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ARBORICULTURE IN LAKE FOREST, ILLINOIS¹

by Harold L. Robson

Abstract: The arboricultural program for Lake Forest, Illinois, a small Midwest city of 15,500 population, is the subject of this paper. A description of the community, the budget preparation for programs, program content and performance data, and productivity and budget control are discussed.

The purpose of this paper is to present the arboricultural program of small suburban community in northeast Illinois. Lake Forest, Illinois, is a small community of 15,500 residents, located on Lake Michigan approximately 35 miles north of Chicago. The community is residential in nature, with no light or heavy industry. The residents of the city are primarily executives and professional people who work for large corporations or own their own businesses. A commuter rail system takes a large number of residents to their places of employment in the central city.

To get a good picture of the environment the residents live in, imagine dense woods with curvilinear streets winding along ravines which lead to Lake Michigan. Fifty to 60 foot densely wooded bluffs extend upward from the Lake Michigan shoreline along the eastern boundary. Inland from the shoreline two miles, to the west City limits, is overgrown farm land mixed with wooded plots. The City is 15 square miles in area, basically 5 miles on a north/south direction and 3 miles east/west.

The City has a long tradition of maintaining its aesthetic characteristics through large lot zoning. Thirty percent of the City is undeveloped. Development is proceeding at a very slow pace due to current economic conditions. Several subdivisions have been platted but house construc-

tion is almost at a standstill. Homes vary in size and architecture and include: large estate houses in the older section of the City near the lake, two story brick homes on lots of large square footage; and smaller one story and two story frame houses on smaller lots. A condominium complex exists adjacent to the business area.

Lake Forest was incorporated as a city in 1861. The early residents were primarily Chicago business men who were looking for country homes. The Presbyterian Church was looking for a location to begin a preparatory school and college. These conditions led to the development of large estate houses by the wealthy between 1895 and 1917 in the easterly side of the community. Families such as McCormick, Swift, Armour, Ryerson, Cudahy and Dick built homes during this period. Separate boys and girls preparatory schools were begun and Lake Forest College ultimately was developed as a small, private, liberal arts college serving residents of the community.

During the development era on the east side, a landscape architect from Frederick Law Olmsted's offices in St. Louis laid out the streets of the City in a curvilinear fashion following many of the ravines which drained into Lake Michigan. The major trees in the area were a mixture of oak, hickory, and white ash. As trees were removed for streets and home sites the land was replanted with a large number of elms. Little did they know the effect that decision would have on the future of the City. During the mid-twentieth century, the elms and oaks developed into mature trees giving

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the City the overall aesthetic effect of a densely wooded forest with streets and homes intermixed.

In 1960, I was employed by the City as the second arborist in their almost 100 year history. During the 40's, one other arborist was employed on a full-time basis. Dutch elm disease had been discovered in the community in 1954. My primary responsibility was to develop a program to control the elm disease on about 50,000 American elms in the community on public and private property. A complete control program was initiated at that time which is still being followed today. Although a major portion of the City's \$265,000 arboricultural program is still spent on Dutch elm disease control, the program has expanded significantly in other areas. With a budget of \$265,000 and a resident base of 15,500 the average amount spent by each resident is approximately \$17 per year per tree.

Department Organization

The Department of Parks and Forestry was recently merged with the Public Works functions of the City to form a new Parks, Forestry and Public Works Department. The purpose of the reorganization is to put all maintenance services under one department. Three divisions were created: a division of Parks, Forestry and Grounds Maintenance; a division of Public Works; and a division of Fleet and Equipment Maintenance. The forestry section is a part of the Parks, Forestry and Grounds Maintenance Division. I have the responsibility of directing the new department. A Superintendent heads up each of the new divisions. The expectations are that a reduction in 15 personnel will be realized over the course of the next several years through attrition. The goal is to provide a department that can mobilize all maintenance personnel and equipment for high priority projects and emergencies. Some cross training will be implemented with foremen and maintenance personnel to provide a more rounded and skilled work force.

Arboricultural Program Formulation

The Lake Forest arboricultural program is currently providing for maintenance of a population of approximately 13,000 street trees and an estimated one quarter million park and other public

property trees.

The Lake Forest arboricultural program is divided into seven subprograms; tree trimming, tree removal, insect and disease control, planting and care, injury repair, compost center, and landscape projects. The forestry section of the department is also responsible for mosquito control. The programs are funded on the basis of an incremental service budgeting process that is part of the overall City budget. The incremental program budget consists of four levels of funding, an essential level which is the same as the previous fiscal year, a high level which is 5% above the previous year, a moderate level which is 10% above the previous year, and a low level which includes "wish list" items with an unlimited funding level.

The first step in the budget process is to establish the objectives and performance levels for each program. The program objective includes the work that is to be accomplished under each level of funding. For instance, in the removal program is removal of all dead and diseased elm trees on public property, dead and dangerous trees of other species, storm damaged trees and removal, backfilling and seeding of all parkway stump holes and improved parkways and parks where vehicle and stumper are able to travel.

Under performance measures, the measure is explained and the budget for the current fiscal year is shown with the actual amount of work done or expected to be done. The performance measures for the next fiscal year under each level of funding are then established. From these performance measures, and program results, budget costs for salaries, materials and equipment are established for each program. The costs, for each level of funding for each program, are then put on a forestry section departmental summary sheet. Once these increments have been established the department head prepares a summary and recommendation of the program level he wishes to see funded. The budget then goes to the City Manager's office for review. The City Manager's recommendations are reviewed with the Finance Committee of the City Council. Once the Finance Committee has made a decision on the level of services to be provided, it goes to the full City Council as a budget package for adoption. The

City Council action finalizes the funding level for the next fiscal year. This fiscal year (1982), the program is funded at the moderate level.

Program Performance Data

Tree trimming. The trimming program for the current year includes 550 elm trees and 450 other species to be trimmed. The elm tree trimming program will be increased to provide a two year rotation for Dutch elm disease sanitation purposes. As in many communities, we have some difficulty in providing funding levels which will enable us to provide a regular trimming rotation on trees other than elms. Each year we have done some trimming on other trees on streets where elms were trimmed (Fig. 1). This year the plan is to begin a more formalized trimming rotation for other species. During the budget deliberations this past year, a study was completed to determine the advantages of contracting tree trimming versus doing it in-house. We currently have three tree trimmers, a maintenanceman and a foreman in the forestry section that have been doing the trimming, without use of contractors. Through our study we were able to determine the cost for trimming trees by contract would be approximately \$10 less than trimming with our own crews. We intend to change to a complete contract trimming program as we lose personnel through attrition. The forestry staff will eventually be reduced to two persons. All trimming and planting work will be contracted. Where maintenance projects require more than two employees, employees from other sections will be used. We also employ eight temporary employees during the summer months to assist in the maintenance programs.

Tree removal. In this program, 286 trees will be removed and 180 stumps; 125 of the total will be contracted for removal. The only contractual removals that are done are the dead and diseased elm trees. The goal is to remove other trees during the winter months and utilize Parks and Public Works employees to assist in the removal work during the less busy winter season. Stump removal will continue to be done by regular employees.

Disease and insect control. Two thousand elm trees are sprayed each year for Dutch elm disease. A sampling program for Dutch elm

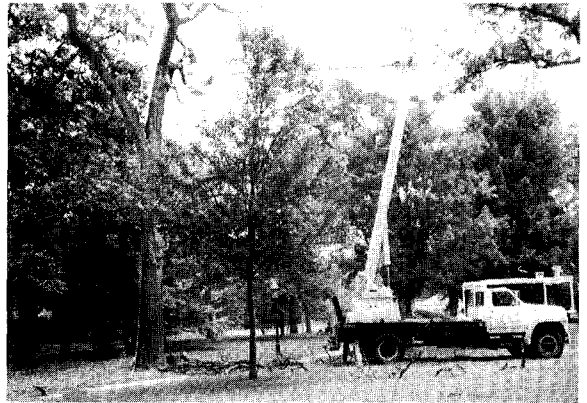


Fig. 1. Aerial lift truck used in tree trimming (upper) and removal (lower) program on parkway and parks in Lake Forest.

disease is carried out on public and private property each year. Follow-up checking for Dutch elm disease tree removal on private property is done by City crews after the thirty day ordinance requirement for removal has expired. We also budget for spraying of trees for control of other insect and disease problems such as scale, anthracnose, and cedar apple rust (Fig. 2). Elm trees are girdled to attempt to prevent root graft transmission of Dutch elm disease.

Since the gypsy moth has been found in Lake Forest, a program of checking new homeowners as they move into the City has been initiated. The City does their own collection of garbage and each person who moves in must set up a pickup for their garbage. When they do this, information is gathered from them as to what part of the country



Fig. 2. Large skid-mounted hydraulic sprayer used for tree feeding and spraying for insect and disease control.

they come from. If they came from the northeast an employee is sent to check their property to determine if gypsy moth egg masses have been brought in on their lawn furniture as a result of this program.

Oak chlorosis is one of the major problems with our white oaks in the City. We have been working with Dr. Eugene Himelick at the Illinois Natural History Survey for several years on this problem (Fig. 3). An aerial survey was made of the City using color photography, not infrared, in an attempt to identify the yellow cast of the trees that are suffering from chlorosis. From these aerial photographs, a graduate student at the Survey transposed the suspected yellow trees to a base map. This year a forestry intern from Michigan State University is working with the City to do further study on the chlorosis problem. An on-site survey has been completed on both private and public property to identify the extent of the problem. An estimated 2,000 trees are showing some form of chlorosis. The intern will survey various commercial tree firms and cities in the Chicago area to gather the results of treatments they have made over the past several years for the problem. From this information we hope to develop a recommendation as to the most effective method the homeowner and City can use to cure a chlorotic tree. Soil samples have been taken in various sections of the City to determine the nutrient content of the soils where the chlorotic trees are growing.

For three years the forestry program has included an experimental program on oak trees in the City, both on parkways and in parks, of



Fig. 3. Plant Pathologist Dr. Eugene Himelick examines rootlets of oak in chip mulch experimental chlorosis control program.

mulching the soil surface under the trees with wood chips. A recent inspection of the root systems of the oaks has determined that a more fibrous root system is being established than in untreated areas. In past years the program seemed to indicate the oaks treated were improv-

ing, but this year we are finding some regression in some of the trees. Dr. Himelick will continue this study and at some future date it is expected a report will be made on the results of this program as a treatment for controlling chlorosis. At this point it is apparent a more fibrous feeder root system is establishing itself in the chipped area than in the area which is covered with lawn.

Tree planting program. The tree planting program in the City consists of a large number of different species of trees. Our ultimate goal is to have no more than 10% of any one species. The planting arrangements are varied. There may be a solid species in one block or there may be two or three species in the same block. Because of our curvilinear streets, we do not have a standard block and therefore longer areas are planted to several different species rather than using a pure species.

The City plants approximately 300 new and replacement trees each year. These trees consist of trees removed from the parkway as a result of Dutch elm disease or some other insect, disease or environmental problem. We also have several new subdivisions that have been planted in the past several years and there are replacements that continue to be made by the contractor in those areas.

Part of the responsibilities of the Director is to work with the subdividers on landscape plans for Planned Unit Developments. A Planned Unit Development requires the establishment of a com-

mon area for the entire subdivision which is undisturbed. No housing can be placed in this area. The common area is required to be landscaped. One of our larger subdivisions created a berm along a major state highway through the community, digging out and establishing large lakes and creating 25 to 30 foot berms to reduce the noise level from the highways (Fig. 4). These berms were required to be landscaped with evergreens, deciduous trees and shrubs. The forestry section has the responsibility for making sure that these landscaped developments are done in accordance with the plans and specifications.

A fertilization program includes fertilizing of about 200 trees a year. Approximately 100 shrubs are planted each year. This year the plans are to contract all tree planting. In a study done during budget deliberations it was determined the cost for planting could be reduced by using a contractor. This allows for a reduction in personnel and equipment in the section, saving City funds.

Tree injury repair and maintenance. We have a problem with cars striking trees during the winter months. Approximately 70 trees which are wounded from that cause are repaired each year. Included in our program is a pruning and shaping program of approximately 400 trees each year.

Compost center. A Compost Center is operational each year at which citizens are allowed to dump leaves during the fall months. The area is supervised. Without supervision all kinds of materials are deposited on the site other than leaves. Every second year the decomposed leaves are shredded. The shredded material is mixed with topsoil for the tree planting program.

A recycling program for elm wood is operated at this site. As the contractor removes elm trees they are stored on the site for disposal as saw logs or chipped wood. A contractor is used to chip the limb wood. Saw logs are sold directly to the sawmill operator. The forestry section sells the chip wood to landscapers and residents at a delivered price of \$7.00 per yard or \$5.00 per yard if picked up on the site. The funds generated are used to offset the cost of chipping. The program has worked very well this past year. The major problem experienced is the reliability of the sawmill operator. He wants the logs but is not



Fig. 4. Berm constructed for noise abatement and aesthetic treatment in subdivision adjacent to a major four-lane highway.

ready to pay for them promptly.

Mosquito abatement. Part of the forestry section's duties and responsibilities is to provide a mosquito abatement program. This program is primarily handled by temporary and seasonal personnel who are trained in the methods of mosquito control. The monitoring and treatment of mosquito larva in stagnant water areas is the primary means of control. An aerial application of granulated insecticide is made in a number of wetland areas which flood at regular intervals when it rains. The program includes treatment of 4,000 catchbasins for larva breeding each year, and 260 miles of ditches which are principal areas for mosquito breeding. Adult mosquitoes are treated by application of an insecticide with an ultra-low volume (ULV) sprayer. This activity is limited to times of large hatches which result in heavy complaint from residents.

Productivity and Budget Control

Our City has an IBM computer on which our general ledger for revenues and expenditures is programmed. All our payroll and billing is done through the computer. The ledger is printed once each month. It provides information on expenditures by each line item account. Salaries, other objects (such as contractual services, maintenance materials, minor equipment, etc.) and capital equipment purchases are reported. It shows the amount that has been spent for the fiscal year to date, the amount budgeted and how much is still remaining in the budget. This permits each department head, superintendent and foreman to know the condition of the budget on a regular basis. If one account is over expended, it will be necessary to cut back to make up for that expenditure in another area of the budget. From the general ledger it is possible at the end of six months to make estimates of the total amount to be spent for the entire year. The intent is that the department and divisions, as well as sections, will maintain the budget expenditure level within those estimates unless there is an item of extreme emergency which has to be purchased.

From the payroll information on the computer, it is possible to get the activities that are performed and the amount of time that employees spend producing results in that particular activity. A monthly report indicating the number of work units completed for the month, the year to date, and the objective established in the incremental budget is produced for section foremen at the end of each month. This gives each manager information on his productivity progress at any particular time during the year. During budget preparation each section foreman must project the number of manhours that he is going to be using in each of the programs and activities within that program. From that information, salaries, are budgeted on the basis of the salary ranges established by the City Council and City Manager's office. After employee evaluations are given by the superintendents and foreman to each employee, a merit salary increase is recommended for each employee. These reports provide an excellent management tool by which the foreman, superintendents and Director can control and keep up to date with how the objective for each program is being met within the department. A format is currently being developed for reporting to the City Council progress being made towards meeting department objectives.

In conclusion, the Lake Forest forestry program is quite an extensive one for the size of the community. Considering the aesthetics and natural beauty in Lake Forest, most residents consider the forestry program a very important part of the City organization, providing for the continued maintenance of the aesthetic beauty of the community which adds to their property values, a general feeling of spaciousness, and to pride in the community.

*Director of Parks, Forestry and Public Works
The City of Lake Forest
220 East Deerpath
Lake Forest, Illinois 60045*