

DEVELOPMENT PLAN FOR THE HARDY POND AREA

WALTHAM, MASSACHUSETTS

by

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Cambridge, Massachusetts

1953

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January 21, 1953

Professor Frederick J. Adams
Head, Department of City and Regional Planning
School of Architecture and Planning
Massachusetts Institute of Technology
Cambridge, Massachusetts

Dear Professor Adams:

In partial fulfillment of the requirements for the degree of Master in City Planning, I submit this thesis titled, "Development Plan for the Hardy Pond Area, Waltham, Massachusetts".

Respectfully,

Wesley P. Wiers

ABSTRACT OF THESIS

A DEVELOPMENT PLAN FOR THE HARDY POND AREA, WALTHAM, MASSACHUSETTS
By Wesley P. Wiers

Submitted to the Department of City and Regional Planning
on January 19, 1953, in partial fulfillment of the require-
ments for the degree of Master in City Planning.

The Hardy Pond Area is a part of Waltham affected by a set of particular problems. Early individualistic, uncontrolled subdivision development, rough topography, poor roads, inadequate utilities, poor housing, and blighted lands have scarred its growth and its reputation. It is now in the path of post-war growth in Waltham and much of its open land will eventually be developed.

This thesis intends to show that although the Hardy Pond Area started out at a disadvantage and has since slowly overcome some of the stigma of its handicaps, it can only become a respectable and desirable segment of the city, in the face of pressures for growth at its doorstep, through an effective plan which anticipates and considers such growth, which attempts to alleviate past and present problems and which includes positive flexible civic controls for plan effectuation. One important proposal is the addition to the zoning ordinance of an open land use zone which will require approval in open areas of all but restrictive residential uses.

A survey of past and existing conditions within the Hardy Pond Area was a prerequisite to development plan decisions. Plan decisions were then made keeping in mind that the Pond Area is a part of Waltham and that Waltham, in turn, is a segment of, and strongly affected by, the Greater Boston Metropolitan Area.

Thesis Supervisors: John T. Howard
Roland B. Greeley

Title: Associate Professors of
Regional Planning

ACKNOWLEDGMENT

The author would like to express his appreciation for the valuable assistance on this thesis he has received from members of the faculty, John Howard and Roland Greeley, who were his co-advisors.

Gratitude is acknowledged too, to the useful criticism given him by his fellow students. Assistance given by the various departments of the City of Waltham, especially Engineering and Assessing, aided naturally in securing much of the basic data.

Acknowledgment of appreciation would hardly be complete without a word of tribute for the patience, assistance, and understanding of his wife, Harriet, and to the kids, Leslie and Douglas, who suffered often in patience, not quite understanding.

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PREFACE

The area considered in this thesis is a 900 acre tract of land surrounded by four major roads. It is located in the northwestern part of Waltham and contains a nucleus of residential development which partially surrounds Hardy Pond.

The author's original idea was to plan the redevelopment of this urbanized nucleus surrounding the Pond. It appeared to be in need of redevelopment. Dirt roads were rutted and muddy. Homes were drab, old, and appeared to be in the last stages of deterioration. The land itself was badly blighted.

First impressions can be wrong, however. This first impression of the Pond Area was wrong - not entirely, but enough to justify a new approach, one of development rather than redevelopment - the positive approach rather than the negative. The Hardy Pond Area, as described, seemed to be a logical unit for positive planning and an area where existing problems could be solved while they were still small, and common to the whole area.

Having chosen a definite planning area, an analysis of its problems followed. This analysis demonstrated there were evident inadequacies of planning policy, zoning control, subdivision regulation, taxation and assessing policies, and municipal policy for services and public improvements. Further analysis also convinced the author that the ordinary methods of control over land uses, tried but perhaps not so true, would not be sufficient to offer even reasonable assurance that a plan for development, once devised, would or could be accomplished.

Changes in accepted planning policy have been suggested in this thesis in an attempt to "plug" the more obvious "gaps" or inadequacies

of present policy which exist. One important suggestion is a change in the zoning ordinance. This change would be the addition of a new and flexible zone to control, essentially, the use of open land, land not intensively developed within the Hardy Pond Area. Control of this open land, by use permit approval, according to a definite plan of development will do much towards effectuating a plan, even a continuous and flexible one. There will be zoning control, yet this control will relieve the indecision of zoners who must establish a zoning pattern for the future based on knowledge of the past and present.

January 21, 1953

Wesley P. Wiers

PART I - INTRODUCTION

Public opinion of the past development around Hardy Pond in Waltham has not been too favorable. Forested hills and the early truck farms of Harvard University have been converted, in the last 30 years, into a mottled pattern of urbanized growth. As expressed in various opinions, it is "sad", "sorry", "badly developed", "run-down", "a mess that never will amount to much", and "a blight on the city which should be redeveloped".

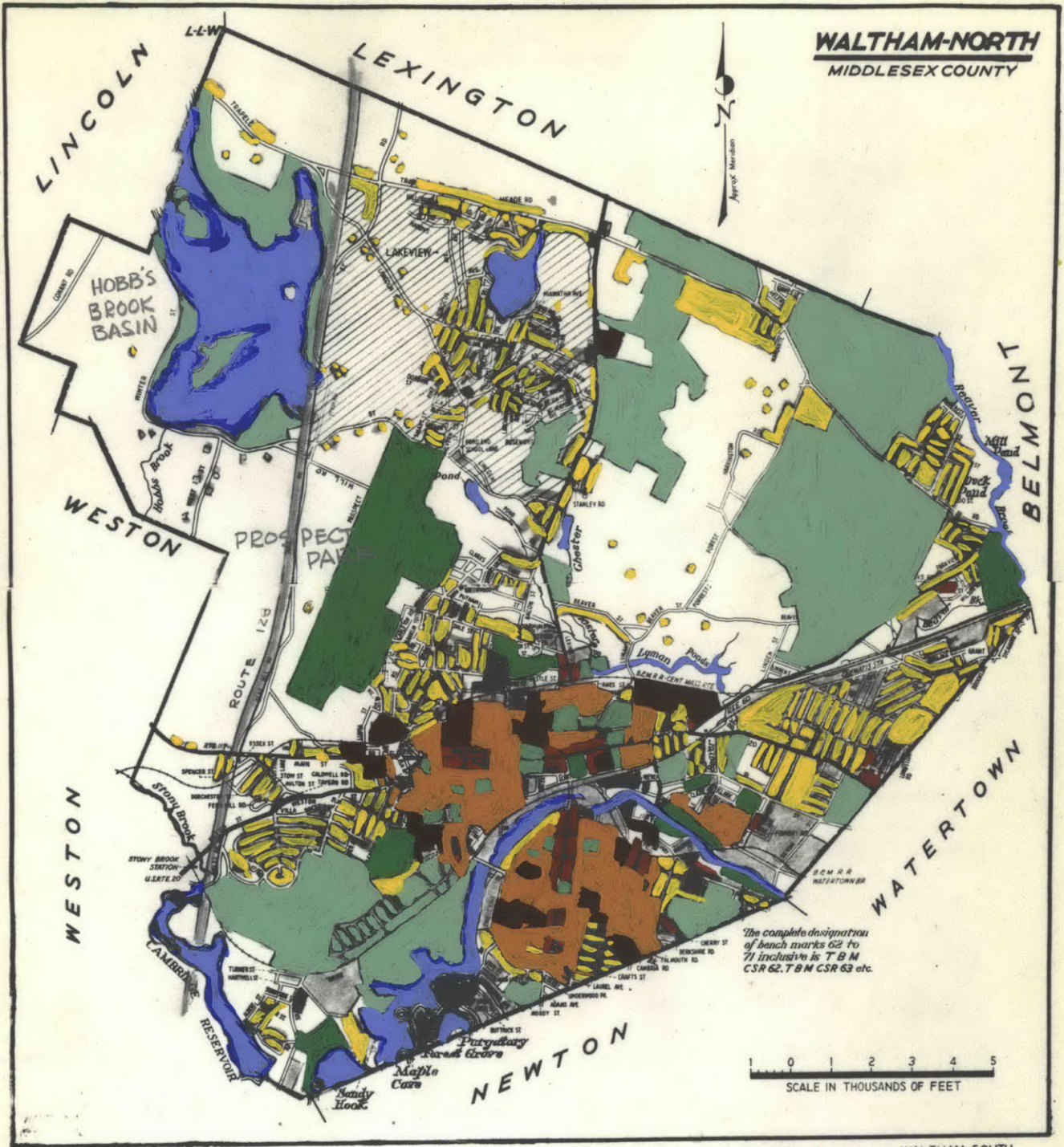
Such opinion is not altogether justifiable. There is a feeling of blight and physical deterioration, especially on a bleak winter day. Remnants of earlier camp buildings still exist. Structures are haphazardly related and many roads are unimproved. The Area does need sewers and walks, greater community integration and most of all planning. BUT - new homes are being built, and banks are lending money in the area for the construction of these homes. Older houses are being repaired, painted, provided with permanent foundations, aluminum storm sash, roofing, siding, and other symbols of improvement. An effort is being made by the home owner to add new value and permanence to his investment.

Changes in city patterns of circulation have increased the desirability of land in the Area. Builders have recently developed land to the east of the Area and are now developing over 200 homes to the north. Industry has already expressed interest in nearby locations. Aging of the core of early development in Waltham places new emphasis on this northern undeveloped section of the city. (MAP 1)

REVISIONS

4-1-42

WALTHAM-NORTH
MIDDLESEX COUNTY



MASSACHUSETTS GEODETIC SURVEY

WALTHAM-SOUTH

LAND USE

MAP 1

- RESIDENTIAL - SINGLE
- RESIDENTIAL - DOUBLE
- RESIDENTIAL - MULTIPLE
- COMMERCIAL
- INDUSTRIAL
- PARK - PUBLIC
- INSTITUTIONAL
- POND AREA



Contrary to probable opinion, the Hardy Pond Area, if properly planned and integrated with a comprehensive plan for the city, can actually be the salvation of Waltham's future. A good plan design for land use, properly controlled, can strengthen and revitalize the city's economic base. It can provide desirable industrial sites, a supplementary shopping center, and valuable, much needed recreational development.

The survey of the Hardy Pond Area was a primary procedure. Complete familiarity with the Area was gained by repeated visits to it and by study of its map relationships. Much of the open land area, impossible to see by automobile, was walked and so studied. Public officials were questioned in the city hall concerning the area, its early history, and its possible future. City reports were scanned from the year 1909 to the present for information on zoning, subdivision activity and planning in the Area. The city engineering department files were exhausted for information on subdivisions, roads, utilities, and land purchases. The engineering department's official, also chairman of the Board of Survey and Planning, and other members of the Board, including its planning consultant, were questioned for information. Information on the Area's present school system and its inadequacies was obligingly received from a Harvard University research group under contract to the city to do a complete school survey and report. Other data was secured from a local savings and loan association, real estate interests in the Area, the city police, fire, health, welfare and assessing departments, and the housing authority.

Topography and soil was studied in the field and on United States Department of Agriculture and Geodetic Survey maps. A complete field land use study was made and a structural condition survey.

Survey information and knowledge gained was fully considered wherever applicable in the plan for future development and in other recommendations to effectuate the plan. It was not considered necessary, however, to discuss, section by section, all survey information obtained.

PART II - SURVEY OF THE AREA RELATIONSHIPS

Waltham, and thus the Hardy Pond Area, as a segment of the Boston Metropolitan Region, (MAP 2) is centrally located between the Region's northern and southern sections, ten miles from its center. A city of 47,000 people, it is located in favorable relationship to all main highways radiating west from the Region. Concord Turnpike is north of the city. U. S. Route 20 almost bisects it. Commonwealth Avenue and the Worcester Turnpike are both a short distance to the south. The Metropolitan Region's circumferential highway, Route 128, cuts through the city's entire western section.

The Hardy Pond Area occupies approximately one ninth of the land area of Waltham or about 900 acres. (MAPS 1 and 2) Of this acreage, almost one quarter has been subdivided. The remainder is vacant except for various open uses. As a planning unit, the Hardy Pond Area is physically separated from other areas of the city by main roads. It is naturally separated from the remainder of Waltham as well. Hobbs Brook Basin lies to the west; rough topography, including Prospect Park, is on the south. To the east are public lands and land held in estates. To the north, except for a portion of land now being developed residentially, is the political boundary of the city. (MAP 1) It has an approximate population of 2,500 people.

DEVELOPMENT

The history of the Hardy Pond Area has had much to do with its present appearances. The entire Area before subdivision and development




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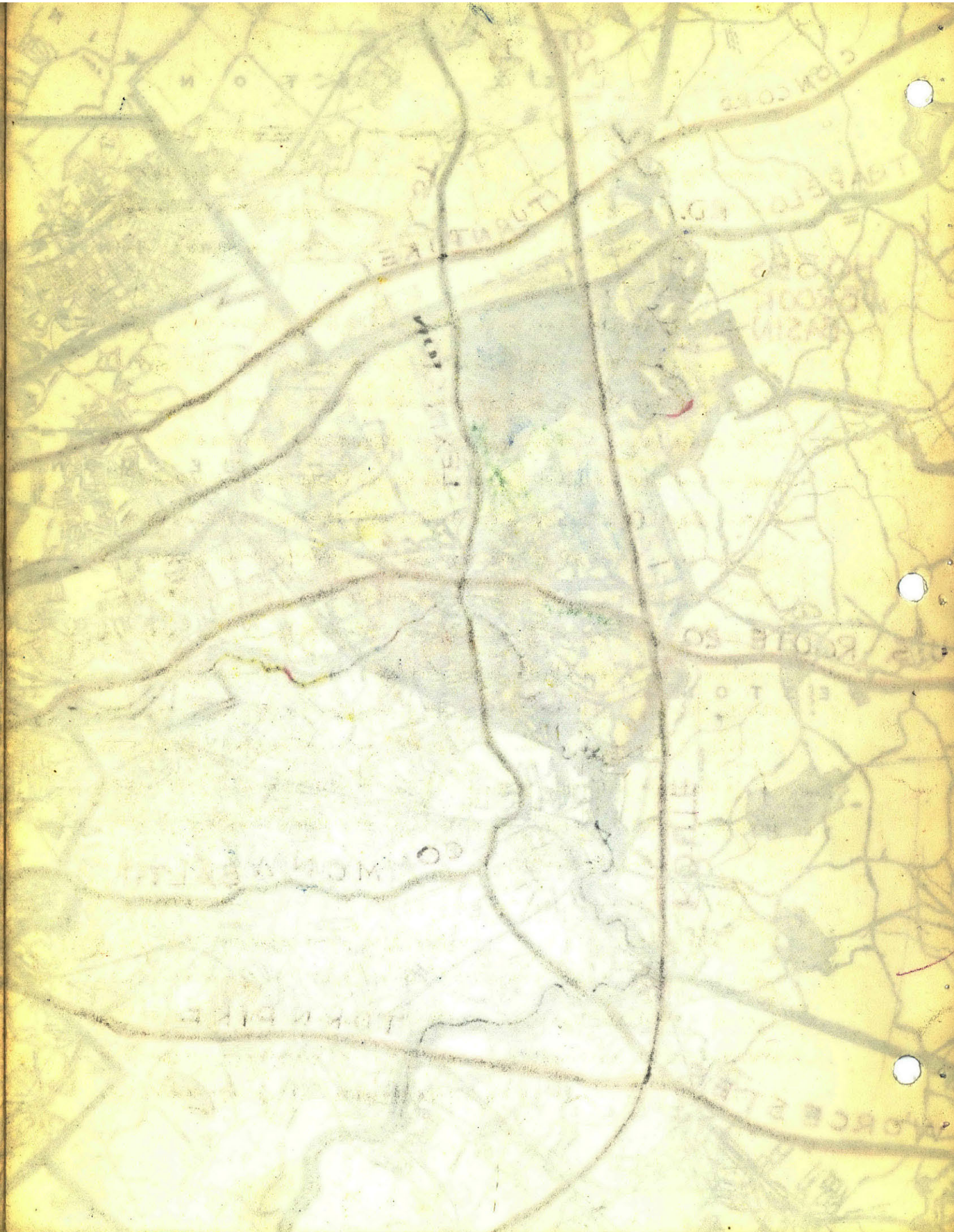
MAP 1:

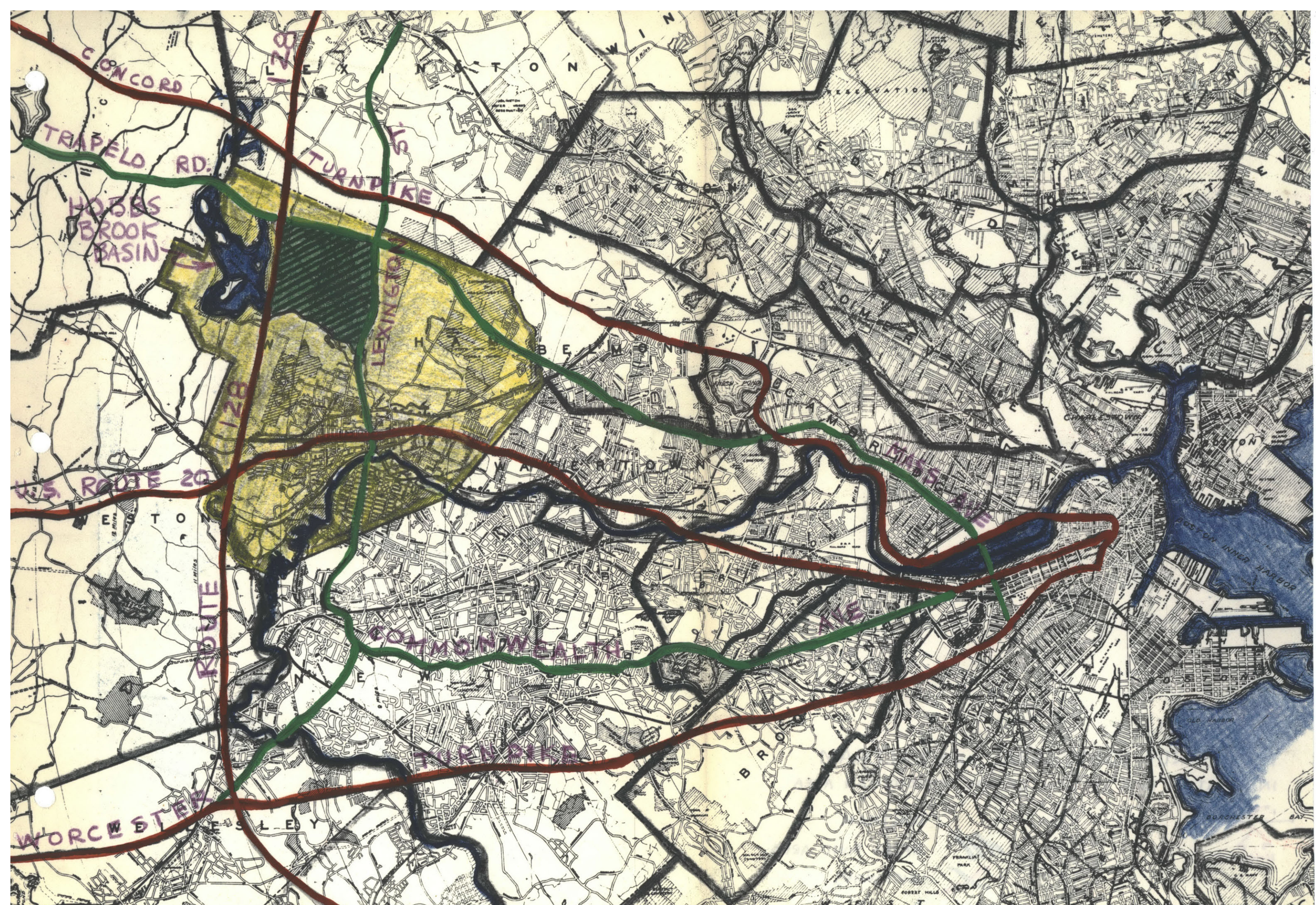
THE HARDY POND AREA AND WALTHAM IN RELATION TO A SECTION OF THE METROPOLITAN AREA

1" = 1 MI.



-  WALTHAM
-  HARDY POND AREA
-  HIGHWAYS





CONCORD

TRAPELO RD.

HOBBS
BROOK
BASIN

TURNPIKE

LEXINGTON

U.S. ROUTE 20

ROUTE

WORCESTER

COMMONWEALTH

WATERBURY

BROOK

MERRIMACK

BOSTON INNER HARBOR

OLD HARBOR

BOSTON HARBOUR

FRANKLIN
PARK

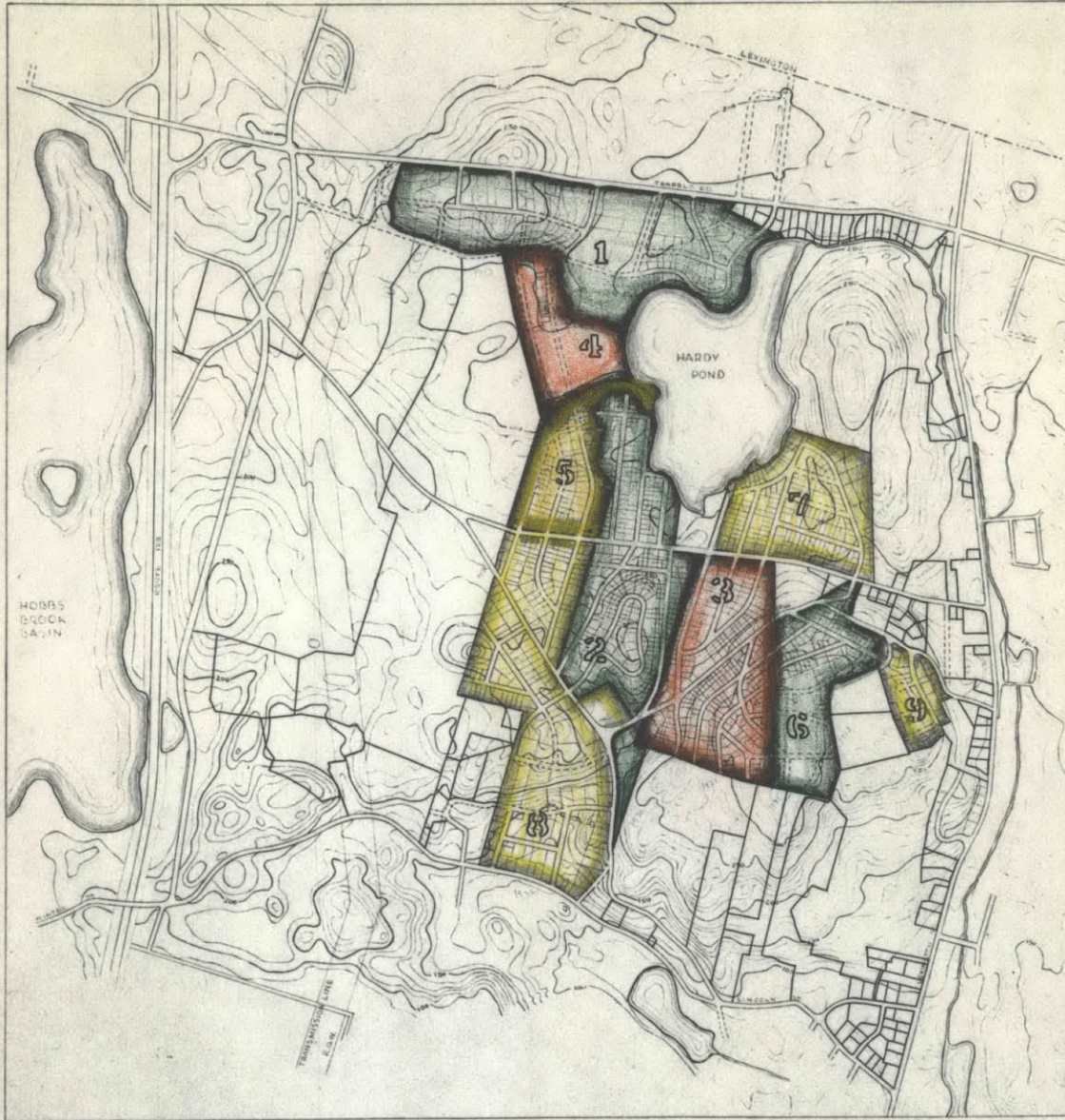
FOREST HILLS

was isolated and unimportant to the city. Except for scattered areas cleared for farming purposes, most of the land was wooded and apparently unused. Most intensive early use was in the vicinity of the Pond itself where the land was relatively flat. Here Harvard College operated their truck gardens in the 1800's.

The Area's first subdivision was undertaken in 1913, (MAP 3), when the Wellington Land Company, "...to provide camp sites for the people of Cambridge and Boston. ...", divided the land into twenty foot lots north of the Pond. Whether it was their intention or not that the land ever be used for permanent housing, we do not know. They completely ignored invitations to have their development approved by the neophyte planning body, the Board of Survey. Land was sold for a dollar down and a dollar a week, and construction was everything from a tent, which the land company gave the buyer, to shelters of tar paper, packing boxes, and scrap metal and wood. Construction took on more permanent aspects in time but it was a gradual process. Many early structures were destroyed by fire. Others were removed or torn down as summer cottages were built. The cottages have since been added to, remodeled and rebuilt, and resold several times as permanent homes. Few, if any, are now on lots which have not been consolidated.

Development south of the Pond occurred between 1920 and 1924. (MAP 3) According to city records, the first plan was approved by the Board of Survey. In its report of 1919, the Board, in reference to land between Lincoln and Lake Streets, stated, "...the early plat was presented with impossible grades..."; and, "...they were persuaded to change their scheme to better conform to the topography...". In the city report for

HARDY POND AREA WALTHAM MASSACHUSETTS



LAND SUBDIVISION

LEGEND . . .

WELLINGTON GROVE	1913
LAKEVIEW PARK	1920
LAKEVIEW PARK ANNEX	1921
MOUNT LAKE VILLA 1	1921
MOUNT LAKE VILLA 2	1921
MOUNT LAKE VILLA 3	1922
MOUNT LAKE VILLA 4	1922
MOUNT LAKE VILLA 5	1922
LAKEVIEW TERRACE	1924

1
2
3
4
5
6
7
8
9

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1920, the Board stated, "It was gratifying to receive such close cooperation from the owners and their engineers. We feel this land has been developed most satisfactorily from an engineering standpoint". The development might have been satisfactory from an engineering standpoint, then, since it was evidently a great improvement over the first scheme, but according to today's standards, the roads still have grades which are excessive. They are excessive, not only from an engineering standpoint, but from practical, financial, planning and esthetic standpoints.

PHYSICAL STRUCTURE

The Hardy Pond Area, physically, is a combination of small hills and flood plain as indicated on the model topographic study, (MAP 4)¹ The hills with their valleys are part of a system of parallel glacial ridges, oriented north-south, through northwest Waltham. Differences in elevation range between 200 and 300 feet above mean sea level in the central sections of the Area. At Hobbs Brook Basin, the elevation goes below 150 feet. The swales or paths of flood water have, through years of erosion and deposition, formed definite flood plain areas such as that which surrounds the Pond. Ledge is very common as are intermediate changes in soil structure.

SOILS

The type of the soil is determined by its structure.² (MAP 5)

1/ The scale of the model is exaggerated two and one half times its natural difference in elevation. Each contour represents a ten foot interval according to United States Geodetic Survey.

2/ See Appendix A.

HARDY POND AREA

WALTHAM MASSACHUSETTS



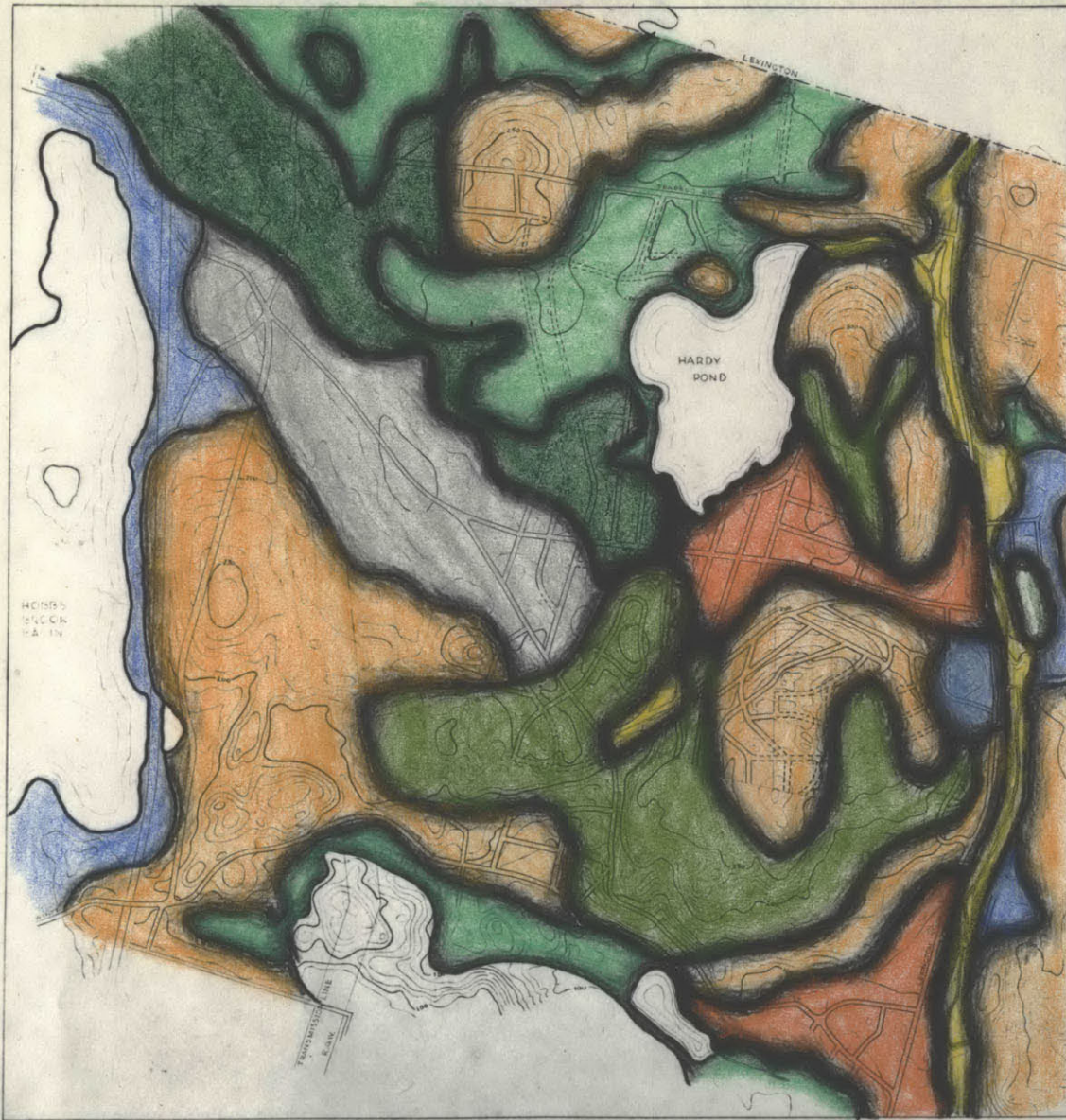
TOPOGRAPHY

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MAP 4

HARDY POND AREA

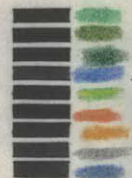
WALTHAM MASSACHUSETTS



SOIL TYPES

LEGEND

- MD MUCK & PEAT
- R ROUGH STONY LAND
- H1 HINCKLEY STONY LOAM
- MN MERRIMAC GRAVELLY LOAM
- M MEADOW
- MG MERRIMAC GRAVELLY SANDY LOAM
- GR GLOUCESTER STONY FINE SANDY LOAM
- GF GLOUCESTER FINE SANDY LOAM
- HG HINCKLEY GRAVELLY SANDY LOAM



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MAP 5

Many of the upper soils are similar, varying only in their porosity and in the amount of ledge or boulder they contain. Few soils, in fact, in the Area are free of coarse materials. Drainage is good but often excessive.

The pattern of drainage, clearly delineated on the model, is deceptive on the ground. Underground rivulets are common, as well as isolated pockets of impounded water which could be drained. Most of the lowland and swamp lies west of the Pond.

LAND USE

Roughly 35% of the entire Area is subdivided. (MAP 3) It is here that most of the development has occurred. This development is almost completely residential. (MAP 6) Most of the homes are single family of wood construction. The density averages about four families per gross acre.¹ Many homes, constructed on 40 by 100 foot lots, are small - hardly more than summer cottages fixed for permanent occupancy.

Commercial development within the Hardy Pond Area is now insufficient for the number of people living there. Business potential exists but the stores, especially on Lake Street, do very little business. Four are located along Lake Street. Another is at the corner of College Farm Road and Lincoln Street.² The commercial area at the intersection of Lake Street and Lexington Street is really a recreation center while the small roadside center at Trapelo and Lexington Streets caters more to business outside the Area.

1/ This might seem contrary to what appears on the land use map, but all land under single ownership is indicated as being used for residential purposes. Actually this is not the case. Often the house occupies only one 40 foot lot, while ownership might include an additional lot or two.

2/ See Map 10 for location of streets in the Area.

HARDY POND AREA WALTHAM MASSACHUSETTS



LAND USE

LEGEND . .

- RESIDENTIAL - SINGLE FAMILY
- RESIDENTIAL - DOUBLE
- RESIDENTIAL - MULTIPLE
- COMMERCIAL
- PUBLIC
- SEMI-PUBLIC
- INSTITUTIONAL
- AGRICULTURAL - GARDENING
- IDLE
- IDLE - TAX DELINQUENT



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MAP 6

Public lands and buildings belonging to the city consist of a playground at the south end of the Pond, school property on Lake and Winter Streets, properties on Lake Street now occupied by an inoperative water pumping station and a single engine fire station, and a stand pipe on Fir Street.

The Hardy Pond School, built in 1925, covers roughly two acres of land. It has nine classrooms, a public library, and an assembly room. Pond End School, on Winter Street, was formerly a part of the school system until abandoned.

Semi-public uses consist of two churches on Lake Street, one of which occupies the premises of an abandoned store. A summer camp for boys located off Lincoln Street is seasonal.

Land not otherwise intensively used is either open or semi-open. Semi-open uses of land are mainly farms, which still occupy old estate acreage, and rural residences. Open land is idle land, essentially. Most of this land has no apparent economic use. It is swampland, ledge, forest or wooded land, and open field. A somewhat different type of open land exists within the subdivided areas. It is tax title land, the delinquency of which is more the fault of the land than the fault of its previous owner.

UTILITIES · ROADS · SCHOOLS

See Map 7, Gas Lines and Sewers,
 Map 8, Water Lines,
 Map 9, Storm Drains, and
 Map 10, Roads and Schools.

HARDY POND AREA WALTHAM MASSACHUSETTS



GAS LINES AND SEWERS

- LEGEND . .
- 10 INCH SEWER LINE
 - 8 INCH SEWER LINE
 - ALGONQUIN GAS TRANSMISSION
 - 16 INCH GAS MAIN
 - 12 INCH GAS MAIN
 - 8 INCH TO 4 INCH GAS MAINS

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WATER LINES

- LEGEND · 1:1
- 10 INCH MAINS
 - 8 INCH MAINS
 - 6 INCH MAINS
 - STANDPIPE
 - PUMPING STATION

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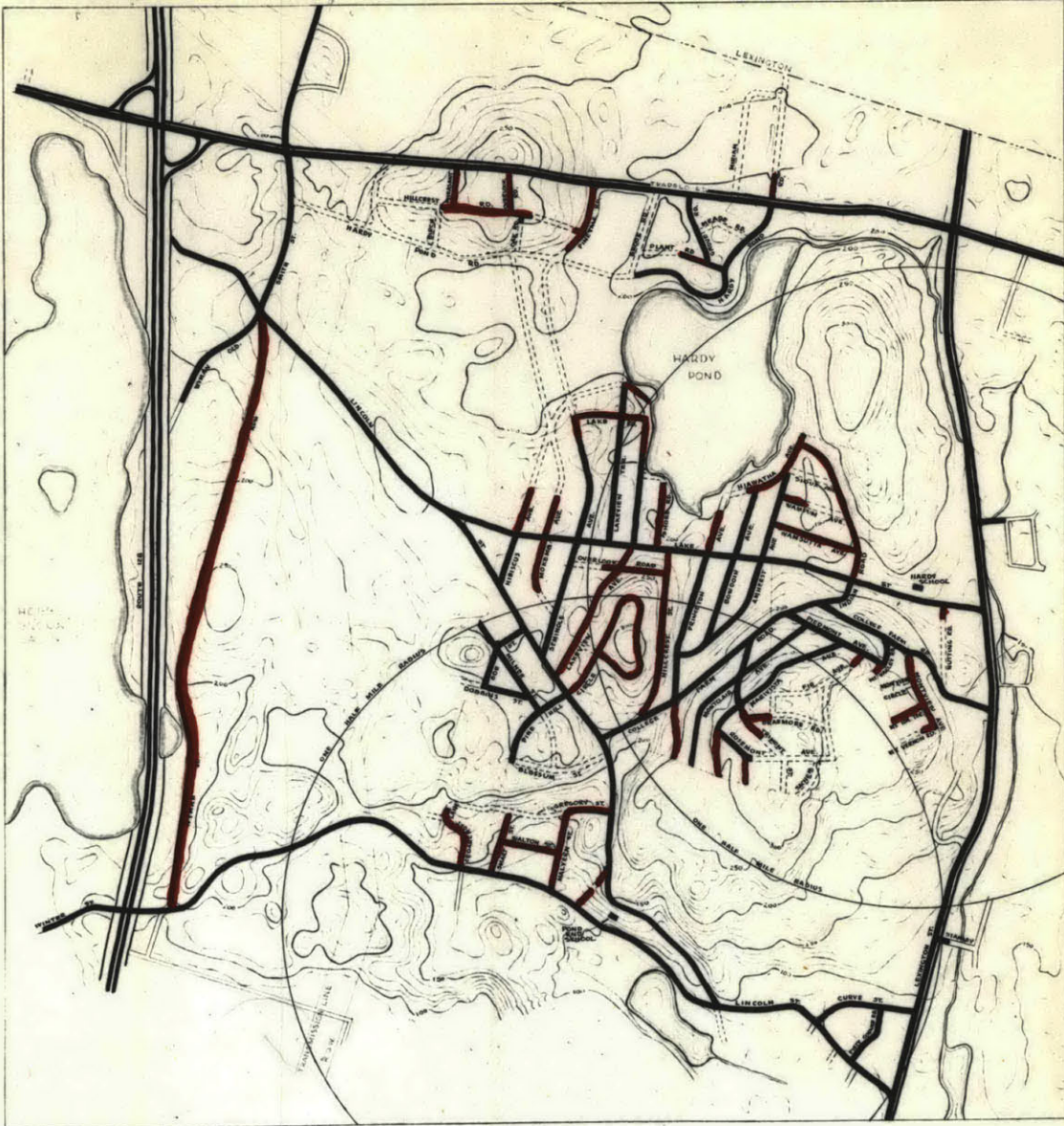
STORM DRAINS LEGEND . . .

12 TO 18 INCH DRAINS	▬▬▬
20 TO 24 INCH DRAINS	▬▬▬▬
30 INCH DRAINS	▬▬▬▬▬
36 TO 40 INCH DRAINS	▬▬▬▬▬▬

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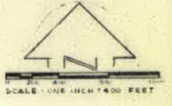
MAP 9

HARDY POND AREA WALTHAM MASSACHUSETTS



ROADS AND SCHOOLS

LEGEND . . STATE LIMITED ACCESS HIGHWAY
 CITY MAIN THOROUGHFARE
 SECONDARY IMPROVED ROADS
 SECONDARY UNIMPROVED ROADS
 SCHOOL



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CONDITION OF STRUCTURES

The condition of buildings in the Area was judged by external inspection. This was necessary as time did not permit surveys of family size, number of rooms, or sanitary and bathing facilities. Interior condition was judged solely on outward structural appearances. Age, condition of frame, roof, foundation, and even land all contribute to obsolescence and were considered some measure of interior decay.

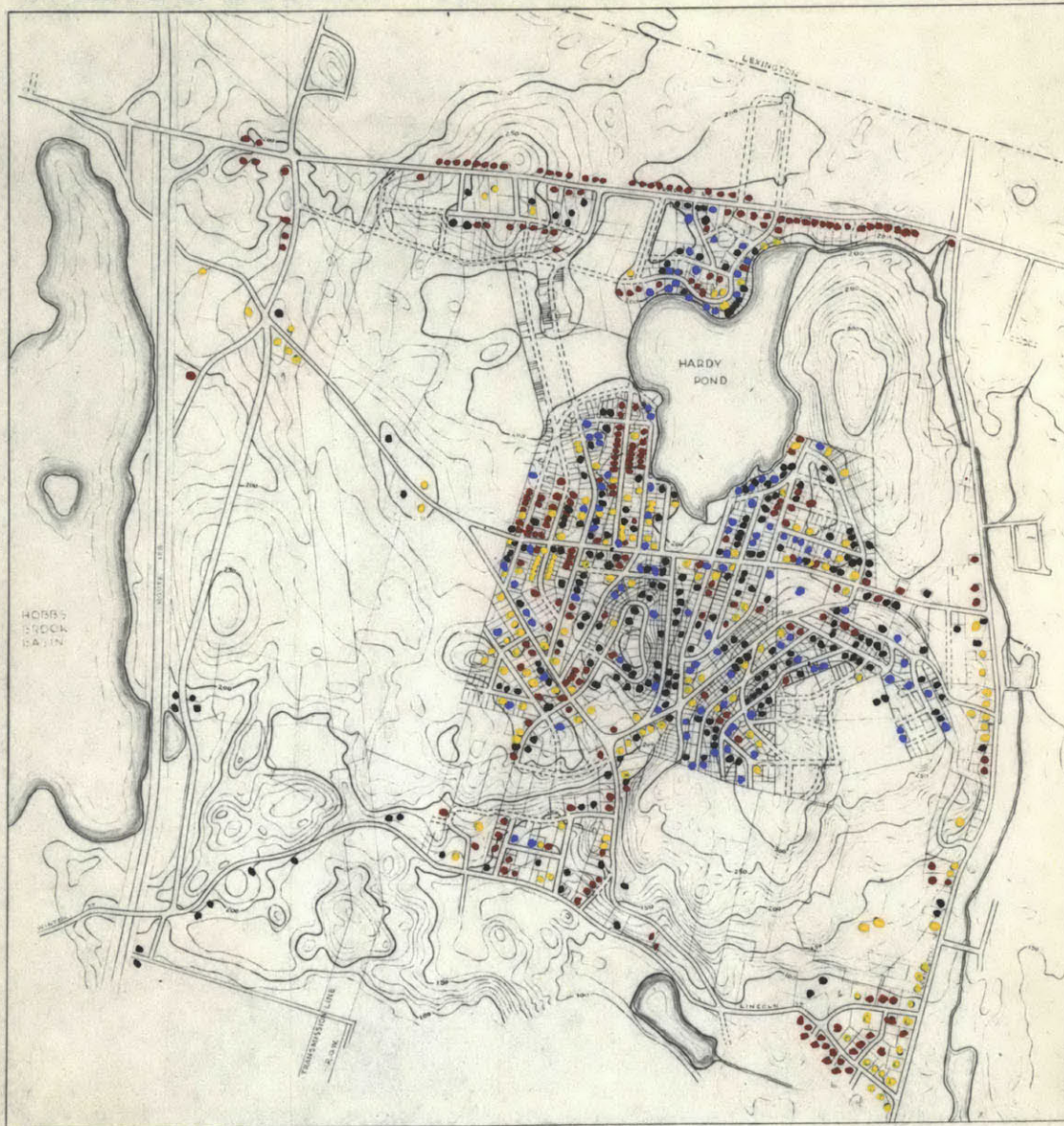
Each structure was visually judged as being in one of four categories according to the condition the structure was in. It was considered either very good, good, fair, or poor. (MAP 11) Most new construction fell into the category of very good. Out of a total number of 712 structures (by structure is meant either a dwelling or major building), 361, the greater proportion, are either very good or good. There are 245 classified as fair and 106 as poor.

The poor structures are scattered throughout the Area. The location of both poor and fair structures combined, however, do form a pattern. They fall into fairly definable groups. One is north of Lake Street, just east of the Pond. Another is south of Lake Street on both hillside developments. The other is Wellington Grove, north of the Pond. (MAP 11)

LAND USE CONTROLS

The zoning ordinance adopted in 1925 by Waltham is legally still in effect today, though proposals for a new ordinance have been presented for public hearing and will soon be considered by the Council for final adoption. Much of the Hardy Pond Area was zoned "Residence B". (MAP 12) This zone permits all uses allowed in "Residence A", two family homes,

HARDY POND AREA WALTHAM MASSACHUSETTS



CONDITION OF STRUCTURES

LEGEND . . .

VERY GOOD	●
GOOD	●
FAIR	●
POOR	●



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HARDY POND AREA

WALTHAM MASSACHUSETTS



EXISTING ZONING • AMENDED

LEGEND .

RESIDENCE	A	8,000 SQ. FT.	
RESIDENCE	B	7,000 SQ. FT.	
BUSINESS	A		

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and central telephone buildings. By amendment to the ordinance in 1942, the zone restricts each lot to a minimum width of 70 feet and an area of 7,000 square feet. "Residence A" permits single family homes and other customary uses.

Both sides of Lake Street, inclusive of areas subdivided when zoning was adopted in 1925, were zoned "Business A", which allows all residential uses, retail stores and other customary uses.

The new zoning ordinance, as proposed by the city's planning consultant, changes considerably the zoning districts in the Area. Compared to the 1925 ordinance, residential restrictions are much higher. The strip commercial zone, so prominent a part of the 1925 ordinance, is all but eliminated on Lake Street. (MAP 13)

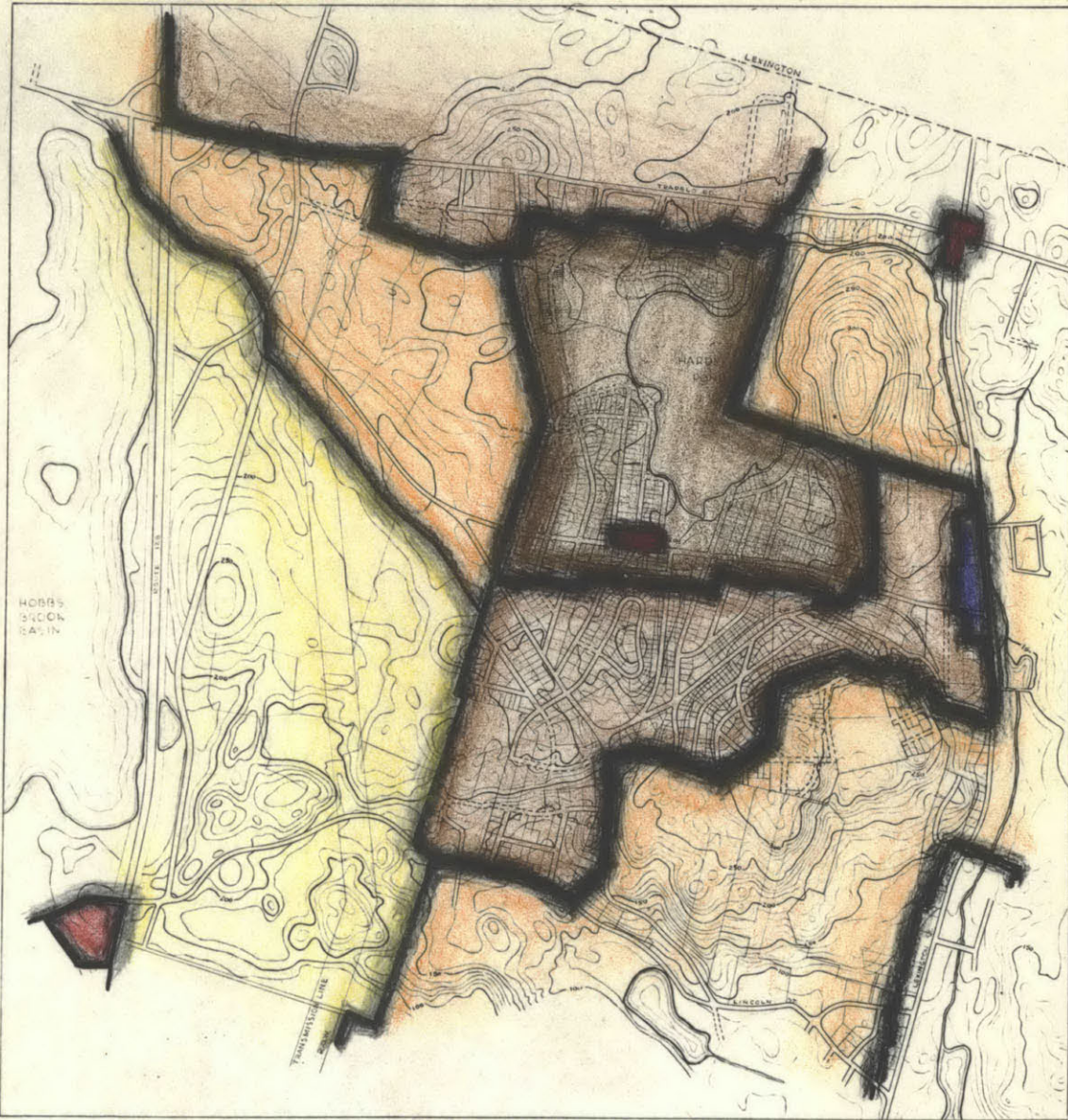
The proposed ordinance has four residential "RA" zones for single and two family use and two multiple residential zones "B" and "C". In the Hardy Pond Area, districts range from "RA-1" to and including "RA-4", with the lowest "A" classification, "RA-4", surrounding and zoning that area around the Pond itself. District "RA-4" has a minimum area requirement of 7,000 square feet with a lot width of 70 feet necessary at the building setback line.

An arbitrary line south of Lake Street puts the Pond Area, as zoned "RA-4", in a class of its own, but in reality there is no distinctive difference except in topography. That surrounding the Pond is fairly flat.







District "RA-3" has a minimum of 9,600 square feet of area and must provide a frontage at the setback line of 80 feet. "RA-3" and "RA-4" both allow for single family dwellings to be converted into two family houses.

HARRIS POND AREA

WALTHAM MASSACHUSETTS



PROPOSED ZONING 1952

LEGEND . .	RA - 1	RESIDENTIAL	36,000 SQ. FT.	
	RA - 2	RESIDENTIAL	18,000 SQ. FT.	
	RA - 3	RESIDENTIAL	9,600 SQ. FT.	
	RA - 4	RESIDENTIAL	7,000 SQ. FT.	
	BA	BUSINESS		
	BC	BUSINESS		

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Both districts "RA-2" and "RA-1" classify land which at present is mostly open. "RA-2" covers the land nearer the developed areas. It has a minimum of 18,000 square feet as an area requirement and a minimum width requirement of 100 feet. "RA-1" protects most of the area adjacent to the Hobbs Brook Basin. It has a minimum area requirement of 36,000 square feet and a minimum width requirement of 180 feet. Both districts are for single family dwellings.

There are three business districts in the proposed new ordinance, "BA", "BB", and "BC", one commercial, "COM", and one Industrial, "I". Hardy Pond Area has districts "BA" and "BC" proposed.

Business district "BA" is for retail business, such as food and drug stores, barbers, hairdressers, shoe repair, tailors, and offices and banks. All residential uses are also permitted. It has a minimum 2,000 square foot limitation on floor area, a maximum of 2½ stories for height, and a minimum of 20 feet for front yard. Business zone "BC", permits theaters, bowling alleys, garages, car showrooms, trailer camps, and accessory uses. All residential uses, as well as uses permitted in "BA" and "BB", are permitted in "BC". It has a maximum height restriction of 50 feet and a minimum front yard restriction of 25 feet.¹

PLANNING ACTIVITY

Planning in Waltham was officially created when a Board of Survey was formed in 1909 by special state legislation. The Board was concerned with land development, roads and streets, and their layout, grades, and

1/ The zones as outlined both in text and on the map are subject to change since they have not, as yet, been officially adopted by the city council.

drainage. The Board was, "...granted the authority to go into undeveloped territory, and make new plans for future highways in districts where there is still opportunity to procure a fitting and economical method of promoting the best interests of the City". The Board, authorized to investigate existing conditions in areas which were developed, was to make plans for their improvement. One of its duties was, "...to act upon petitions coming from owners or other parties interested in the layout of new streets, such parties to submit to the Board suitable plans and profiles, and methods of drainage according to the rules the Board may prescribe".

The Board of Survey had been given no provisions by legislation for the enforcement of its powers, and had to stand idly by when by-passed and ignored in 1913 by the developers of Wellington Grove, north of Hardy Pond. (MAP 3) The only recourse the Board had was to refuse the installation of city facilities on such streets not approved and so not accepted by the city, which put the burden on the property owner and the eventual problem back in the lap of the city.

In 1913, the City Council voted in favor of establishing a local planning board as permitted under state enabling legislation. This board's express purpose was, "...to study the resources and needs of the city in respect to conditions injurious to public health in and around rented dwellings, and to make plans for the development of the municipality with special reference to proper housing." The Planning Board, as it was called, was beset by resignations and accomplished very little. It was finally combined in 1923 with the Board of Survey. The two together were called the Board of Survey and Planning.

The Board of Survey and Planning carried on the work of approving streets and administering the zoning ordinance. Little advanced planning was officially done even though planning was recognized as a vital function the Board should perform. In 1945, added powers were given the Board through City Council adoption of Section 81F, Chapter 211 of the Acts of 1936. Chapter 211, of the Acts of 1936, was titled, "An Act providing an improved method of Municipal Planning". Section 81F gave to the Board of Survey and Planning the power to recommend approval or disapproval of all subdivisions and to adopt reasonable rules and regulations governing such recommendation. It wasn't until 1949 that steps were finally taken by the Board towards the creation of a comprehensive "Master Plan" for Waltham. The plan is still in the formative stages.

PART III - PROBLEMS IN THE AREA

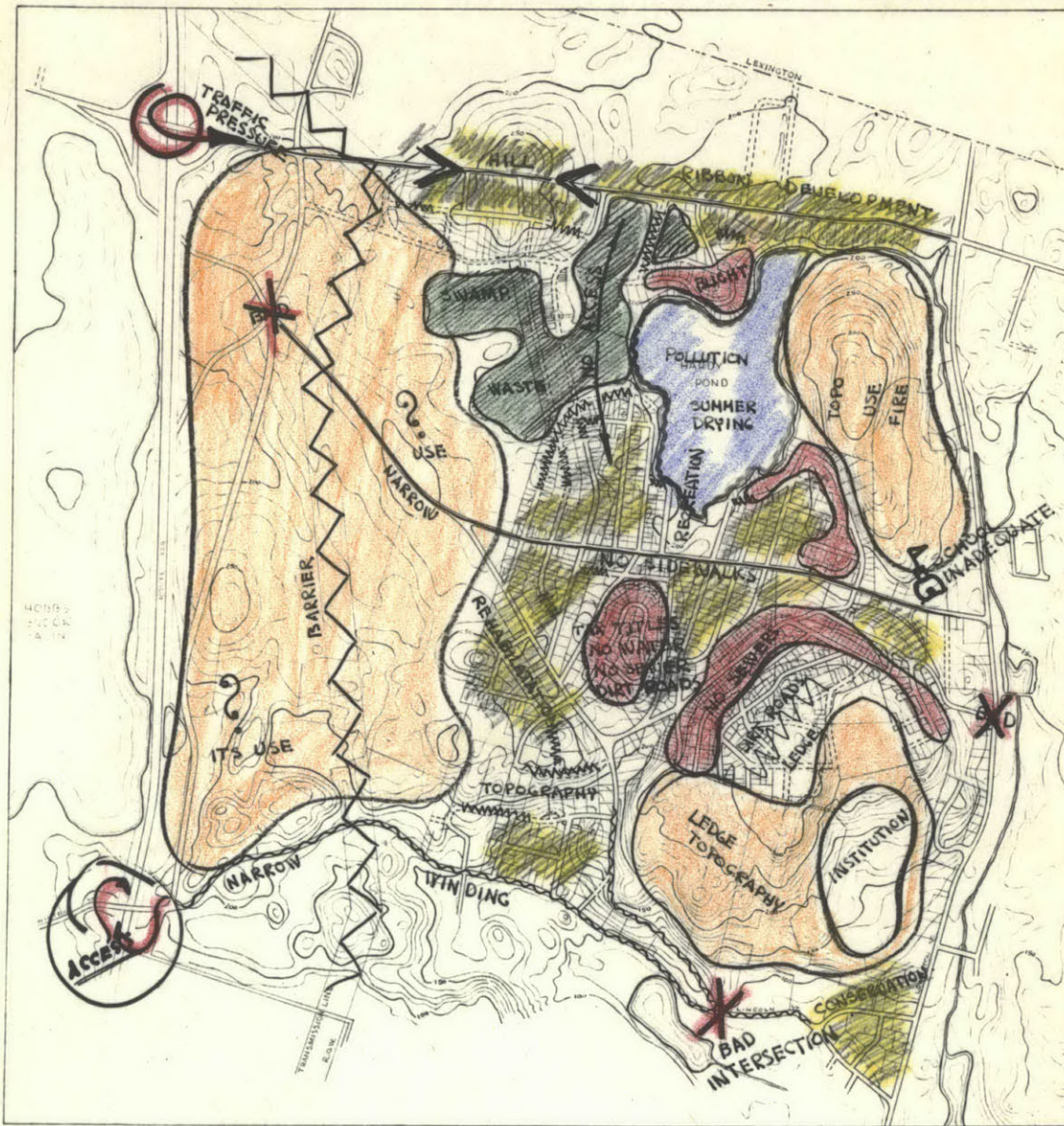
Problems exist in the Hardy Pond Area as a direct result of the inconsistency of its physical features with the use to which they are being put. (MAP 14) Problems exist because of the early lack of proper control measures for residential subdivision; because of neglected public improvements, individualism within the Area, and lack of official foresight and planning.

TOPOGRAPHY

Topography creates problems too. Some land is permanently scarred as a result of attempts to use it for residential purposes when much of it should have remained in its natural state. Little effort was made to "fit" the houses into their surroundings. The hillsides have been gouged to create self-styled parking areas. Fill is used haphazardly depending on which side of the hill the dwelling happens to be on. There has been little done to prevent the erosion which has resulted. Garbage is dumped wherever a convenient gully offers the opportunity and refuse and junk is deposited freely. Homes are constructed close to the road in an attempt to make the most of the space available, and to reduce the number of stairs necessary to reach the main floor level. Often the house is too far above or below the road. Attempts to remedy the situation by building rough walls and steps have not been too successful, and the architectural abortions which have resulted have discouraged better development.

The slope of the land, which restricts the usable depth of the lot for building, also brings the parallel hillside roads too close

HARIDY POND AREA WALTHAM MASSACHUSETTS



PROBLEMS

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together. Roads which then connect these parallel roads are too steep. Maximum recognized road grades of 10%,¹ are often exceeded. The lack of space also limits the width of roadway and the necessary right-of-way for pedestrian traffic. Minimum right-of-way makes difficult, as well, the proper allowances for natural road drainage without resorting to excessive cuts and fills. Roads, descending and connecting other roads along the side of the hill, create dangerous acute angle intersections when attempt is made to maintain a grade under the maximum desired. Winter conditions increase the danger and incidence of accident, as well as demands for increased maintenance.

Installation of sewers and other utilities has been difficult due to the high cost of putting such installations through ledge. It has made other means of disposing of sanitary wastes, by individual means, difficult and in many cases unsafe. Leeching areas are often insufficient to absorb the liquid wastes and the natural gravitational run of surface and subsurface fluids bring such an overflow to the surface.

Most of the rougher areas, topographically, are areas of natural beauty. They are attractive for development, the right development, but once developed poorly, the natural beauty which does exist is soon destroyed.

DRAINAGE

The soils existing on the hills, if not largely ledge, are extremely coarse above ledge, and create hazards of sanitary waste pollution.²

1/ From subdivision specifications as used by the City Engineering Department.

2/ Proper operation of cesspools and septic tanks depend on a quality soil which is porous, true, but where ledge occurs it causes an obstacle. Liquid wastes partially filtered follow then the stream of least resistance along the ledge often to the surface of the ground.

The worst offender is Rough Stony Land. (MAP 5) In contrast, some of the valley soils, such as Meadow, are not porous enough and have a tendency to remain wet and deter the operation of waste systems located in such soil. These same wet soils make home basement construction impractical. Pot holes of poor drainage exist in large unused sections of Gloucester Stony Fine Sandy Loan. Their presence is one of the reasons why much of that land remains undeveloped.

The soil which is most troublesome is the Muck and Peat. It forms large areas of swampland west of Hardy Pond. Sections which exist somewhat higher than the average water table are cultivated for truck crops, but most of the land is under water, or at least saturated, especially in the spring and fall when Pond water is high. The land does support a variety of plant, animal, and insect life which appreciates "wet feet".

Hardy Pond is a problem. This is partly because it is just a pond, shallow, subject to drying, and stagnating; partly because it is the reservoir for sewage and other forms of human and animal pollution which originate nearby and find access to its water.

The Pond is not a deep body of water. At its deepest point the water seldom exceeds 12 feet. It dries dangerously low in the summer and in 1934, evaporated completely. Fish, those that manage to exist, find it difficult, no doubt, to do so under such conditions. The stench of decaying animal and vegetable matter associated with stagnant pools hardly adds to the esthetics of a body of water which could be of immeasurable value to the residential neighborhood.

The lack of sewerage facilities in the vicinity of the Pond makes the use of cesspools necessary and seepage from such sanitary facilities

through the porous soil intermingles with natural drainage and so finds its way to the Pond. Open drains carrying raw sewage from other sources add further contamination.

HOUSING

Housing in the Hardy Pond Area is not too bad as judged by the survey of condition of structures. The construction of new homes and the reconstruction of older units has gradually raised public opinion of the Area. Tax title land is being absorbed and improved. The City, even, is concentrating greater effort in the Area to furnish needed services and improvements.

Homes classified as poor and fair in the survey present a problem which seems best solved by proper incentives towards rehabilitation. Most of these structures are suffering most from age and past civic neglect. There are a few patchworks from the past which no amount of municipal support could hope to revive. Other structures are suffering because of the site they occupy. In the latter case, planned indulgence for the lifetime of the structure is about all that is possible to hope for until the land can be put to a better use.

SHOPPING

Commercial or business development within the area definitely needs a "shot in the arm". Buildings are poor, small and uninviting. The potential for trade is there. The actual trade appears to be going somewhere outside the Area.

INDUSTRIAL BARRIER

The public utility right-of-way owned by the Boston Edison, in effect, erects an artificial barrier 200 feet wide through a sizeable

portion of the open land existing within the Area. It splits the land which it runs through, leaving one section between it, the right-of-way, and Hobbs Brook Basin, and the other section between it and present residential development. The Utility's policy to remove all trees and brush creates a naked, unnatural appearance. Fortunately, the Algonquin Gas Transmission Company occupies right-of-way parallel and adjacent with the Boston Edison rather than separated from it. (MAP 14)

ROADS

Road conditions within and around the Hardy Pond Area have probably effected the Area's growth and development more than any other factor. Early roads were all unimproved and early development of tar paper and scrap wood structures very clearly reflected that condition. Improvement since, came largely through Federal W.P.A. funds expended during the depression when construction was possible without having to assess betterments to the abutting property owners. At present, of the 13 miles of road in the Hardy Pond Area, six miles are black-topped, four miles remain unimproved, and another three miles, laid out in plan, do not exist on the ground. (MAP 10)

Improved roads are still satisfactory in width and surface to carry the traffic generated from within the Area. The roads surrounding the Area, however, are neither of sufficient size nor condition to adequately handle the increased traffic loads which they must bear as Waltham continues to grow. Trapelo Road is narrow and the percentage grade is excessive in some instances. The road, not too long ago just an unimportant way through a very sparsely settled section of the city, now has become a major thoroughfare. Its interchange with the circumferential

freeway has made the immediate area convenient for residential development. Homes have been built on both sides of the road without provision for adequate setbacks. Lincoln and Winter Streets are very narrow and wind tortuously.

There is insufficient and convenient access to desire points within the Area. Residential development south of Hardy Pond has always been segregated from Trapelo Road and development north of the Pond. It is possible to get from one to the other by way of Lexington or Smith Streets, but its via the long way. It is equally difficult to get from the center of the Area to the southwest. At present there is little desire in this direction, but eventual development along Winter Street and necessary access of Winter Street with the freeway at that point will create desire in that direction. Access at Winter Street with the freeway is necessary for the convenience and development of that section of Waltham. It would relieve the present pressure on Trapelo Road and Route 20, the only other access points Waltham now has.

UTILITIES

The lack of municipal utilities in the Hardy Pond Area is a problem. The density of population is too great and the average size of lot too small in the Area for the use of individual sanitary waste systems. It is fortunate that municipal water is available to most of the Area. The proximity of private wells to waste systems would be extremely dangerous where area for both is at a minimum.

SCHOOLS

There is insufficient school room, not only for the future but also for the present school-age population in the Area. Hardy Pond School, on

Lake Street, has an emergency capacity of 270 pupils at 30 children per room.¹ The number of children up and including grade nine, by elementary attendance area, which the school should be able to accommodate now is 435. There are in addition in this attendance area 429 preschool children.²

What the future school population figure becomes depends a great deal on continued growth in the Area, the plan for land use, the density of population permitted by land use controls, and future family size. Assumptions can be made that growth will steadily continue and that family size will remain an average 3.6 to 4.0 persons. The variables will be land use and density. Zoning now being proposed lowers the density of most of the open undeveloped land in the Area to approximately 2 families per net acre. (MAP 13) It is estimated no more than 300 acres of open land could be so developed. This would add 600 new homes to the Area. Disregarding, completely, any population growth or change in the attendance area, the immediate need for additional school facilities is far in excess of what present facilities can satisfy.

RECREATION

In 1946, the area between the tip of Hardy Pond and Lake Street was purchased by the city for a playground. It was a low, wet area, but

1/ Report of the Center of Field Studies, Harvard Graduate School of Education, "The Present and Future--A Plan for Meeting Waltham's School Housing Needs", (Cambridge, 1952) p.76.

2/ Ibid., p. 26 - 32 - 33. Using present zoning densities there will be an increase of 650 new dwelling units to the attendance area by 1954 and an additional 900 by 1958. According to these figures, by 1954 the attendance area will have a total of 1,081 children which will have to be accommodated with school facilities. Of this number, 537 children are to be from new dwellings. They estimate by 1958, that total of 1,081 will rise to 1,877, with a total of 1,320 children coming from new dwellings. (Whether the research group's assumptions of growth and population densities in the attendance area are correct or not remains to be seen, as the city and the Area continue to grow.)

has since been partially filled and graveled enough so the front portion may be used for play purposes. The area is fenced from the street, has a slide and swing, and allocated space for more active games. It is not attractive. There has been no landscaping done whatever and, as yet, no effort to integrate the area with the Pond. The playground doesn't appear to be used to any extent.

The only other planned city play facility in the entire Hardy Pond Area is the school playground. Most roads, especially in the hill sections of the Area, become the unplanned playgrounds. The road offers about the only convenient, smooth, flat, unobstructed space on which to play, bicycle, or walk. Acres of woodland exist in the Area, but most is privately owned and privately used.

SOCIAL UNITY

The absence of community consciousness weakens the Area. This absence is evident. There is no community core, no center of activity. The school, off to one side of the Area, is limited in its power to bring the community together and only one large church exists. Businesses are weak and spotty.

POLICY

Not all problems which must be solved to accomplish a positive plan for the Hardy Pond Area can be graphically shown. The problems of policy in planning, not as evident as physical problems, are still as real. How should an area, the size of the Hardy Pond Area, be planned under the circumstances, knowing it to be but a minor segment of a larger, more important planning unit? How should its development contribute significantly to the eventual plan for Waltham? What should

be of primary importance? How can the plan, as well, be oriented to the best interest and eventual development of the Hardy Pond Area and to the general welfare of its community? How is it possible to alleviate the problems of past development and growth and integrate that growth with a plan of development for the future? What consideration should be given to relationships of land uses? Should the pattern of such use relationships necessarily follow past "accepted" patterns? How is it possible to control "new" land use relationships? How is it possible to control the use of land, so the control can be positive, yet flexible and not unreasonable? How can the plan, the control of new uses of land, and new land use relationships improve the entire Area? How will it be possible to secure the necessary control, have it accepted by the people and the governing body, and gain the necessary cooperation both must give to the administration of control if it is to succeed?

PART IV - DEVELOPMENT PLAN

The development plan is a general plan for land use, circulation, recreation, schools, and other community facilities, specifically designed to be a solution for the problems in the Area. (MAP 15) It is designed to encourage an atmosphere for community interest and healthy, desirable growth.

The design is not the total solution, however. It emphasizes objectives. Support for its implementation and effectuation must come from the community, from local government, and from other public and private interest. This support must be enlisted by positive planning policy. Such policy is, therefore, part of the development plan.

LAND USE

Certain sections of the Hardy Pond Area are definitely residential now and should remain residential. Where possible, small lots can be consolidated into acceptable building sites and vacant areas improved. Self rehabilitation, encouraged by continued desirable growth, should stimulate much of the older development. Where it was thought advisable, some sections have been enlarged, residentially, to unify the pattern of use. Other sections, at present undesirable, have been reduced in size where it was felt their present use would be detrimental as well to future desired uses. (MAPS 11 and 15)

Most of the Area's developed land, in plan, to remain residential is now in various stages of residential growth. Its growth is sufficient to contribute to the peak student enrollment of the Hardy Pond School and require, from within that attendance area, the transportation of an additional 165 students, up to grade nine, to other in-town facilities.

HARDY POND AREA

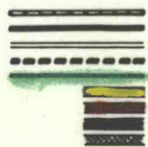
WALTHAM MASSACHUSETTS



DEVELOPMENT PLAN

LEGEND

ROADS TO BE CONSTRUCTED
 ROADS TO BE MAINTAINED
 ROADS TO BE ABANDONED
 ROADS PROPOSED FOR FUTURE
 LIMITED ACCESS PROTECTIVE R.O.W.
 DEVELOPED LAND TO REMAIN RESIDENTIAL
 DEVELOPED LAND TO REMAIN COMMERCIAL
 DEVELOPED LAND TO REMAIN INDUSTRIAL
 DEVELOPED LAND TO REMAIN INSTITUTIONAL



DEVELOPED LAND TO REMAIN PUBLIC
 DEVELOPED LAND TO BE REDEVELOPED RECREATIONAL
 UNDEVELOPED LAND PREFERRED RESIDENTIAL
 UNDEVELOPED LAND PREFERRED COMMERCIAL
 UNDEVELOPED LAND PREFERRED INDUSTRIAL
 UNDEVELOPED LAND PREFERRED INSTITUTIONAL
 UNDEVELOPED LAND PREFERRED RECREATIONAL
 UNDEVELOPED LAND PREFERRED PUBLIC
 UNDEVELOPED LAND PREFERRED PROTECTED FOR RECREATIONAL



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Based on the above, residential growth can reasonably be held to the limit of the plan since any additional school facilities could get its beginning K-6 school enrollment from the existing overflow from Hardy Pond School, plus added enrollments from greater densities and more intensive development within the residential limits of the plan. Further enrollments would come from the residential growth now rapidly expanding beyond the Area, north of Trapelo Road.¹

Commercial uses of land which now exist are indicated in plan as remaining in that use at the intersection of Lake and Lexington Streets. The single store at the intersection of College Farm Road and Lincoln Street should be part of an enlarged neighborhood shopping area. Other small commercial zones are indicated to accommodate no more than two or three neighborhood stores apiece for local or week end shopping.

One single large commercial center of at least 15 stores is a necessary inclusion, either within the Area or convenient to both the Area and other potential users, who, without it now, and in the future, must fight uptown traffic and parking to do most of their shopping.

Land now owned by the Boston Edison as a right-of-way for its electric transmission lines is planned to remain so used. It is in effect an Industrial Utility use and, therefore, with some industry planned for the Area it becomes a valuable and compatible use for such industrial growth.

1/ This area north of Trapelo Road would directly affect school planning in the Hardy Pond Area, although it was not considered a part of the thesis Area. It is a relatively narrow band of land between Trapelo Road and the city boundary. Over 200 homes are now being built there.

All undeveloped land is subject to more intensive use and in plan it is indicated as preferred for either residential, commercial, industrial, recreational, institutional or public use. The use it is indicated preferred for, now, is not necessarily the use to which it may be put, either under the present plan or subsequent revised plans. This will be discussed later in greater detail as a zoning policy procedure.

CIRCULATION

The plan is a general plan of the whole Area rather than a specific plan of any one portion of the Area, yet such design features as proposed roads have been carefully thought out, and by field inspection of intended route, visually constructed. They have been routed for economy of construction as well as purpose of use. The majority will be built from public funds as roads necessary to the convenience of the community. They will be provided to eliminate the dangers of increased traffic in residential areas. They will provide better facilities on which that traffic can flow. They will protect some uses; encourage others. (MAP 15)

Smith Road is now being improved partially on new right-of-way by the state because of state construction of the freeway over the old right-of-way. Smith Road will be a convenient means of access therefore, parallel with the freeway, connecting both Winter Street and Trapelo Road. Its realignment in the vicinity of Trapelo Road eliminates a bad crossing at Lincoln Street and reduces traffic through the existing residential area near Trapelo. This section of Smith Road also opens to use, the area of low lying land west of Hardy Pond.

Trapelo Road should be replaced, for the most part, by new construction. Public funds, spent to widen and improve the existing

right-of-way, to handle the traffic volumes it should, would not only be wasteful, but would actually be creating a major thoroughfare out of what now should be a neighborhood collector. It would be fostering congestion and traffic through residential development and require right-of-way widths which would reduce the minimum setback this development now has.

The by-pass for Trapelo Road follows the valley or base of the hill to the south of the old road. It is separated completely from all residential development until it angles north of the Pond to connect with Lexington Street and to its original right-of-way. It is eventually planned that this residential development which it passes through will become part of the recreation lands surrounding the Pond. The by-pass will be built for limited access and protective right-of-way will be acquired for this purpose. It will unite residential uses to the north and encourage the use of lands west of the Pond. Traffic which it carries will normally funnel into the Hardy Pond Area when Seminole Avenue is extended north. It will go to residential and large commercial uses visualized in the plan to the north, to Lexington Street which will eventually be widened, and back on its own right-of-way towards Belmont. This eastern section of Trapelo was improved before too much residential development could encroach on right-of-way widths which were necessary for its improvement. It can be widened still further if the need materializes.

The need for the extension of Seminole Road connecting residential development north and south of the Pond will more than justify its construction. Extension will provide direct access to the Trapelo Road

by-pass and to the proposed shopping center between the by-pass and its old right-of-way. It will provide access to community recreation surrounding the Pond, to the campus school, the community center of the Area, and proposed uses of land south and west of Lincoln Street.

Two roads are proposed for opening land in the southwestern section of the Area. One will be from Seminole, south to Winter Street and the other almost at right angles to the first and splitting in half, open land which can be developed. The first road supplements Smith Road in giving desirable access from Trapelo by-pass to Winter Street and its possible interchange with the freeway. It becomes as well a barrier between divergent land uses and a necessary inter-Area collector for uses on both sides to points of desire. The second road conveniently connects areas of residential uses. It provides necessary access to and from the community center, school, recreation, and shopping. It connects points of desire and breaks the barrier of the public utility's right-of-way.

The development plan indicates access to the freeway at Winter Street. This is necessary. Exact details would have to be worked out to provide the most desirable interchange of traffic. It may be a full interchange cloverleaf is unnecessary. The design as indicated in plan is merely indicative of need.

Without the improvement of both Winter and Lincoln Streets, it would be inadvisable to provide access to either from the freeway. Inducing traffic on both streets, as they exist now, would be extremely hazardous. Winter Street, for a good portion of its length, should be realigned completely. This realignment, completed near Piety Corner, would then carry traffic directly towards the central business section

of Waltham. Realignment would also eliminate the dangerous present intersection of Winter and Lincoln Streets. (MAP 10) It is planned that Lincoln carry one-way traffic north into the center of the Area from the old intersection of the two streets. A new, but short, one-way road south from the Area would connect College Farm Road and Malvern Road. Two-way traffic is not advisable on Lincoln Street north. It is narrow and winds dangerously upgrade. (MAP 4)

Realignment of Winter and Lincoln would not interfere with existing development to any extent. Both new sections would be south of their original right-of-way where there has been little or no development. New right-of-way and old, wherever possible, would be protected by the purchase of limited access rights.

Other roads proposed for construction are indicated on the plan. Their location and alignments are self-explanatory. Some roads are indicated as closed - Indian Road because it is extremely steep and College Farm Road due to its dangerous connection with Lexington Street.

SEWERS

Until some new research creates a better, universally accepted, inexpensive method for the individual disposal of human wastes in urban areas, and such a method can be used in the Hardy Pond Area, a municipal sewer system should be considered as necessary to serve every Area use. There are exceptions. Development may occur in the Area where both space and soil are satisfactory to safely substitute for municipal sewer connection. If such is possible and according to plan, and it will eliminate having to serve an entire area with sewer lines, such an exception should be considered. If, however, a sewer line must be laid

to serve other development, it should be utilized by all development in its service area.

Sewer lines should be a mandatory service provided every present use in the Area on a minimum lot of less than one half acre. It is questionable how long a construction schedule would be necessary to accomplish this, but any schedule would have to consider immediate needs and existing mains. Old Wellington Grove north of the Pond would be an area with top priority. A main could be constructed to this area perhaps prior to the building of Seminole Road but in its right-of-way and as part of its base construction. This main could serve most of the area surrounding the Pond.

WALKS · LIGHTING

Sidewalks should be provided in the Hardy Pond Area at least on one side of every street, and in some critical areas where use, traffic, and development demand it, on both sides. Pedestrian ways should also be a part of the walk system. Wherever possible abandoned road rights-of-way should be used for such purposes. If the need exists rights-of-way should even be purchased and ways constructed. Lighting is an important service which should be provided along all streets and walks.

RECREATION

Hardy Pond is the natural focal point for recreation within the Hardy Pond Area. The Pond and the lands surrounding it, as indicated on the plan, should therefore be purchased for public recreational purposes. The need cannot be disputed and the pond area certainly has potential without disturbing present uses of land too much. Purchase would take out of idleness, swampland, now of little economic value.

The area to be purchased should completely surround the Pond to insure right of use of all its water by the public. City ownership should extend at least 15 feet beyond high water. Distances greater would be desirable for many reasons, but general purchase of improved properties, which now extend to the water's edge on both the north and south shores of the Pond, would be expensive and should be accomplished over a period of time when both the need and opportunity arises. It would be desirable, eventually, to have as one area, in the vicinity of the Pond, all the lands which will never be well or fully utilized by private interests.

Smaller neighborhood recreational areas are not detailed in plan. Their location depends on residential growth in the Area, possible gifts of land, the granting of land for park purposes under subdivision ordinance, and the ability to find and purchase suitable land. Open space is available in various sections of the Area and space acquired by the closing of certain roads could be considered for play areas and pedestrian ways.

Another source for recreation land, as indicated on the plan, are the hill areas which are poorly developed, poorly serviced and topographically unsuited for residential development. The lots are small and narrow. Access to some is almost impossible. Most of Waltham's tax delinquency has been on property in these areas, often on a single parcel under succeeding ownerships.

It is not the intention of the plan that this land be purchased immediately for recreational purposes to force abandonment of homes and land. The plan does intend, however, that the land gradually revert to its original use, that only enough maintenance - no improvements -

be furnished to protect health and safety of the people there, and that, as necessary, building, fire, and sanitary regulations be enforced with the intention of eliminating private structures eventually. Permits both for the alteration of or addition to any structure and for the construction of new dwellings should be refused. Tax delinquent land reverting to the city could be held by the city along with land purchased and condemned until sufficient area had accumulated to be a useful addition to the park system without infringing on the private rights of the residents still remaining.

SCHOOLS

A new school is needed now to relieve the pressure on present facilities, and to provide room to accommodate the needs of children as the community continues to grow. No better time exists to purchase school property than when the need so dictates, when the site is one approved in the comprehensive plan and when the land is open, and inexpensive. Land, as indicated in plan, preferred for school purposes, west of the Pond on Lake Street is open land. Its location is approximately the same as the location recommended by the Harvard research group in its study of schools. Option has already been secured for its purchase by the School Committee. The choice is a good one as it relates to other aspects of this development plan for the Area, and so was endorsed. The school would be campus style as near to present and anticipated users as could be desired and would be for elementary as well as junior high grades.

With added room available, and changes in concepts of education possible, a variety of valuable subjects could be added to the curriculum

of the new school, especially at the junior high level. Near possible industry, the school could offer subjects related to such uses. Industrial management, sales, and processes could be taught and observed at the same time in cooperation with industry. Located adjacent to Area recreation, the school could make excellent use of these facilities.

Hardy Pond School should be maintained in operation but not enlarged. Structural weakness, restricted location on the site, and renovation would probably cost more than the building is worth. General location of the school in relation to residential development was never too good, but with other facilities to be built to balance student enrollment, advantage can be taken of additional open land to the north and construction of new Hardy Pond School can take place in the future whenever the need is manifest and the funds are available.

So that it may be possible for the Hardy Pond School to take equal advantage of recreation facilities planned around the Pond, it is suggested in the development plan that land be purchased connecting the two.

COMMUNITY CENTER

There is a need in the Hardy Pond Area for a center for community uses. The school, now a unit by itself, can be a closely related part of such a planned nucleus for other public and semi-public uses. The development plan indicates an area preferred for public use opposite the site of the new school. Open land, which can be purchased in this community site, should be purchased now while land costs are still reasonable and there is sufficient room for a planned community development. The area is a natural focal point. It can be the site of churches,

a branch post office, a branch library, a day nursery, a meeting hall or lodge, branch bank, or even professional offices. The land can remain in city ownership or be purchased by private interests.

SPECIAL RECOMMENDATIONS ON HOUSING

Self rehabilitation of residential structures in the Hardy Pond Area was considered necessary in preference to any mass purchase or other scheme by government to effect rehabilitation under redevelopment legislation. Economically, over a period of years, money spent directly or indirectly as incentives to the people living in the Area would be public money otherwise spent for condemnation and rebuilding.

Under the theory that interest begets interest, public incentive money for self rehabilitation would be spent for one thing, on the improvement of streets in the Area. Walks would also be provided. Sewers should completely serve the Area and schools and recreation made conveniently available. Cooperative land improvement, grading and filling on rough, unsightly land, and the planting of state forest stock to naked areas should be encouraged on a municipal level. Perhaps as important, the people should be given the incentive to spend their own money directly for the improvement of their homes without fear of additional taxation for value added. No property should be so assessed. Value added to property from the accumulation of continued, interested improvement by its owner should only be reflected as an assessment when the property is sold and that assessment becomes the value of the house to the new owner.

Rehabilitation can also be negatively but effectively accomplished, if necessary, by the strict enforcement of the sanitary, safety, fire, and building codes, as it has been successfully accomplished in parts of Baltimore.

Cooperative housing may be organized to provide shelter for the people in the Area whose homes might be displaced because of new road construction, park acquisition, and other public purchase. It need not be limited to those individuals, however, if others are able to meet the requirements for membership of home owned equity and obeisance to the rules of the cooperative.

Original construction of such housing could be supported by funds in the form of governmental subsidy.

Too often housing, residential structure, and residential densities become fixed patterns of habit. The variety necessary to create interest in housing is usually just a matter of change in architectural design. Year after year, we build house after house, row after row. A departure from this would be worth while trying in the area designated for possible residential use near the proposed interchange of Winter Street with the freeway. The land is buildable although it varies considerably in elevation. It would have excellent access to highway facilities and is a beautiful spot overlooking a portion of Hobbs Brook Basin. It could be a small community in itself, with a residential population that could support both a school and a small shopping center. The area has unlimited architectural possibilities. Once developed, it would be ideal for an owner or rental group who desired to live in the "country", so to speak, yet desired many of the amenities of communal rather than isolated living, with rapid and convenient access to the metropolitan area.

The presence of ledge but not excessive grades in certain hill sections of the Pond Area offers a challenge to the imaginative home

builder. Acres of beautiful land remain idle although potentially desirable and valuable for homesites. Land of this sort was platted as part of Mount Lake Villa-3, in 1922, and no attempt has ever been made to develop it. (MAP 3)

Because of the ledge and the difficulty and expense involved in grading, even gravel roads, and properly developing most of this land, it will probably remain idle, unless new ideas take advantage of the usefulness of the land and new concepts are accepted for the laying out of subdivisions and for the construction of homes.

Buildings can have foundations of rock securely seated. It should also be accepted that, at normal densities, subdivisions need not have immediate access on an engineered fifty foot right-of-way and a thirty foot pavement. Nor should homes necessarily be lined up like rows of corn by standard yard requirements applicable to rigid subdivision design.

In areas of ledge, such as this in the Hardy Pond Area, some roadway must be constructed but it can be limited. That which is constructed, must be planned to serve, as economically as possible, segments of residential development somewhat like "Reilly Greens". Garages and other parking could be immediately adjacent to the main street and all other traffic directed to homes could be by foot or smaller vehicle along ample walkways.

Houses could be sited to preserve their natural settings, to avoid impossible physical conditions, and to give due consideration for privacy. Walks, less restricted by direction and engineering, would have to be carefully planned for ease of access for both the dwellers and certain servants for municipal and private service. In no case could

they be beyond reasonable limits in distance and design for adequate fire protection and for other emergencies.

ON THE POND

Control of the Pond itself and its affects on the surrounding area must be part of the recreational plan. Without this control much of the potential value of recreation in the area is lost, since the land to be purchased is swampy and is subject to flooding by the Pond in the spring and fall. It is only in the heat of midsummer that the ground dries enough to be walked on.

If the land eventually is to be the Area recreational center, it must be made usable. This is only possible by the use of earth fill or some other solid fill. The Pond cannot be lowered to accomplish the same results. Filling can be programmed to fit the city budget, the need, and the contributions of earth moving organizations or individuals.

The level of the Pond must also be decided upon and eventually maintained. Perhaps this should be at its normal high, but not lower than its average spring level. A high level is necessary to keep the water circulating and draining. A high level is desirable if the Pond is to be used and enjoyed.

Care would have to be taken to prevent year-round flood damage to low-lying properties, at least until such properties were purchased by the city and vacated. It would also be wise to maintain the height of the water below the point where it would flood much of the low shoreline until a dyke could be established as a possible new beach line along the western and southern sides of the Pond and a dam built at the Pond's present outlet.

Since the Pond does not have sufficient watershed to keep it at a constant high level all year, water would have to be brought in artificially once its natural level began to fall. There are three possible ways, for the present at least, that such a program could be carried out economically. In cooperation with the Cambridge Water Works, it might be possible for water to be piped and pumped from Hobbs Brook Basin. A deep well might also be the answer, drilled much nearer the Pond provided there is no direct connection of this supply with the systems which now feed the Pond. If the demand was not too severe, it might also be possible to take the water directly from the metropolitan water system. It would depend on how much water was needed and which method, if any, could supply the amount of water necessary. An engineering study would have to be made.

ON ZONING

The use of open land, as part of the land use aspect of the plan, will not be as rigidly planned nor as rigidly controlled as uses of land which are almost completely developed now or adjacent to such development. The uses indicated as preferred on the plan for open land are the result of definite, thoughtful planning and are desirable land use relationships which will be used as a positive planning guide for the future development of open land. They will be a guide as well to a new and necessary flexible zoning policy for open land.

This new zoning policy would attach to the zoning ordinance now being prepared for the city, a new zoning district which could be designated as "O", for open. This district would regulate the use of land, height, use, and bulk of buildings, and the density of population

in all open areas, permitting certain residential uses and all other uses upon the proper issuance of an approved use permit.

Use permits would be granted in "O" districts, depending among other things, on whether the use desired was a use designated as preferred on the development plan, (MAP 15), whether the use was a desirable and compatible use in relation to other uses in the Area, and whether its operation would or would not be detrimental to the public welfare. Its effect on municipal services, traffic, safety, and growth in the Area would be considered. Sufficient conditional controls would or could be attached to the approval of the permit to minimize any possible objectionable features it might be guilty of harboring.

On the zoning map of the Hardy Pond Area, all open areas would be designated "O" districts with two residential options. (MAP 16) Residential use would be permitted in an "OA-1" district without a use permit providing each use met minimum lot area requirements of 36,000 square feet and lot width requirements of a minimum of 150 feet frontage on a public street. Residential use would be permitted in an "OA-2" district without a use permit if each use met with the reduced requirements of 18,000 square feet of lot area and 100 feet of width fronting on a public road. Both residential uses would be further controlled by the subdivision ordinance.

According to the development plan, approximately 100 acres of land is indicated as preferred for industrial use. Most of this is in the corridor between present Pond residential development and the freeway. A sizeable area lies west of the Pond between Lake Street and the

HARDY POND AREA

WALTHAM MASSACHUSETTS



1953 ZONING PROPOSED

LEGEND.			
RA-3	RESIDENTIAL	9,600 SQ. FT.	
RA-4	RESIDENTIAL	7,000 SQ. FT.	
BA	BUSINESS		
OA-1	OPEN - RESIDENTIAL OPTION	36,000 SQ. FT.	
OA-2	OPEN - RESIDENTIAL OPTION	18,000 SQ. FT.	
	BOUNDS OF PREF'D USE		

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proposed Trapelo Road by-pass.

The need for industrial land in the city is primary. Land here in the Hardy Pond Area is suitable for such development. Topography is not excessive. It surrounds power facilities. Excellent access would be possible to the freeway which serves the entire Boston Metropolitan Area.

Open land preferred for residential use is indicated in areas near industrial uses where such area, under normal circumstances, could not, topographically, be used by industry. Open land is also suggested used for residential purposes where its use, in relation to other residential uses and desirable community structure, is more suitable and where the cost of municipal service can be more economically distributed. Being preferred for residential use does not discount the possibility of the land being used for some other use provided the need for the other use is valid and the use is one which would not be detrimental to surrounding uses and to the public welfare.

Land north of the Pond, designated in plan as undeveloped, but preferred for commercial use, would be land now low and subject to flooding. Its location is in the center of a growing residential area to the north. It will be accessible by roads on all four sides, and will also be convenient to most of the development south of the Pond once Seminole Street is extended to Trapelo Road. It would be the shopping center for the whole of North Waltham.

PART V - OPEN LAND ZONING

As a special recommendation on zoning, this policy concerning control of the use of open land was briefly mentioned before to clarify certain proposals for land use which were presented in the development plan. However, a great deal more must be said concerning what it proposes to accomplish, how it will operate, why it is necessary, and what its advantages and disadvantages are for application in the Hardy Pond Area, the rest of Waltham, and perhaps other municipalities.

Open land zoning is essential if a continuing plan for the growth and development of the Hardy Pond Area is to be realized. Only a portion of the development plan for the Area concerns the use of land already developed. More than half of the entire Area is land either idle, forested, farmed, or used for scattered rural residences. It is the future use of this "open" land which must be intelligently controlled.

In the Hardy Pond Area land has not been and probably will not be intelligently controlled through the use of conventional zoning policy and the use of conventional zoning districts and regulations. A more rational, a more flexible, and a more modern policy on zoning is necessary.

This new policy of open land zoning is based, in part, on the theory of zoning, that it be initiated by the people, according to the will of the majority, for the general welfare of the community. It's based, also, in part, on professional knowledge granted the planner to judge from day to day with all possible data at his command, what uses of land will best sustain the will of the majority and be in the best interest of the community.

Opportunity of the individual to use open land which is owned or optioned by him, in any way he desires, is open to that individual by giving him the right to ask for approval of a use permit for that use. He would have limitations. His own judgment and perhaps his knowledge of open land zoning policy procedures would limit his impulse to ask permit approval for certain uses. He would otherwise be limited by the studied decision of the body judging his application. Burden of proof would rest on him, the individual, to substantiate his desire and show to the satisfaction of the judging officials and his neighbors how such a use would not be detrimental to the welfare of the community. He would be limited also, by his acceptance, under the enforcement of the zoning ordinance, of certain conditions attached to approval of his use permit.

ITS OPERATION

Open land zoning would be attached to the new zoning ordinance, now in the process of adoption by the people of Waltham, if more time was available to give the people affected by it, and the officials charged with the responsibility of its administration, the opportunity to understand its policy. Logically, open land zoning should be a part of this new ordinance even if only certain sections of the Hardy Pond Area would be affected by its "O" district regulations. Its inclusion would put open land zoning on probation in a sense and create an awareness of its value to control uses of open lands. As a later amendment to the new ordinance, it would not be accepted as readily as it might be at this time.

Under present state enabling legislation accepted by Waltham, a Zoning Board of Appeals acts on special exceptions to the zoning ordinance

and on the issuance of variance permits in cases where there is exceptional hardship, unusual circumstances, and no detrimental effect to the community on approval of the permit. This Board would probably handle, as well, the issuance of use permits under the regulations of open land zoning.

With its added duty, the complexion of the Zoning Board of Appeals would change considerably from an inconspicuous group of citizens, meeting infrequently in the evening to judge a few requests for exception or variance of the ordinance, to a more important and probably overworked group of men, who would have the opportunity, in hearing use permit applicants and in issuing use permits, to aid materially in the effectuation of a continuing land use development plan for open areas in the city, at least in the beginning, in the Hardy Pond Area. Their role would be an important one even though their decision would rest primarily on recommendations from the Planning Board.

Rightfully, the approval or disapproval of use permits in "O" districts should be the prerogative of the Board of Survey and Planning since use permit procedure would be a part of zoning administration tied directly to the pulse of planning for the Area. Still, with the city having a Board of Appeals, it would be within that Board's jurisdiction to hear and issue the use permit as a neutral group, acting as it does for exceptions and variances. It would probably be the desire of the governing Body that this procedure be followed. The use permit would be considered a broadening of the concept of the special exception, legally specified as such in the ordinance.

Because the issuance of use permits for open areas or "O" districts is so closely allied with continuous planning, the ordinance should

contain definite provisions for mandatory referral, by the Zoning Board of Appeals to the Board of Survey and Planning, of all applications for use permit approval. The Board of Survey and Planning would then be given a definite period of time in which it must render a recommendation. To substantiate either approval or disapproval, this recommendation would be made, using staff advice and advisory information from as many other departments of government and outside sources as possible. Recommendations would take into consideration, the plan for the Area, all factual data which is available, and the basic considerations of effect and control.

Provisions in the zoning ordinance should clearly state that in no case can the recommendation from the Planning Board for denial of an application for a use permit be disregarded and reversed by the Zoning Board of Appeals. The Zoning Board of Appeals could, if it thought it wise, reverse a recommendation for approval of an application by denying one so approved by the Planning Board. In all cases decisions by both boards should have to be by a full majority of all its members and not the majority of a quorum. Appeal would have to be to the courts.

The Board of Survey and Planning would hold the reins on use permit approval and they would be the logical Body to do so. This presupposes that the members of the Board are of sufficient calibre to understand the principles of planning, to comprehend the intent of the development plan and open land zoning, and to depend on the technical skill of their staff. It presupposes, as well, that the Planning Board be men of highest moral integrity, who base their actions on intelligent decisions for the public welfare and not on individual selfish interests.

The technical staff of the Planning Board would have to be a group well trained, and competent. It would be up to them to gather the necessary factual information to support the development plan and to change the plan as new uses and new conditions changed the concepts which guided earlier plan decisions. The planning staff would have to be able to correlate material from various sources to support recommendations on individual use permit applications passed by the Board. It would have to be large enough to enable it to devote the full time of as many of its members as would be necessary to use permit investigation without neglecting to coordinate the whole city plan.

The use permit applied for by an individual, company, or corporation, first referred to the Planning Board, and then to the planning staff for investigation, should be accompanied with sufficient information, gathered by the applicant, to explain the nature of the use desired so it be fully understood. Plans should accompany the application for use to show its intended location and uses it would be adjacent to. It should then be up to the planning staff to determine, after field investigation and after studying additional data, not available to the applicant, whether such a use should, under existing plans for the development of the Area, be recommended for approval or disapproval. The staff, if it favors approval, should also be prepared to submit sufficient conditions to approval to protect the community from any possible nuisance the use might create.

Depending on the use, a use permit might be issued for a limited period of time subject to renewal. It could be issued, subject to revocation for cause with proper public hearings. Changes in ownership

of a use would not represent a change in use. A change in operation substantially different than applied for under use permit procedure would constitute a violation of the permit requiring approval of a new application.

Continued approval of like uses in an open area could indicate, zoning-wise, an evident, if not desirable use relationship.

Use permit approval or disapproval should be a community function, too, through the continued intersession of local citizen's groups. Such groups would have the right to hear Board of Appeal cases and could, there, judge the logic of Planning Board recommendation and Board of Appeal action. A community group organized specifically for this purpose could put the old "town hall" touch to Area decisions. It would strengthen community consciousness and be a force to insure that decisions affecting the Area be made with intelligence and in consideration for the Area and its people, as well as for its plan.

ITS ADVANTAGES

Open land zoning, through permit approval for land uses, would consider present needs and present desires in relation to present plans for future development in the Hardy Pond Area. The policy would make use of present information. It would permit, for the general welfare of the community, the best present use of open lands in the Area, based as each use falls into a niche of the development plan, on the use's relationship to size and location of schools, location and size of utilities, transportation facilities, and protective services. The policy would use zoning, and its effectuation of the development plan for the Area, in terms of the present rather than the past or the future.

Open land zoning would operate in the present but with the future in mind, through a development plan. This plan would be subject to future revisions due to present decisions, changing concepts of use relationships, changes in the natural function of uses, changes in technology, planning theory, law, and the economic structure of the city.

Closer use relationships would be possible without sacrificing the plan. Where the use of land would be requested and the approving agency would be given the chance to use as points of consideration the operational function of the use, its character, its requirements for municipal services, its effect on the community, its highways and its economy, the opportunity to relate such use to other like uses would be much less left up to chance, as is most often the case where the use is broadly permitted in a precise zone.

The amount of land which must be zoned precisely in Waltham could be reduced. In 1925, city officials precisely zoned the Hardy Pond Area, "because they didn't know what else to zone it". Open land zoning would reduce the opportunity for error in judgment to areas already developed or areas in close relationship where the development was apparent.

Open land zoning would grant to the Planning Board the opportunity to condition all use permit applications. It would be these conditions, asked for by the Board, and attached to the approval of the use permit, accepted and applied by the applicant, which would fix the pattern of growth for the Area. The conditions would have to be reasonable but they could encompass regulations which normally are not included in an ordinance. More often an ordinance cannot be drawn up to cover the various contingencies which are bound to arise. The ordinance normally

covers in broad terms only certain regulations for the use of land. These can only be changed by amendment. The amendment cannot in turn apply to another new situation without again being changed.

Through conditional use permits, nuisance operations could be eliminated or adjusted to minimize their nuisance features. Smoke control might be possible. Certain esthetic relationships could be validly considered. Nauseous smells have always come under the ban of the law, but ugly lights and discordant surroundings may be just as distressing to people's now keener sensibilities. The requirement for a fence or a landscaped screen might be just as valid for the industrial storage yard as it is for the junk yard.

Open land zoning policy would discourage the development of smaller residences on the minimum lot by relying on subdivision regulations as well as on regulations in the zoning ordinance requiring certain area and yard requirements. The zoning policy would, in effect, reduce the amount of land used for small residences but would also reduce the number of homes within the Hardy Pond Area. The reduction of homes would reduce the immediate necessity of huge outlays of funds for new schools, added fire fighting equipment and stations, police protection, streets, and utilities. It would give the city the opportunity "to catch up" with the needs of the people now residing in the Area. Added taxation dollars otherwise spent could be allocated to these immediate needs. Without the reduction of tax liability uses, the city would either have to continue to raise the tax rate and reduce maintenance

and services still more or call on increased aid from other governments.¹

Industrial and other tax asset land uses would in turn be encouraged. These uses need not be industrial to be acceptable uses even though a large portion of the open land in that part of the Pond Area is designated as preferred for industrial use. It is generally recognized that the higher valued land uses which return the greatest percentage of tax revenue for services received are industrial.

The term industrial even so should not ring a note of horror. In the Hardy Pond Area, industrial uses would be desirable uses under open land zoning. To get a use permit, they would have to be nuisance free. They would be well screened where there was any doubt their view would be offensive. They would be well set back from the road they front upon. Their appearances would be compatible. Yards would be landscaped, drives paved, and building front would be neat. Much more than that they would add to the city coffer much of the funds the city needs to furnish necessary improvements in the Area.

Industry and heavy commercial uses could be good neighbors. They would appreciate the opportunity for a choice of location in a desirable area. Industry has been relegated the leftover land for a long time. This land has usually been low, expensive, and surrounded by undesirable uses and traffic.

Experience has shown that limited industrial zoning has often worked a hardship on an organization which definitely wished to locate

1/ In 1951 the average cost of local government and services in Waltham amounted to a liability of \$599.74 against every building in the city. The average home owner in 1950 paid only \$183.00 at the rate of \$46.00 per thousand dollars of valuation. Based on the 1951 tax rate of \$51.40, this would amount to \$204.00

within the city, and had by way of no choice, to either pay an exorbitant price, asked for by the sole owner of the land zoned, or give up the location. On the other hand, it is not infrequent for an organization to deal directly with the owner of desirable land zoned for another use, and then proceed to work out a zoning change to its benefit. Outside the jurisdiction of planning, some location for industry might be detrimental to the community, yet pressure might be sufficient to sanction the change in zone. On the other hand, the plant might be perfectly located and the zone change defeated by local fears and disagreements. Problems of this sort would not exist if sufficient choice of land was available.

Open land zoning would take the profit out of zoning, at least the profit reaped by select individuals who have the zoning monopoly on desirable land. It would create an artificial supply of land for any use. At the same time, land could be assessed on a much more realistic basis, as open land, until developed. Land assessed as open, undeveloped land could be assessed at a low figure and there would exist no abnormal pressure for its development. Land assessed as zoned for the future is really being assessed for its potential, taxed for its potential, and pressured into development for a much higher use than perhaps it should.

Open land zoning, if it serves no other advantage, would set a procedure in motion, a new way to zone land in Waltham. As a guinea pig in the Hardy Pond Area, it could operate on a small scale in an area which has open land in the city available for development. It could rest on its own merits as an example, to either follow or not, for future amendment of the zoning ordinance to control other open areas in the city or possibly open lands of other cities similar to Waltham.

ITS DISADVANTAGES

Open land zoning would be new to Waltham and this would be its greatest disadvantage. Being new, its intent could be easily misunderstood and being misunderstood, it could be used to injure the progress zoning and planning has made. It could injure proponents of the change and being rejected, it could rob the Hardy Pond Area, perhaps the city, of a logical solution to its problems and a desirable way to control the use of open land.

Being new and not thoroughly understood, open land zoning, once accepted and a part of the ordinance, might be difficult to administer unless most of the essential elements of its operation were available - one being the cooperation of other governmental departments, such as engineering and assessing. If it also had to operate with an inadequate planning staff, incompetent Boards, and without cooperation of government, proper decisions on use permit applications could not be rendered.

Whenever regulations are imposed to control the action of the individual for the benefit of the community, certain individuals are bound to be affected more directly than others. This is one disadvantage of open land zoning, one which will create its foes, until such time as its value is realized and accepted. Individuals will be refused certain uses of their land and, as it was when zoning was new, they will contest the right of government to restrict the use of property and it will be up to the courts to decide whether the decision was arbitrary and the procedures a valid exercise of the police power. The court will have little precedent to judge the procedure. Real estate groups, individual realtors, subdividers and builders, building supply distributors and

businesses will probably criticise the requirements for residential construction and no doubt openly oppose the policy.

The greatest threat, perhaps, would be to the cause for the potential home owner, who cannot afford anything better, as a home, than a marginal structure. His plight is one to consider, but perhaps he should not be a home owner under the circumstances, at least not in the Hardy Pond Area. This could bear more investigation.

The policy of open land zoning does intend that the small home owner, whose residence hardly pays in taxes enough to send children to school, shall always be a welcome part of the worker city. It does not intend, even if there is a demand for such housing, for it to envelop most of the open land now existing within the city to the detriment of any area and exclusion of taxables to support it. This is like building a house with no foundation and building the house badly as well.

Industrial development on land well suited esthetically for residential development might be a disadvantage. Now is the time to realize, however, that industry should not be relegated to land unusable and undesirable by other uses simply because it lacks the intimate human relationships with the land that is more evident with residential uses.

Should open land zoning be accepted and proven in the Hardy Pond Area, it would be worthwhile to consider its application to the rest of the city. Whether it should function without some degree of change would be a matter worth a great deal more study. The idea of open land zoning originated in response to a need particular to the Hardy Pond Area and is particularly adapted to the control of open land there. It would be,

perhaps, a disadvantage to both planning and zoning in Waltham if open land zoning was accepted and applied, without any particular change in policy or application, to the whole of the city. It might also be damaging to other cities if accepted without thorough study of how it was originally used and how the policy would relate under the circumstances to that particular city. It would be even a more unhappy consequence if open land zoning were used solely to exclude undesirable uses of land.

PART VI - CONCLUSIONS

The effectuation of the plan of development for the Hardy Pond Area cannot rest entirely on the open land zoning policy so fully and recently expounded. It takes more than a single idea, more than a combination of circumstances supporting that idea to accumulate sufficient momentum to progress in the right and ultimate direction - the realization of a plan.

FURTHER RECOMMENDATIONS

An adequate resident planning staff is absolutely necessary if any progress is to be realized towards the ultimate plan or even the day to day decisions, with the data to back up such decisions. A great deal of work must be done, alone, to prepare the way for acceptance of a new method to control the use of land. The plan itself must be perfected. Open land zoning must be set down in legal terms for inclusion in the ordinance. Methods must be invented to graphically and orally simplify the principles and policy of open land zoning, to educate legal counsel, government, and the people who are to accept it as part of the zoning ordinance. Once open land zoning is accepted, and a part of the ordinance, staff must be available to consolidate planning data, to work out the proper advisory relationships with other departments, and be ready to investigate applications for use permits and be prepared to recommend action to the Planning Board.

It must be strongly urged that greater effort be made to expand both the engineering and assessing departments. Engineering has a backlog of work to be done and is badly understaffed. It will need additional

personnel if it is to undertake additional projects necessary in keeping with the plan for development of the Hardy Pond Area and the city.

It is recommended that assessing procedures be reviewed and new assessing methods be adopted. It is felt that revaluation of all properties (as long as property taxation is still the largest single source of income for the city) must be done. Assessed valuations today in the city of Waltham, in a period of inflation, with growth in residence, industry, and commerce exceed valuations of 1930, a year of depression, by only five millions of dollars.¹ The tax rate of \$33.00 per thousand dollars valuation in 1930, brought almost as much revenue in property taxation to the city as the tax rate of \$45.60 in 1951, when the rise in the cost of living is considered.²

Valuation of property should conform closely to assessment standards of fair cash value and valuation figures should be kept up to date. Equalization of all property values in the city is also necessary.

Of special importance and value to planning and open land zoning would be better methods or more simplified methods in assessment bookkeeping. Such bookkeeping should show, in up-to-date form, where the tax dollar comes from, whether it be from light or heavy industry, multiple or single family residence and in what proportion. These figures then applied to engineering records of apportionment of services rendered accountable to certain land uses would constitute a valuable source of planning information and a link in the data necessary to properly judge approval of use permit applications. Assessing officials in Waltham,

1/ Waltham City Annual Reports, 1930, 1950

2/ Waltham City Annual Report, 1951

now, have no apparent idea what their chief source of tax revenue is in relation to land use.

An effort must be made to enlighten the general public, planning-wise and tax-wise, to the value of a balance of land uses in the community as this balance effects the amount of tax he, as an individual property owner, must pay, how it effects the job he now holds, the distance he must go to shop, or the prices he must pay for his goods.

Attempt should be made to educate the public to a more rational view of land use relationships. As a property owner, the average citizen has always considered, quite naturally, that his residential use of land was the most important use in the community. It was where he lived and where his children went to school and church, and where they played. He knew that other uses of land were necessary - he worked in one and shopped in another-but he felt they were always necessary somewhere else. He has therefore fought, vigorously, the encroachment of foreign uses which he felt would infringe on the enjoyment of his and his family's primary property rights, and which he felt was lowering the value of his property. So such uses, although essential to his livelihood, located somewhere else - in the bottom land, in the old section of town where the people didn't care as much, and in some other town where its citizens were not quite so fussy. Mr. average citizen suffered because he had further to go when he went to work; more taxes to pay when the town lost additional tax support. The use lost as well. The town was not as nice. The location was not as desirable as it could have been.

The public resents uses which create noise, dust, traffic, odors, smoke, and vibration, among other nuisances, especially when such uses desire to locate near their residential neighborhoods. There are some

heavy commercial uses and some industrial uses such as steel mills and oil refineries, huge, sprawling, and naturally dirty, which must find seclusion and even protection in the salt marshes of New Jersey or the swamp land of northern Indiana, but this type of industry needs land, a great deal of it, and could never consider sites as small as areas available in the Hardy Pond Area. Industry that would consider the smaller site, would be industry which need not be objectionable, especially with the controls possible under open land zoning.

It's necessary to reorient the thinking and concepts of use relationships which the ordinary citizen has. Commercial and industrial uses are valid uses necessary to the vitality of a worker's city such as Waltham. It would be part of the job of planning in Waltham to work towards the compatibility of uses without destroying the right of residential security, deeply rooted in present society.

It would be desirable to institute measures for modernizing other city codes and ordinances. The building code, now a specification code, should eventually be a performance code. Subdivision standards, now a series of specification sheets used by the engineering department, should be completely revised, strengthened, and administered by the Planning Board through its staff and in close cooperation with the engineering department. Much of the success of open land zoning would depend on the degree of compliance to requirements for the subdivision of land. Health and sanitary codes should be broadened in scope and brought up to date as performance codes. The zoning ordinance must include all of the regulations necessary to administer open land zoning. It should also be thoroughly studied to modernize many other points.

Cooperation of other governmental departments and boards would be extremely important to the success of the development plan and special effort should be made to solicit and maintain this cooperation. The cooperation and support of outside organizations, civic groups, and community groups would be equally necessary.

Before any cooperation is received from any group, that group will want to know, if it does not already know, what planning is, what kind of planning is being done in the Hardy Pond Area, and why their cooperation is necessary to the effort. If the proper job is done in this process of education and the group or the organization or the people feel the job they are doing is beneficial for the community, cooperation will be forthcoming. The greatest deterrent will be the inevitable lag in progress prevalent in the American Way. There are always the "over cautious" and the "over critical" who feel it's necessary to delay the acceptance of something new or radical because it's new and radical. A big job, therefore, lies ahead, not in getting planning accepted, but in getting the controls necessary to properly plan and the men who can properly administer them.

THE IMPROVEMENT PROGRAM

In planning the Hardy Pond Area, its plan for development was not worked out in detail, since a plan at anyone time can only be suggestive of best current solutions. Estimates, in this case, of the cost of its realization, over a period of years, can only include basic plan features which should be accepted for capital improvement.

It is recommended that immediate steps be taken to accept, as official, certain plan recommendations. These are outlined on Chart I,

with approximate costs. The improvements which remain can be accomplished in the following nine years of a suggested ten year capital improvement program as indicated on Chart II.

It is recommended that the following points be considered as part of the policy of improvement.

1. That local self-rehabilitation, encouraged by municipal street and other improvements, is soon defeated by the policy of assessing betterment for such improvements, unless effort is made to reduce the cost of betterments.
2. Until such time as betterment assessments can be eliminated, the period for paying should be extended at least to a total of ten years without interest.
3. That it specify in the zoning ordinance, no building permit for the construction of a home be issued to an individual, who is not covered by the requirements of the subdivision ordinance, unless that individual's property has frontage on an improved public street, or unless he can post bond for the construction of the street according to the specifications of the city engineer.
4. Subdivision regulations to be approved should require that the subdivider of residential land provide all improvements and stand all costs as a prerequisite to approval of his plat.
5. Attempts should be made to establish reserve accounts for future public improvement outlays.

CHART I

CAPITAL IMPROVEMENTS

FIRST YEAR

Department	Improvement	Amount	Cost Unit	Total Cost	Less Grants, Assessments	Total
Recreation	Land Purchase	60 Acres	@\$100./ Acre	\$6,000	\$6,000	\$6,000
Highway Maintenance	Limited Access Trapelo Road By-pass	5,600 Lin. ft.	@\$30./ft.	\$168,000.	\$77,000.	
	Seminole Avenue Extension	1,400 Lin. ft.	@\$25./ft.	\$35,000.	\$34,000.	
	Road Right of Way	25 Acres	@\$100./ Acre	\$2,500.	\$2,500.	
	Local Road Improvement	1,500 Lin. ft.	@\$25./ft.	\$37,500.	\$9,600.	\$139,000.
Sewer Maintenance	Sewer mains	4,000 Lin. ft.	@\$10./ft.	\$40,000.	\$32,000.	<u>\$ 32,000.</u> <u>\$177,000.</u>

CHART II
CAPITAL IMPROVEMENTS
REMAINING NINE YEARS

Department	Improvement	Amount	Cost Unit	Total Cost	Less Grants, Assessments	Total
Recreation	Ditching					
	Filling Pumping Facilities	Entire Area		\$50,000.	\$50,000.	
Highway Maintenance	Limited Access Roadway	2,400 Lin. ft.	@\$27./ ft.	\$65,000.		
	New Roadway	12,000 Lin. ft.	@\$25./ ft.	\$300,000.		
	Improved Roadway	7,600 Lin. ft.	@\$25./ ft.	\$190,000.	\$195,000**	
	Miscellaneous (Walks-Lighting, etc.)			\$ 50,000.		
School	New Elementary	14 Room	@\$500,000*	\$500,000.	\$500,000.	
Sewer Maintenance	Sewer Mains	18,000 Lin. ft.	@\$10./ft.	\$180,000.	\$144,000.	<u>\$889,000.</u>

* Figures from study by Harvard Research Group.

** Betterment Assessments have been reduced to zero, prorated over the nine year period.

The first year's expenditure allocated in the ten year capital improvements program for Hardy Pond Area would add approximately \$2.75 to the tax rate per one thousand dollars assessed valuation of property. This tax rate would be based on present valuation. As the Area and the city grows, present valuations, however, will increase. A program of revaluation, together with an increase in valuation, should see tax revenues increase at a greater rate than cost of government.

The estimate of improvement costs for the Hardy Pond Area does not take into consideration costs of improvements necessary for the remainder of Waltham. In a city program for capital improvements, one area is seldom singled out completely from the rest of the city as more deserving and more in need. Not knowing the need for such public works, schools, and other improvements, which the entire city must accomplish within a ten year program, does not change the needs of the Hardy Pond Area. Any adjustment in the capital improvements program would have to be made according to priorities of other sections of the city, over those of the Hardy Pond Area and according to the city's ability to satisfy those needs and priorities. There is no section of the city with both the sewer and road problem the Pond Area has, nor an area with as much pressure and potential for development.

THE FUTURE

Without the positive control of open land zoning and the cooperation of government, convinced of the value of planning, residential development in the Hardy Pond Area will, probably, continue at the same rate it has in the past. There will be little improvement of existing

commercial uses. There will be some pressure for commercial zoning to accommodate new residential development further west. There will be no industrial development whatsoever. This picture of the Area's possible future is based partly on its existing structure and partly on its proposed zoning pattern. Under the new ordinance, the Area is zoned residential except for scattered commercial uses.

The future street pattern for the Area would be impossible to imagine unless its development was patterned after an Area master plan for circulation. The system of roads serving open land were designed for rural use and are already antiquated. They cannot be used, even though widened, to serve an intensive urban use with its urban desires.

Because of the expense of improvement and the reticence of the people in the Area, the Pond and its surroundings will probably remain, as it is, unimproved, unhealthy, and unsightly.

The school will be constructed. Plans are already in motion. Eventually it will even be enlarged as the Area continues to grow residentially.

There will probably be no community center. Churches and other miscellaneous public or semi-public buildings will come to the Area but their location will form no particular pattern of relationships since there exists no nucleus for such a pattern at the present time.

It is not difficult to visualize problems of the future. Many such problems will merely be the problems of the present still unsolved.

The future of the Hardy Pond Area, with the benefits of a thoughtful plan and the proper controls to develop that plan, would in some ways parallel the growth of a new town, in miniature. It would have its industrial belt, source of its taxation. It would have its center, its

commercial area, its recreation, and its residential use, all well related one to the other. It's quite possible it would also have its land uses intermixed, (a horrible thought Mr. Bassett) but one which zoners may eventually agree with. Proper control of land uses in the interest of the community could actually assure pleasant use relationships in the future, which today are quite incompatible. Less attention might probably be given to the random mixture of single family with four family or even multi-family residential uses, than would be given to constant densities, child population, and esthetic regulations.

The improvements which are suggested would require little more than "normal" expenditure for capital outlays, yet the benefit to the Hardy Pond Area of such improvement according to plan would be unlimited. Exercise then of intelligent application of present controls in the older areas should effect sound and stable neighborhood growth. Expansion of controls in the direction of open land should round out desirable future development of the entire Area. Remaining to be accomplished would be a continuous application of sound planning.

APPENDIX "A"

SOIL TYPES

Mp - Muck and Peat

Muck soil - from two to six feet deep, underlainly compact bed of gray or white sand. They are either stream bottom or at the edges of larger swamps.

Peat soil - from 3 to 30 feet deep are filled in lake beds.

R - Rough Stony Land

Steep and broken to smoothly sloping drainage well established, mostly surface - some internal drainage seeps out hillsides in level or stony areas.

Drain is poor.

Hl - Hinckley Stony Loam

Loam, gravelly with boulders--rough broken with narrow hog back mounds--drainage is excessive.

Mm - Merrimac Gravelly Loam

Loose open in structure--fairly level with low swells--drainage well established--much industries, cities, and towns.

Mg - Merrimac Gravelly Sandy Loam

Subsoil fairly loose and open in structure to coarse sand--outwash from glaciers as terrace along stream--drains internal is well established inclined to be draughty--much covered by towns.

Gr - Gloucester Stony Fine Sandy Loam

Some boulders and gravel--ledges and protrusions of bed rock mostly covered 2 to 20 feet extensively rolling or hilly and sloping--some runoff is through surface channels--much is internal drainage is well established--only little cleared.

Gf - Gloucester Fine Sandy Loam

Soil consistent--good bit of parent rock on surface--smoothly rolling uplands--drainage internal and good.

Hg - Hinckley Gravelly Sandy Loam

Open in structure--drainage almost all internal is usually excessive to the extent it becomes draughty.

BIBLIOGRAPHY

STANDARD REFERENCES

Center of Field Studies, Harvard Graduate School of Education, The Present and Future—A Plan for Meeting Waltham's School Housing Needs, Cambridge: 1952

City of Waltham, Annual Reports, Waltham: 1909 to 1951.