic, access and planning. Natural resource information is found in the Birch Hill Run report prepared in March 1990. This information is still valid. Specific objectives for this review include:

1) Assessing the hydrological and geological limitations and opportunities;
2) Determining the suitability of erosion and sediment (E&S) controls;
3) Assessing the impact of the revisions on the wetlands and watercourses;
4) Assessing planning and land use issues; and
5) Assessing traffic and access issues.

THE ERT PROCESS

Through the efforts of the Washington Inland Wetlands Commission, the developer's representatives and the King's Mark ERT, this environmental review and report was prepared for the Town. This report primarily provides a description of the changes to the plans. The review process consisted of 4 phases:

1) Inventory of the site's natural resources (collection of data);

2) Assessment of these resources (analysis of data);

3) Identification of resource problem areas; and

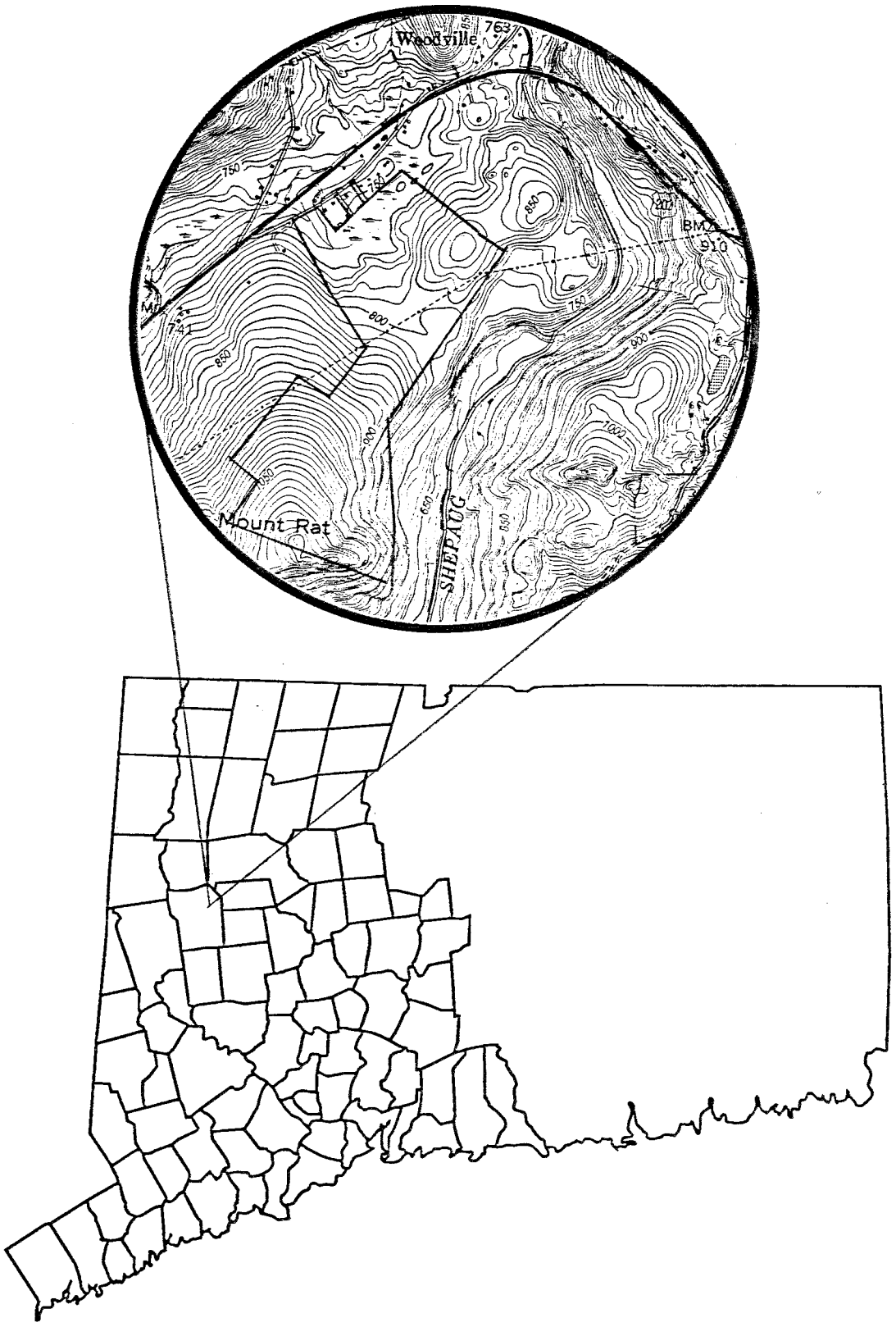
4) Presentation of planning and land use guidelines.

The data collection phase involved both literature and field research. The ERT field review took place on December 12, 1990. Field review and inspection of the proposed development site proved to be a most valuable component of this phase. The emphasis of the field review was on the exchange of ideas, concerns or alternatives. Mapped data or technical reports were also perused, and specific information concerning the site was collected. Being on-site also allowed Team members to check and confirm mapped information and identify other resources.

Once Team members had assimilated an adequate data base, they were able to analyze and interpret their findings. The results of this analysis enabled Team members to arrive at an informed assessment of the site's natural resource development opportunities and limitations. Individual Team members then prepared and submitted their reports to the ERT Coordinator for compilation into the final ERT report.

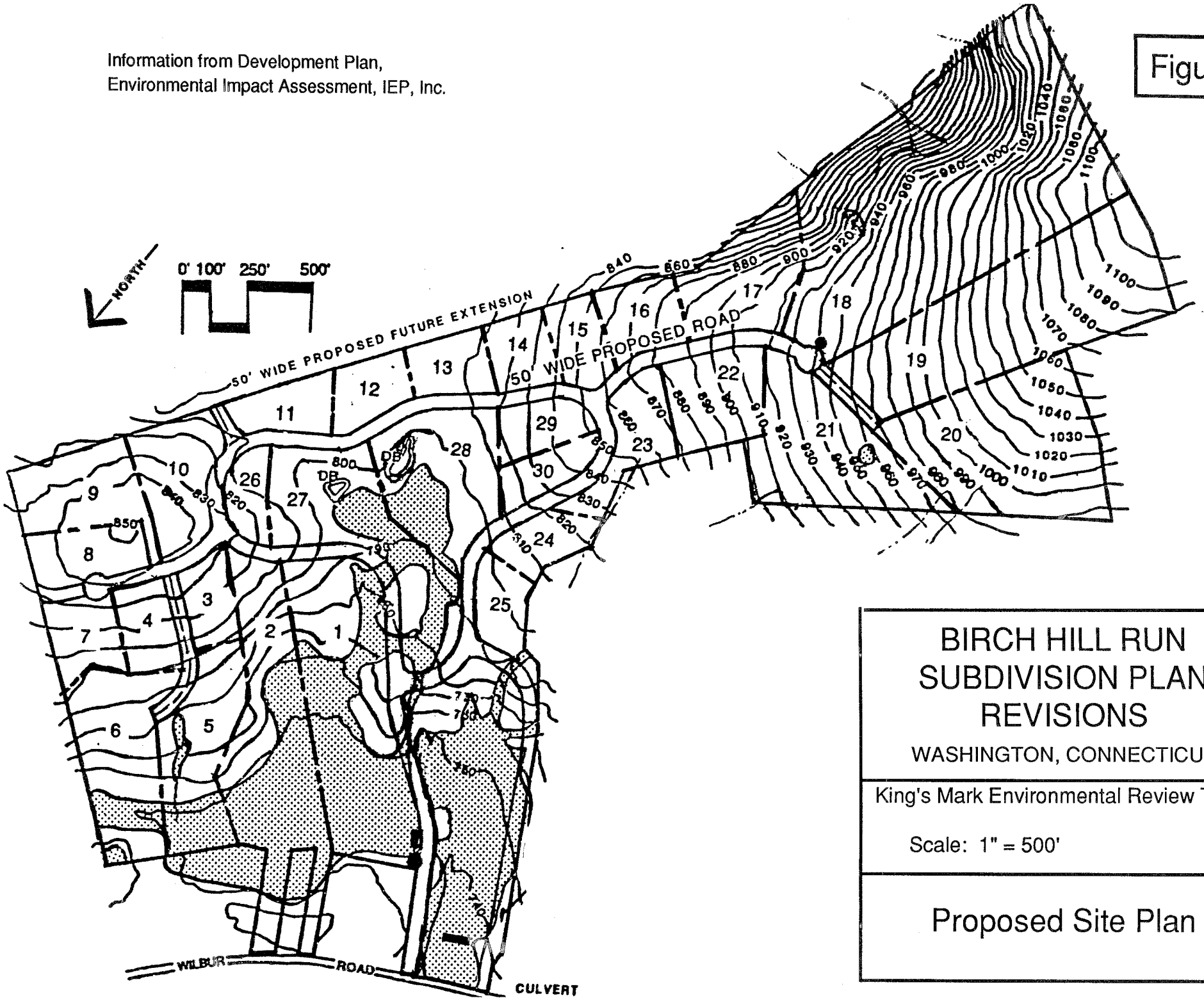
Figure 1

LOCATION OF STUDY SITE



Information from Development Plan,
Environmental Impact Assessment, IEP, Inc.

Figure 2



BIRCH HILL RUN SUBDIVISION PLAN REVISIONS

WASHINGTON, CONNECTICUT

King's Mark Environmental Review Team

Scale: 1" = 500'

Proposed Site Plan

STORMWATER MANAGEMENT

The proposed subdivision uses curbed roadways and collected roadway runoff for most of the road areas. This has the disadvantage of concentrating the roadway runoff, which then must be spread out in the wetlands. Non-curbed roadways and roadside swales should be used in all areas where practical. Much of the roadway area to the north of the powerlines can be curbless as well as some of the more level areas of roadway to the south of the powerlines.

For better stormwater management, there does not appear to be a significant benefit to changing Detention Basin 1 to a **retention** basin (i.e., holding basin) by eliminating the low flow pipe. A minor benefit would be the elimination of regular maintenance by the Town of the low flow system in the basin.

ROAD CONSTRUCTION

The construction of 2 improved roads to the site from Wilbur Road will have a much larger impact on the wetlands than is necessary. The Town should consider the option of constructing one new road along the westerly site boundary and keeping the existing woods road as an unpaved emergency vehicle access route.

Paved road width is a major factor influencing environmental impact to the site both during construction and during long-term use. Many of the effects of stormwater drainage are significantly reduced by reducing the area of paved road surface. If the access road is reduced to a paved width of 18 feet and all interior roads are reduced to a 16 feet paved width, there will be a significant reduction in these effects both during construction and during long-term use.

Several factors should be considered during the construction of the main access road (i.e., the access road to Wilbur Road along the western boundary of the site).

This proposed road touches the edge of the wetland for some distance along its length and may intersect down-slope surface water flow. These items should be considered:

1) Maintenance of down-slope water flow can be aided by using a fairly thick, coarse, permeable stone base for the roadway. This permeable base will permit cross-flow of the surface water and near-surface groundwater. To complete this cross-flow function, the retaining wall on the down-slope side of the road should also have a permeable base to permit water movement.

2) In some areas of the State there have been problems with using crushed bedrock that contains sulfide minerals which weather forming acidic drainage conditions. The rock used for this roadway base should be free of sulfide minerals.

3) A reduction in road width will significantly lessen the height of the down-slope bank and lessen disturbance of the wetland.

4) Particular care should be taken to install E&S control measures on this section of roadway (i.e., the main access road) **prior** to the initiation of road construction. Also, consideration should be given to installing a temporary snow fence on the wetland side defining a non-disturbance boundary. It is very easy for heavy machinery operators to make a quick turn-around in the wetland, paying little attention to a silt fence. If all parties agree and install a snow fence here and on other wetlands establishing a non-disturbance boundary, disturbance will be limited.

The Town engineer and the road maintenance foreman should review the maintenance requirements of the proposed storm drainage system. The catch basins and the detention basins will require periodic maintenance, and the Town should have some idea what the requirements will be.

Protection of the watercourses and wetlands from sedimentation during the roadway construction period is a major challenge. Many of the proposed roads on the interior of the site run directly up-slope, providing opportunity for rapid down-slope erosion. These roads include Birch Hill Drive, Birch Hill Lane and parts of Birch Hill Run. Sediment laden storm drainage will move rapidly along these roads during the construction period, especially prior to the installation of the storm drainage structures and detention ponds. To minimize impacts to the watercourses and wetlands during the construction period:

1) Road construction should be timed so that it is completed **well before** the end of the growing season so that vegetation can be re-established.

2) The length of time or duration for the period of road construction should be constrained to minimize the open construction period. Road construction should be phased so that given areas are completed with a finished storm drainage system and revegetated before another segment of construction is initiated.

3) If storm drainage of the rough graded road cannot be directed through sediment control structures and through the detention basins, temporary sediment and detention basins should be created to handle sediment laden runoff during the construction phase. The construction of temporary runoff structures should be done as the first phase of road construction.

4) It is imperative that the Town inspect the initial installation of E&S control measures and frequently monitor their performance during the construction period.

LAYOUT OF FACILITIES ON LOTS

The earlier ERT report (March, 1990) for this site noted that 7 lots, as designed, will require use of pumping chambers to raise waste water to the leaching fields. The current subdivision proposal contains 11 lots which are designed with leaching fields uphill from the house, namely Lots 1-3, 5, 6, 8 and 16-20. On a number of these lots the leaching field is directly uphill from the house or well or both. These comments apply:

1) It is a significant disadvantage to the community and to potential lot owners to approve lot designs where the primary building option requires the use of pumps to serve the leaching fields. While pumps do work, these designs tie the lot owners and the residents of the area to increased development, operation and maintenance costs, to the increased potential for system failures and to the requirement of using electrical energy for what normally is a non-energy use system. Primary lot designs should be developed for the subdivision that do not require the use of pumped waste water systems. If lot owners wish to design the use of space to include a pumped system, that should be their choice.

2) If lots for the general subdivision are approved with a primary design that requires a pumped leaching system, the individual lots should be clearly labeled as such on the subdivision plan and on other maps. Such wording

as "Pumped septic system may be required" should be noted to clarify site conditions for prospective purchasers.

3) It seems less than optimum design, especially on a large lot subdivision, to place leaching fields directly uphill from house and well sites. Waste water from the leaching fields moves downward and downhill through the ground materials. A house basement or well located directly downhill from the leaching field is much more likely to be affected by waste water from the leaching field. Lots 2 and 16 are examples of this type of situation. Many of the 11 lots with uphill leaching fields could have these problems. The leaching fields should be located so that down-slope movement of waste water is not directed at basements or wells. Lots 7, 9, 26 and 27 show better placement of facilities.

OPEN SPACE

Mount Rat is a scenically prominent feature of the Town. Consideration should be given to a pedestrian access from this subdivision towards the summit of Mount Rat. A 10-foot pedestrian access could be created off of Birch Hill Run between Lots 15 and 16 or between Lots 16 and 17. This access could continue along the southern part of Lot 18 uphill towards the summit of Mount Rat. In the long-term this could link up with other pedestrian access ways, if available, to the top of the hill and/or down the slope to the Shepaug River, resulting in a very desirable hiking trail. The inclusion of such access ways should be done during the planning approval of each subdivision plan.

SOIL RESOURCES

The soil resources identified and discussed within the previous ERT report (March, 1990) are currently applicable for this ERT report.

Generally, the recommendations for the soil E&S control plan identified and discussed within the previous ERT report (March, 1990) are currently applicable for this ERT report.

Specific recommendations include:

1) Incorporate the complete E&S control plan **directly** onto the site plan. The E&S control plans for **both** proposed subdivisions have been provided in separate environmental assessment reports and only partially incorporated directly on the site plans.

2) Since lot numbers have changed, omit the silt fence recommendations associated with Lots 33 and 34 (March, 1990).

3) Provide additional silt fencing at the following locations associated with wetlands or wetland crossings:

   a) Along the new proposed Birch Hill Run Road, from Wilbur Road to where it joins the existing dirt road also named Birch Hill Run; and

   b) Along the existing dirt road, named Birch Hill Run, if road improvements are accomplished.

WETLAND CONSIDERATIONS

Descriptions of the wetland character prepared for the previous ERT report (March, 1990) for this site remain unchanged. The project as now submitted calls for the alteration of approximately 0.9 acre of regulated wetlands and or watercourses on the site. This is an increase over the 0.35 acre which was proposed for alteration under the previous plan. Ordinarily, such an increase in wetland impact is viewed as inappropriate. However, it is understood that municipal subdivision regulations require more than one route of access to serve a subdivision of this size.

The central issues for consideration by the Commission are:

1) The impact of roadway construction and development on wetlands and watercourses;

2) Alternatives which may minimize avoidable impacts to wetlands; and

3) Techniques to mitigate the unavoidable impacts.

The first alternative is to consider 1 rather than 2 routes of access to serve the requirement in planning and zoning regulations. This site presents some unique limitations to the proposed roadway alignments by virtue of the location and significance of the on-site wetland/watercourse resource. The relatively small number of lots proposed (i.e., 30) may be adequately served by a single route of access without significant risk to the health and safety of future residents. A potential future access point has been provided along the site's southeastern boundary. A significant reduction in impacts, both direct and indirect, would be realized by less roadway construction. These include reductions in runoff volumes and velocities, reduction in non-point source pollution and reduction in direct loss of wetland habitat values.

A second alternative is to utilize the existing woods road as an emergency access route. This crossing could be improved with very little impact on the wetlands and could be made suitable for use by emergency vehicles. When not in use, the accessway could serve as a pedestrian trail to allow passive enjoyment of the wetland area.

A third alternative worthy of consideration is creating one-way roads of approximately 1/2 the required width in the locations presently proposed. These roadways would provide for safe access and circulation of traffic, but would be available for reverse direction traffic during an emergency.

Regardless of the alternative chosen, certain mitigation measures can be implemented to reduce long- and short-term wetland/watercourse impacts. These measures include:

1) Use retaining walls to limit fill slopes in critical areas.

2) Use oversize pipe-arch, corrugated metal "squash" pipes or box culverts with headwalls to reduce the width of roadway crossings upon the watercourses and to maintain the integrity of the watercourse riparian zones.

3) Stage the project into smaller phases which will provide for completion of one phase before earth work begins on the subsequent phase.

The developer, the Wetlands Commission and the Planning and Zoning Commission should communicate and cooperate closely in the review and approval of this proposed subdivision to ensure that the unique environment of this site is protected while providing for acceptable and orderly development.

PLANNING CONSIDERATIONS

The revised Birch Hill Run subdivision plan differs from the original in having fewer lots and a different internal road layout. The majority of planning comments submitted for the original ERT report (March, 1990) still apply.

The unfortunate conflict posed by the road layout exists between minimizing impact to regulated wetlands and the requirements for roads in the subdivision regulations. During the field review, Team members and the developer's representative discussed the possibility of a single access road or an unpaved secondary road for emergency access. Each alternative would have less impact on wetlands than the proposed layout. The applicant contends the 2-road design was needed to comply with Town regulations. It would be preferable for the Town to change or have flexibility in those regulations to achieve:

1) Narrower paved road width to be more consistent with the rural character and the width of Wilbur Road;

2) Less land in impervious surfaces; and

3) Minimized wetlands crossings.

Issues identified in the original ERT report (March, 1990) and still to be addressed by the applicant include:

1) Contribution toward improvement to Wilbur Road;

2) Restrictions on major vegetation clearance in open space and conservation easement areas; and

3) Minimum lot sizes in potential public water supply watershed areas.

TRAFFIC CONSIDERATIONS

The current proposal relates to a previous ERT report (March, 1990) for this site. The traffic consultants and other consultants have prepared reasonable documents for the current proposal.

Wilbur Road

Wilbur Road is approximately 15-18 feet wide and without shoulders. The pavement indicates areas of distress with longitudinal cracking in the vicinity of the roadway center line. The roadway requires some maintenance at the present time. A pavement survey should be made prior to the start of construction to determine baseline conditions. If the proposed subdivision requires school bus service and the pick-up point is on Wilbur Road, a bus turn-in should be constructed on Wilbur Road near the proposed intersection of Birch Hill Run West.

The 2 existing intersections of Wilbur Road and Route 202 should be improved to facilitate left turns from Wilbur Road onto Route 202. This should be accomplished by new traffic control signs at each intersection, removal of vegetation and relocating the existing "stop bar" locations.

Development Roads

The 2 road system appears to be a boulevard design with a wide median. This design treatment requires the disturbance of a natural area. Rather than Birch Hill

Run West and East, the roads could be combined into a single access roadway, Birch Hill Run West, which will reduce the impact on the existing wetland system. This will require an adjustment to the first connecting subdivision roadway from Wilbur Road. A single 24-foot wide paved roadway would be adequate to serve the subdivision. A single 30-foot wide roadway would provide adequate width in case of an emergency.

Another approach suggested in the Environmental Impact Assessment (IEP, 1991) for this site includes using a 24-foot wide pavement and a 12-foot wide fire/ emergency road. This is a viable concept, but impacts the wetland to a greater degree.

A summary of the ERT report (March, 1990) comments:

1) Rock Slopes - All rock should be removed rather than attempting to leave "sliver" rock slopes.

2) Sub-base - An additional 6 inches of sub-base with a geotextile fabric incorporated into the roadway drainage should be considered in cut areas or fill areas in a wetland.

3) Stonewalls - Stonewalls should be left in place to minimize disturbance, preserve rural character and preserve the existing runoff characteristics.

4) Drainage - Longitudinal drainage pipes connecting catch basins should be reviewed to determine if slotted RCP pipe should be specified to increase pavement life.

5) Utilities - Location of underground utilities outside the paved roadway is preferred. Any excavation to accommodate such installations must be monitored to ensure compliance with E&S controls.

NOTES

ABOUT THE TEAM

The King's Mark Environmental Review Team (ERT) is a group of environmental professionals drawn together from a variety of federal, state and regional agencies. Specialists on the Team include geologists, biologists, soil scientists, foresters, climatologists, landscape architects, recreational specialists, engineers and planners. The ERT operates with state funding under the aegis of the King's Mark Resource Conservation and Development (RC&D) Area - an 83-town area serving western Connecticut.

As a public service activity, the Team is available to serve towns and/or developers within the King's Mark RC&D Area - free of charge.

Purpose of the Environmental Review Team

The Environmental Review Team is available to assist towns and/or developers in the review of sites proposed for major land use activities. For example, the ERT has been involved in the review of a wide range of significant land use activities including subdivisions, sanitary landfills, commercial and industrial developments and recreational/open space projects.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision-making. This is done through identifying the natural resource base of the site and highlighting opportunities and limitations for the proposed land use.

Requesting an Environmental Review

Environmental Reviews may be requested by the chief elected official of a municipality or the chairman of an administrative agency such as planning and zoning, conservation or inland wetlands. Environmental Review Request Forms are available at your local Soil and Water Conservation District and through the King's Mark ERT Coordinator. This request form must include a summary of the proposed project, a location map of the project site, written permission from the land owner/ developer allowing the Team to enter the property for purposes of review and a statement identifying the specific areas of concern the Team should investigate. When this request is approved by the local Soil and Water Conservation District and King's Mark RC&D Executive Committee, the Team will undertake the review. At present, the ERT can undertake approximately two (2) reviews per month.

For additional information regarding the Environmental Review Team, please contact your local Soil and Water Conservation District or Nancy Ferlow, ERT Coordinator, King's Mark Environmental Review Team, King's Mark RC&D Area, 322 North Main Street, Wallingford, Connecticut 06492. King's Mark ERT phone number is 265-6695.