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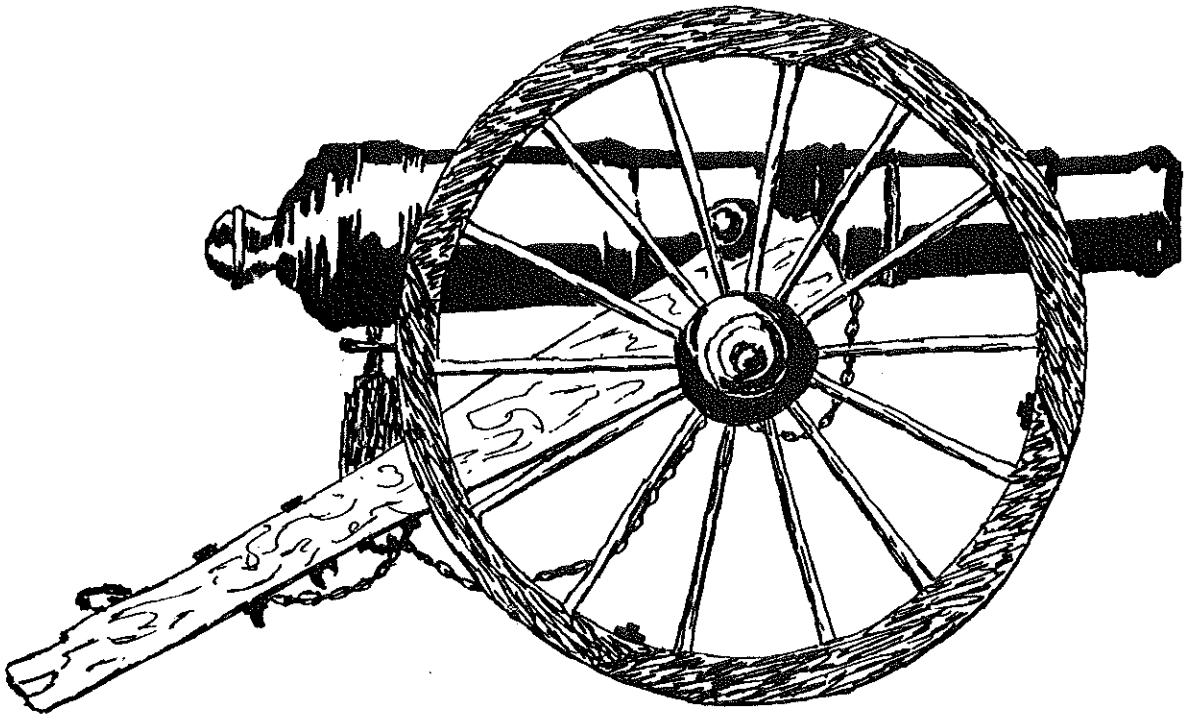
EASTERN CONNECTICUT



RESOURCE CONSERVATI
& DEVELOPMENT PROJ

Assisted by:
U.S. Department of Agriculture
Soil Conservation Service
And Cooperating Agencies

SUMNER BROOK WATERSHED
STREAMBELT REPORT

Middletown, Durham and Haddam, Connecticut

Prepared for:

The Town of Middletown

In Cooperation with:

Middlesex County Soil and Water Conservation District

and

Eastern Connecticut Resource Conservation and Development Project

By:

UNITED STATES DEPARTMENT OF AGRICULTURE

Soil Conservation Service

December 1972

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The report deals primarily with the identification of streambelts and potential water oriented development sites. This study is in effect only one phase in the process of inventorying the broad range of natural resources of the watershed. However, the streambelts comprise a very important segment of the physical base of Sumner Brook.

The report is essentially the result of field reconnaissance and map studies by the U.S. Soil Conservation Service. Soils maps, topographic maps, aerial photographs were the principal materials used. The criteria for delineating streambelts is discussed in the Appendix.

This information is part of the process of taking stock of resource potentials. Further study and evaluations will be needed including economic, ecological and engineering considerations to determine feasibility and compare alternatives.

In this inventory, Sumner Brook was divided into six sub-watersheds. Within these watersheds streambelts are identified along with major potential water development sites and other significant features. Two of the larger watersheds having longer watercourses, Sumner Brook and Long Hill Brook, are divided into segments. Additional studies of more detail may reveal other "sites and features", which can be added to this report as they are identified. (The sites and features are numbered on the map and in this report. The sites are further described in Table I in the Appendix.) The streambelts are identified by a letter symbol and referred to by names of principal streams.

The main components of streambelts are:

1. The watercourse of a defined stream, including banks, bed and water.

2. Lands subject to frequent stream overflow.

3. Associated marshes and wetlands.

4. Contiguous lands with special beneficial and environmental

CONCLUSIONS

CONCLUSIONS

The quality of the environment for people is to a great degree linked to streams and associated lands. Streambelts are environmental corridors of land and water. Streambelts contain many features having an important bearing on the water-related, esthetic, recreational, wildlife, historic and open space aspects of land use. The waters and lands of the streambelts are among our most important natural resources. Streams and their tributaries extend beyond man-made town boundaries. The retention of these streambelts or environmental corridors are of public concern and warrants deliberate action by local units of government.

In the Sumner Brook Watershed, there is evidence of streambelt encroachment and destruction of this ecologically vital resource. The current population growth and resulting urbanization will greatly increase the hazards of uncontrolled forms of development. The towns in the watershed have a unique opportunity to act NOW to preserve and develop wisely the natural resources of the streambelt.

Along with the urgent need to forestall careless and uncontrolled forms of development in the streambelts is the need for actions to conserve their special values. As a prerequisite to such actions, a comprehensive land use plan should reflect its objectives for the preservation and wise use of it's streambelts.

Streambelts are in the public interest and when they are made in integral part of a land use plan the specific intent is then to:

1. Prevent such developments or land uses that would have probable adverse environmental effects.

2. Maintain natural drainage courses sufficient to carry normal flows of storm water. In addition, the flood plain and flood-prone areas should be retained in open space. These actions would prevent the need for excessive public expenditures for water disposal and flood prevention measures.

3. Maintain a framework of environmental corridors of high quality with close proximity to neighborhood and population centers.

4. Help stabilize stream flows.

5. Protect water quality and help preserve high yielding ground water areas that are important to water supply.

6. Retain potential impoundment sites for beneficial water uses

through long-range planning. However, where encroachment is currently proving detrimental and destructive, more immediate action is called for.

STREAMBELTS IDENTIFIED

PROPORTIONAL EXTENT OF WATERSHED AND STREAMBELT
ACREAGE AND MILES OF WATERCOURSE BY STREAMBELTS AND SEGMENTS

Streambelt and Segment	Watershed Area (Approx. Acres)	Watercourse		Streambelt		Total (Acres)	Percentage of Watershed
		Main Stream (Miles)	Feeder Stream (Miles)	Land (Acres)	Water (Acres)		
M1 Sumner Bk., Conn. River to Route 155	795	2.1	-	60	10	70	.9
M2 Sumner Bk., Route 155 to Town Line	1,140	2.6	1.2	234	-	234	2.9
M3 Sumner Bk., Town Line to Head of Watershed	1,330	2.1	2.6	196	35	231	2.8
M SUMNER BROOK TOTAL	3,265	6.8	3.8	490	45	535	6.6
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N LONG HILL BROOK TOTAL	2,122	3.5	0.3	147	54	201	2.4
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P Prout (Gilberts) Bk.	288	0.7	-	45	35	80	1.0
Q Unnamed Tributary to Sumner Bk	1,306	1.0	1.6	160	3	163	2.0
R Harris Bk.	210	0.9	-	40	-	40	0.5
TOTAL OTHER	2,805	6.0	1.6	347	44	391	4.8
SUMNER BROOK TOTAL	8,192	16.3	5.7	984	143	1,127	13.8

M - SUMNER BROOK STREAMBELT

Sumner Brook originates at Miller Pond along the Durham-Haddam town line. It flows in a northerly direction for 6.8 miles through Middletown to confluence with the Connecticut River.

Localized flooding is a major problem along the lower reaches, especially in the heavily urbanized areas. Flooding may occur any month of the year. Spring floods occur quite regularly and are sometimes accompanied by destruction from moving ice. Flooding may also occur during late summer and fall, the results of tropical hurricanes or other storms moving up the Atlantic coastline. Towns people are mindful of flood hazards along the brook and have initiated a watershed study, of which this report is a part, to determine environmental, conservation and flood protection needs.

That portion of the watershed in the headwaters, in Durham and Haddam, is well wooded and the outflow into Sumner Brook is clear water of good quality. As the brook enters Middletown, its course is through agricultural, mostly grassland. Here runoff from highways and roads reach the brook and along with silt and sediment from streambanks, erosion results in a somewhat lower quality water. Passing through the heavily urbanized Middletown area, the brook becomes quite badly contaminated, the results or urban runoff.

Sumner Brook offers only fair fishing for warm-water fish species. However, impounded pond waters do offer somewhat better fishing and have potential for "good" fishing for warm-water species.

The combined streambelt for all three segments of Sumner Brook has 10.6 miles of watercourse. This includes 6.8 miles along the main watercourse and 3.8 miles of small laterals and feeder streams. The streambelt covers 490 acres of land and 45 acres of water.

M1 - Segment - Sumner Brook, Confluence with Connecticut River to Route 155

This segment includes the course of the brook through the heavily urbanized section of Middletown. Typical of colonial development, concentration along watercourses, down through the years in many places, urbanization and industrialization has encroached to immediate banks of the brook. Two mill dams are located on the brook in this segment. At the lower end of the segment, the brook passes under an elaborate system of roads at a Route 9 interchange. Two tributary streams, Long Hill Brook and an unnamed brook, confluence with Sumner Brook in the segment.

The watercourse of this segment is 2.6 miles on Sumner Brook and 1.2 miles on small feeder streams. The streambelt covers 234 acres of land.

6 - Streambank Erosion: Considerable cutting and undermining of brook banks is taking place along the brook through this segment. Eroded material is deposited downstream in the channel where the hydraulic gradient is low. With lower carrying capacity, flooding becomes imminent.

7 - Potential Site for Water Impoundment: Topography and soils in this vicinity appear favorable for creating a moderately deep-water impoundment. The site might be considered for a multi-purpose impoundment having a permanent pond but with adequate dam and freeboard to allow for floodwater storage. In addition to water conservation, the permanent pond would have some potential for recreational uses (i.e., fishing, boating, skating) and wetland wildlife development.

Further ecological, geological, engineering, economic, and other evaluations of the site will be needed to determine feasibility and to compare alternative uses.

8 - Source of Sediment and Erosion: Bulldozing, grading and alteration of land along the brook in this vicinity has left the land subject to critical erosion. The area needs to be stabilized and revegetated.

M3 - Segment - Durham-Haddam Town Line to Head of Watershed

The brook through this segment is mostly through woodland. The outflow from Miller Pond is of good quality and continues the length of the segment.

The watercourse of this segment is 2.1 miles on Sumner Brook and 2.6 miles on small lateral feeder streams. The streambelt covers 196 acres of land and 35 acres of water.

9 - Site for Wetland Wildlife Development: Brushy wetland area has a potential for creating a wetland wildlife development by constructing a low head dam to create a small shallow water pond, or by excavating one or more small ponds. Creating a water surface area here would enhance the value of the area for wildlife.

10 - Scenic Area: Sumner Brook along Johnson Lane makes for a scenic stretch or road as they pass through a gap in the hills in the upper valley.

The land west of Sumner Brook is rough, steep, stony bouldery and shallow to bedrock. This has severe to very severe limitations for urban uses and would best be maintained as open space.

APPENDIX

CRITERIA FOR DELINEATION OF STREAMBELTS

Soil surveys provide the most suitable basis presently available for making land use decisions. The soil survey is based upon many of the soil properties which significantly affect the suitability, limitations, or hazards in using land for various purposes.

The criteria uses the Connecticut Natural Soil Group System in the process of streambelt delineation.

The streambelts as delineated include areas in proximity to named streams and their tributaries, as shown on the U.S.G.S. topographic maps, and consist of the soils as specified in the following groups.

A-1a Excessively drained terrace soils with slopes less than 15 percent:
A-1b

Shall include the areas of these soils where, because of proximity to the watercourses, the soil patterns, steepness of slope, or surface water drainage required controlled land use to minimize the hazard of pollution, erosion and sedimentation. As a minimum, the streambelt zone shall include these soils that are less than 150 feet from any of the following: the watercourse, its floodplain, or poorly or very poorly drained soils contiguous to the watercourse or its floodplain. Also, it shall include areas of these soils that are within 50 feet of a terrace escarpment that is within the streambelt zone.

A-1c Terrace escarpments:

Shall include terrace escarpments adjacent to either the watercourse or its floodplain.

A-1d Well drained terrace soils:
A-1e

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D-1 Rocky and very rocky upland soils with slopes less than 15 percent:

Shall include areas of these soils where proximity to the watercourse, soil patterns, or surface water drainage require controlled land use to minimuze the hazard of pollution or erosion and sedimentation. As a minimum, it shall include these soils which are contiguous to the watercourse or its floodplain and which are lower than 25 feet in elevation above the bed of the watercourse.

D-2 Rocky and very rocky upland soils with slopes more than 15 percent, and extremely rocky soils:

Shall include areas of these soils where proximity to the watercourse and soil pattern or surface water drainage require controlled land use to minimize the hazard of pollution or erosion and sedimentation. As a minimum, it shall include these soils that are contiguous to the watercourse or its floodplian, and those which are lower than 60 feet in elevation above the bed of the watercourse.

E Floodplain soils:

Shall include all floodplain soils.

F Marsh and swamp soils:

Shall include the areas of these soils which adjoin the watercourse or its floodplain.

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This information is part of the process of taking stock of resource potentials. Further study and evaluations will be needed including economic, ecological and engineering considerations to determine feasibility and compare alternatives.

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The main components of streambelts are:

1. The watercourse of a defined stream, including banks, bed and water.

2. Lands subject to frequent stream overflow.

3. Associated marshes and wetlands.

4. Contiguous lands with special beneficial and environmental

values, i.e., wildlife habitat, esthetic, public recreations, scenic, historic, etc.

5. Shorelines of lakes and ponds associated with the stream.

6. Potential water development sites of public significance.

7. Areas in proximity to streams where certain developments or land uses would have probable adverse environmental effects, i.e., pollution and health hazards, erosion and sedimentation, destruction of ecological systems.

8. Other areas necessary as links to form a continuous streambelt system.

CONCLUSIONS

The quality of the environment for people is to a great degree linked to streams and associated lands. Streambelts are environmental corridors of land and water. Streambelts contain many features having an important bearing on the water-related, esthetic, recreational, wildlife, historic and open space aspects of land use. The waters and lands of the streambelts are among our most important natural resources. Streams and their tributaries extend beyond man-made town boundaries. The retention of these streambelts or environmental corridors are of public concern and warrants deliberate action by local units of government.

In the Sumner Brook Watershed, there is evidence of streambelt encroachment and destruction of this ecologically vital resource. The current population growth and resulting urbanization will greatly increase the hazards of uncontrolled forms of development. The towns in the watershed have a unique opportunity to act NOW to preserve and develop wisely the natural resources of the streambelt.

Along with the urgent need to forestall careless and uncontrolled forms of development in the streambelts is the need for actions to conserve their special values. As a prerequisite to such actions, a comprehensive land use plan should reflect its objectives for the preservation and wise use of it's streambelts.

Streambelts are in the public interest and when they are made in integral part of a land use plan the specific intent is that to:

1. Prevent such developments or land uses that would have probable adverse environmental effects.

2. Maintain natural drainage courses sufficient to carry normal flows of storm water. In addition, the flood plain and flood-prone areas should be retained in open space. These actions would prevent the need for excessive public expenditures for water disposal and flood prevention measures.

3. Maintain a framework of environmental corridors of high quality with close proximity to neighborhood and population centers.

4. Help stabilize stream flows.

5. Protect water quality and help preserve high yielding ground water areas that are important to water supply.

6. Retain potential impoundment sites for beneficial water uses

such as flood control, water supply, wildlife habitat and recreation.

7. Protect areas of vital importance in the preservation of significant ecological systems.

8. Maintain and encourage the improvement of environmental qualities including beauty, recreational, plant and animal life, scenic, and other natural values.

9. Preserve areas of unique and scientific or historic interest for scientific study, ecological research, and conservation or nature education.

10. Promote the health, safety, and welfare of all people and property owners near streams and in areas subject to flooding, and to prevent further occupancy in flood-prone areas.

11. Protect and/or improve fish and wildlife habitats.

Along with the urgent need to forestall careless and uncontrolled forms of development in streambelts is the need for actions to conserve their special values. Examples of ways and means for local governments to achieve streambelt goals include:

1. Community-wide informational and educational programs to promote wise land use and natural resource development.

2. Development of soil and water conservation plans on private and public lands through services and facilities provided landowners by the Middlesex County Soil and Water Conservation District.

3. Public acquisition.

4. Acquisition by private land trusts.

5. Conservation easements.

6. Regulations of the State relating to health and sanitation, water pollution, stream channel encroachment, etc.

7. Utilization of town zoning authority to establish streambelt zones with land use regulations to protect their special environmental values.

8. Dedication of wetlands to "open space" in accordance with Public Act 155, "An Act Concerning Inland Wetlands and Water Courses".

Where encroachment into natural streambelt land already exists, needed restoration and reclamation can be accomplished over a period of years

through long-range planning. However, where encroachment is currently proving detrimental and destructive, more immediate action is called for.

STREAMBELTS IDENTIFIED

Sumner Brook has a drainage watershed area of approximately 8,192 acres. The watershed is located in three towns as follows: Middletown, 6,816 acres or 83 percent; Durham, 905 acres or 11 percent; and, Haddam, 471 acres or 6 percent. Sumner Brook outlets into the Connecticut River at Middletown. Principal tributaries are Long Hill Brook, including East and West Round Hill Brook tributaries, Prout Brook, Harris Brook, and an unnamed tributary along the east side of the watershed.

For purposes of this study, streambelts associated with Sumner Brook and the above named tributaries are reported on. Sumner Brook streambelt is sub-divided into three segments and Long Hill Brook into two segments.

The study identified approximately 1,127 acres in streambelts as delineated on the map. This includes 143 acres of water. The streambelt area is 14 percent of the watershed area. There are 22 miles of perennial watercourses within these streambelts. Approximately 0.5 percent of the streambelt area is in public ownership.

Based on physical characteristics such as wetness, stoniness, rockiness, steep slopes and flooding, it is estimated that over 90 percent of the land in the streambelts would have severe or very severe limitations for most urban uses. However, these soils do have many favorable ecological, wildlife, recreational, scenic and esthetic values.

The study identified one site having potential for a water impoundment. Site number 7 might be considered for a multi-purpose water impoundment having a permanent pool but with adequate dam and freeboard to allow for floodwater storage. In addition to water conservation, the permanent pond would have potential for some recreational uses (i.e., fishing, boating, skating) and wetland wildlife development.

Shown on the map by symbols are some potential sites for small excavated ponds for fire protection, including forest fires.

Within the streambelts are locations with potentials for various kinds of outdoor recreational development for either community-wide or neighborhood use. Streambelts in close proximity to schools offer unlimited natural values for nature study, biological and ecological education.

The pattern of streambelts presents an excellent opportunity to preserve open space corridors near many residential areas. Streambelts present a unique opportunity for a system of trails linking many parts or the town. Hikers, birdwatchers, photographers, nature study groups, and

others with outdoor interest would find many features of interest along such a network of trails. Several features with historical significance are also found in streambelts.

Several miles of public utility rights-of-way criss-cross the town. They cover many acres which might well be regarded as open space. With the approval of utility companies, sections of these rights-of-ways might be used for access roads and/or trails for hiking, bridle, cycling, snowmobiles, etc.

State Adopted Water Quality Standards as established for Connecticut apply to waters in the Sumner Brook Watershed as follows:

Class "A" water: Class "A" water is suitable for water supply and all other water uses. Character uniformly excellent.

SUMNER BROOK

PROPORTIONAL EXTENT OF WATERSHED AND STREAMBELT
ACREAGE AND MILES OF WATERCOURSE BY STREAMBELTS AND SEGMENTS

Streambelt and Segment	Watershed Area (Approx. Acres)	Watercourse		Streambelt		Total (Acres)	Percentage of Watershed
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M - SUMNER BROOK STREAMBELT

Sumner Brook originates at Miller Pond along the Durham-Haddam town line. It flows in a northerly direction for 6.8 miles through Middletown to confluence with the Connecticut River.

Localized flooding is a major problem along the lower reaches, especially in the heavily urbanized areas. Flooding may occur any month of the year. Spring floods occur quite regularly and are sometimes accompanied by destruction from moving ice. Flooding may also occur during late summer and fall, the results of tropical hurricanes or other storms moving up the Atlantic coastline. Towns people are mindful of flood hazards along the brook and have initiated a watershed study, of which this report is a part, to determine environmental, conservation and flood protection needs.

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Sumner Brook offers only fair fishing for warm-water fish species. However, impounded pond waters do offer somewhat better fishing and have potential for "good" fishing for warm-water species.

The combined streambelt for all three segments of Sumner Brook has 10.6 miles of watercourse. This includes 6.8 miles along the main watercourse and 3.8 miles of small laterals and feeder streams. The streambelt covers 490 acres of land and 45 acres of water.

M1 - Segment - Sumner Brook, Confluence with Connecticut River to Route 155

This segment includes the course of the brook through the heavily urbanized section of Middletown. Typical of colonial development, concentration along watercourses, down through the years in many places, urbanization and industrialization has encroached to immediate banks of the brook. Two mill dams are located on the brook in this segment. At the lower end of the segment, the brook passes under an elaborate system of roads at a Route 9 interchange. Two tributary streams, Long Hill Brook and an unnamed brook, confluence with Sumner Brook in the segment.

The watercourse in this segment is 2.1 miles and the streambelt covers 60 acres of land and 10 acres of water.

Some features identified on the map are:

1 - The Connecticut River: The river is scenic as it bends its way south to east to pass through a gap in the highlands between the towns of Portland and Middletown. This section of the river is tidal and is navigatable. Just upstream of the confluence of Sumner Brook, the State maintains a boat launching facility and parking area.

2 - Hubbard Park: A city-owned recreational facility bordering on Sumner Brook.

3 - Sewage Disposal Facility: Facility is located between Route 9 Interchange entrance and exit roads.

4 - Area of Streambelt Encroachment and Water Pollution: Flood plain has recently been filled and graded at the confluence of Long Hill Brook with Sumner Brook. A building has been erected on the newly filled area along Sumner Brook. South of Mill Street and along a small feeder stream, a steep escarpment has been excavated. The extremely steep unvegetated bank of the borrow area and the east bank of the feeder stream are critical erosion areas and threaten home properties and land atop the escarpments. Industrial buildings have been built along Long Hill Brook and the feeder stream. From this area there is evidence of outwash from erosion, sedimentation and industrial pollution reaching the brooks.

5 - Mill Ponds: Two dams on Sumner Brook in this vicinity have created ponds. Urbanization and industrialization extends to the immediate banks of the ponds. The lower pond is less than one acre and is badly silted and polluted. The upper pond has about five acres of water surface and is about one-half mile long. It too is badly silted and polluted.

M2 - Segment - Sumner Brook, Route 155 to Middletown-Durham-Haddam Town Lines

South of Route 155, the course of the brook is through open agricultural land for two miles then through woodland for one-half mile to the town line. The brook has a low gradient, the banks are low and much of the land adjacent to the brook has poorly and very poorly drained soils. Principal land use along the brook is pasture. The brook meanders through the lowland and streambank erosion is critical and a source of sediment.

Two tributaries, Prout Brook and Harris Brook, confluence with Sumner Brook in this segment.

The watercourse of this segment is 2.6 miles on Sumner Brook and 1.2 miles on small feeder streams. The streambelt covers 234 acres of land.

6 - Streambank Erosion: Considerable cutting and undermining of brook banks is taking place along the brook through this segment. Eroded material is deposited downstream in the channel where the hydraulic gradient is low. With lower carrying capacity, flooding becomes imminent.

7 - Potential Site for Water Impoundment: Topography and soils in this vicinity appear favorable for creating a moderately deep-water impoundment. The site might be considered for a multi-purpose impoundment having a permanent pond but with adequate dam and freeboard to allow for floodwater storage. In addition to water conservation, the permanent pond would have some potential for recreational uses (i.e., fishing, boating, skating) and wetland wildlife development.

Further ecological, geological, engineering, economic, and other evaluations of the site will be needed to determine feasibility and to compare alternative uses.

8 - Source of Sediment and Erosion: Bulldozing, grading and alteration of land along the brook in this vicinity has left the land subject to critical erosion. The area needs to be stabilized and revegetated.

M3 - Segment - Durham-Haddam Town Line to Head of Watershed

The brook through this segment is mostly through woodland. The outflow from Miller Pond is of good quality and continues the length of the segment.

The watercourse of this segment is 2.1 miles on Sumner Brook and 2.6 miles on small lateral feeder streams. The streambelt covers 196 acres of land and 35 acres of water.

9 - Site for Wetland Wildlife Development: Brushy wetland area has a potential for creating a wetland wildlife development by constructing a low head dam to create a small shallow water pond, or by excavating one or more small ponds. Creating a water surface area here would enhance the value of the area for wildlife.

10 - Scenic Area: Sumner Brook along Johnson Lane makes for a scenic stretch or road as they pass through a gap in the hills in the upper valley.

The land west of Sumner Brook is rough, steep, stony bouldery and shallow to bedrock. This has severe to very severe limitations for urban uses and would best be maintained as open space.

11 - Durham Rod and Gun Club Property

12 - Miller Pond State Park: The State Park area in the upper reaches of the watershed is approximately 261 acres. The Park is undeveloped at the present time but provides some hiking and fishing.

13 - Miller Pond: An impounded pond of about 35 acres in Miller Pond State Park. The pond has a watershed area of 256 acres. It is scenic and appears to have good potential for fishing. Most of the shoreline is undeveloped.

14 - Cockaponset State Forest: That portion of the Cockaponset State Forest in Sumner Brook Watershed is 40 acres.

N - LONG HILL BROOK STREAMBELT

Long Hill Brook is a major tributary of Sumner Brook. The brook and its watershed is located entirely within Middletown. The watershed is nearly 100 percent open land. Urban development is proceeding at a fast rate throughout the watershed and streambelt encroachment is occuring at many points along the watercourse. As urbanization intensifies, the hazard of flooding along the brook can be expected to increase.

The combined streambelt for the two segments of Long Hill Brook has 3.8 miles of watercourse. This includes 3.5 miles along the main watercourse and 0.3 miles of small feeder streams. The streambelt covers 147 acres of land and 54 acres of water.

N1 - Segment - Long Hill Brook, Confluence of Sumner Brook to Confluence of Round Hill Brook, Route 17

Land along this segment of the brook is heavily urbanized. A dam on the brook creates Pameacha Pond. Round Hill Brook, a tributary brook, confluences with Long Hill Brook at the upper end of the segment.

The watercourse of this segment is .7 miles and the remaining land available for streambelt is approximately 47 acres. In addition, Pameacha Pond is 20 acres.

15 - Gorge: East of South Main Street, Route 17, Long Hill Brook passes through a deep gorge. From the bottom, steep slopes rise 60 or more feet to lesser sloping urbanized land along the top.

Slopes are covered with brush and trees except at the outlet end where excavation and industrial development is taking place. (Refer to Feature Number 4.)

16 - Pameacha Pond: An artificial pond of 20.5 acres, having a maximum depth of 16 feet and an average depth of 7.7 feet. The dam is of masonry construction. The bottom is mud, rubble, sand and gravel. There is a considerable quantity of submerged and emergent vegetation in the school areas. Some interest has been expressed in dredging and cleaning the pond.

Access to the pond can be gained from Route 17. The pond has been stocked with a variety of warm-water fish species and fishing is fair to good.

Little opportunity remains for preserving adequate open space streambelt land around the pond due to urbanization, roads and highways.

N2 - Segment - Long Hill Brook, Confluence of Round Hill Brook (Route 17) to Head of Watershed

Land along this segment of Long Hill Brook varies from urban residential at the downstream end to rural residential in the upper reaches. Urbanization of the watershed is progressing at a rapid pace. The brook parallels Route 17 along most of the segment.

There is 2.8 miles of watercourse along the main brook and .3 miles of small feeder streams. The streambelt covers 100 acres of land and 34 acres of water.

17 - Opportunity for Streambelt Preservation: Upstream from Highland Avenue to Randolph Road, sloping land adjoining Long Hill Brook is wooded. This is an example of good land use for streambelts and its preservation should be assured. There is opportunity here for some woodland park type of recreational development.

18 - Streambelt Encroachment: Apartment complex has encroached onto the streambelt in this vicinity.

19 - Extensive Area of Poor and Very Poorly Drained Soils: An extensive area of poorly and very poorly drained soils west of the brook between Route 17 and Long Hill Road. These soils have severe to very severe limitations for urban uses although some development is taking place around the area.

20 - Streambelt Encroachment: Construction for housing development extends onto streambelt. A source of erosion and sedimentation.

21 - Dooley Pond: A State-owned 28 acre pond having a maximum depth of 16 feet and an average depth of 4.9 feet. The pond is impounded by a small earthen masonry dam and can be almost completely drained. The bottom is mostly of mud with some sand, gravel, and rubble. Waters are heavily choked with submerged vegetation. The shoreline is mostly open pasture.

The pond has been stocked with a variety of warm-water fish species. Fishing is reported to be good. Access to the pond is provided through a State-owned parking area and boat launching area. There is a boat livery on the pond and picnic facilities are available.

O - EAST AND WEST ROUND HILL BROOKS STREAMBELT

East and West Round Hill Brooks are tributaries of Long Hill Brook. They confluence with Long Hill Brook east of Route 17 near the junction of Route 17 and Highland Avenue. The lower end of the watershed falls within the rapidly urbanizing Middletown area. Both brooks originate in woodland in the upper reaches of the watershed.

The watercourse of West Round Hill Brook is 1.4 miles. East Round Hill Brook is 2.0 miles. The streambelt for West Round Hill Brook covers 60 acres of land and 6 acres of water. East Round Hill Brook streambelt covers 42 acres of land.

22 - Zoar Pond: A small shallow to moderately deep impounded pond of approximately 6 acres just above the outlet of Round Hill Brook. The pond is located in a scenic open space setting. Most of the shoreline is undeveloped. Some tree and shrub landscaping within the designated streambelt area around the pond would enhance its esthetic and wildlife values. The pond provides fair to good fishing for warm water fish species.

P - PROUT (GILBERTS) BROOK STREAMBELT

Prouts Brook originates at the outlet to Cyrstal Lake. It flows northward for .7 miles to confluence with Sumner Brook at Route 155.

The streambelt covers 45 acres of land and 35 acres of water.

24 - Crystal Lake: This 35.5 acre lake is artificial in origin and has a maximum depth of 24 feet and an average depth of 7.9 feet.

There is a considerable quantity of submerged vegetation in the shallow areas. The bottom is of sand, gravel, ledge and mud. The shoreline development is quite extensive, there are numerous cottages present. A public town beach and recreational area is located at the upper south end of the lake.

The ratio of watershed to pond area is approximately 5:1. Because of this small ratio, the future water quality of the lake may be jeopardized as a result of heavy shoreline build-up and heavy recreational use of lake waters. Little opportunity remains to delineate needed streambelt protective area around the lake. The prevention of serious contamination of lake water requires that special consideration be given to the location and density of development and type of sewage disposal systems. Also essential is the need to stabilize sources of shoreline and yard erosion, reduce siltation from roads and to maintain shoreline properties free from contaminates that might wash into the lake, including pesticides and excessive application of certain lawn fertilizers.

The lake has been stocked and offers good fishing for warm-water species. Fishing should continue good when managed for warm-water fish species.

25 - Town Recreational Area: A town-owned recreational facility provides boating, fishing, swimming and picnicking.

Q - UNNAMED TRIBUTARY TO SUMNER BROOK STREAMBELT

Over 1,300 acres of land along the east side of the Sumner Brook Watershed drains to Sumner Brook by a system of smaller branch streams which converge to form the main stream. The area is subject to pressures from urban development. Some points of flooding were noted and some filling of lowlands along the brook was observed.

The streambelt has one mile of watercourse along the main brook and 1.6 miles of watercourse on branch streams. The streambelt covers 160 acres of land and three acres of water.

26 - Streambelt Encroachment and Point of Flooding: Land in this vicinity is subject to flooding. Filling of lowland close to the brook is taking place.

Some open space is available to constrict a pond or water retarding structure in the lowland north of Route 155. However, more information is needed to determine feasibility for flood retardation.

D-1 Rocky and very rocky upland soils with slopes less than 15 percent:

Shall include areas of these soils where proximity to the watercourse, soil patterns, or surface water drainage require controlled land use to minimuze the hazard of pollution or erosion and sedimentation. As a minimum, it shall include these soils which are contiguous to the watercourse or its floodplain and which are lower than 25 feet in elevation above the bed of the watercourse.

D-2 Rocky and very rocky upland soils with slopes more than 15 percent, and extremely rocky soils:

Shall include areas of these soils where proximity to the watercourse and soil pattern or surface water drainage require controlled land use to minimize the hazard of pollution or erosion and sedimentation. As a minimum, it shall include these soils that are contiguous to the watercourse or its floodplian, and those which are lower than 60 feet in elevation above the bed of the watercourse.

E Floodplain soils:

Shall include all floodplain soils.

F Marsh and swamp soils:

Shall include the areas of these soils which adjoin the watercourse or its floodplain.

CRITERIA FOR DELINEATION OF STREAMBELTS

Soil surveys provide the most suitable basis presently available for making land use decisions. The soil survey is based upon many of the soil properties which significantly affect the suitability, limitations, or hazards in using land for various purposes.

The criteria uses the Connecticut Natural Soil Group System in the process of streambelt delineation.

The streambelts as delineated include areas in proximity to named streams and their tributaries, as shown on the U.S.G.S. topographic maps, and consist of the soils as specified in the following groups.

A-1a Excessively drained terrace soils with slopes less than 15 percent:
A-1b

Shall include the areas of these soils where, because of proximity to the watercourses, the soil patterns, steepness of slope, or surface water drainage required controlled land use to minimize the hazard of pollution, erosion and sedimentation. As a minimum, the streambelt zone shall include these soils that are less than 150 feet from any of the following: the watercourse, its floodplain, or poorly or very poorly drained soils contiguous to the watercourse or its floodplain. Also, it shall include areas of these soils that are within 50 feet of a terrace escarpment that is within the streambelt zone.

A-1c Terrace escarpments:

Shall include terrace escarpments adjacent to either the watercourse or its floodplain.

A-1d Well drained terrace soils:
A-1e

Excessively drained terrace soils with slopes less than 15 percent. Shall include the areas of these soils where, be cause of proximity to the watercourses, the soil patterns, steepness of slope, or surface water drainage required controlled land use to minimize the hazard of pollution, erosion and sedimentation. As a minimum, the streambelt zone shall include these soils that are less than 150 feet from any of the following: the watercourse, its floodplain, or poorly or very poorly drained soils contiguous to the watercourse or its floodplain. Also, it shall include areas of

these soils that are within 50 feet of a terrace escarpment that is within the streambelt zone.

A-2 Moderately well drained terrace soils:

Shall include areas of these soils where proximity to the watercourse or its floodplain, or poorly or very poorly drained soils contiguous to the watercourse constitute a special hazard of pollution.

A-3 Poorly and very poorly drained terrace soils:

Shall include these soils where they are contiguous to either the watercourse or floodplain soils.

B-1a, B-1b,
B-1c, C-1a
C-1b, C-1c, Well drained upland soils with slopes less than 15 percent:

Sufficient areas of these soils shall be included to provide suitable width and continuity for a streambelt to meet public objectives. As a minimum, the streambelt zone shall include these soils less than 150 feet from any of the following: the watercourse, its floodplain, or poorly or very poorly drained soils contiguous to the watercourse or its floodplain.

B-1d, B-1e
C-1d, C-1e, Well drained upland soils with slopes more than 15 percent:

Shall include the areas of these soils where because of proximity to the watercourse, the soil patterns, or surface water drainage require controlled land use to minimuze the hazard of pollution or erosion and sedimentation. As a minimum, the streambelt zones shall include areas of these soils which are contiguous to the watercourse or its floodplain, and which are lower than 40 feet in elevation above the bed of the watercourse.

B-2,
C-2 Moderately well drained upland soils:

Shall include sufficient areas of these soils to provide suitable width and continuity for a streambelt to meet public objectives. As a minimum, the streambelt zone shall include these soils that are less than 150 feet from any of the following: the watercourse, the floodplain, or poorly or very poorly drained soil contiguous to the watercourse or its floodplain.

B-3,
C-3 Poorly and very poorly drained upland soils:

Shall include these soils where they are contiguous to the watercourse or to its floodplain.