

CHAPTER TWO

PROBLEMS OF WATER

One of the prime purposes of the Authority was to establish a program of water management and flood control, and early attention was paid to this phase of the over-all conservation program.

The first major undertaking was the Ingersoll Channel improvement program. The initial move came from Ingersoll town council in 1949, as a result of a proposal by Chemical Lime Limited to change the course of the South Branch of the Thames immediately above the town. A survey was made by Graham G. Reid, Toronto consulting engineer, who estimated the cost of transforming an aimless 12-mile series of loops into a manageable stretch of about six miles, at \$600,000. It involved virtually a new channel from the downstream side of the Zorra Street bridge in Beachville to a point two miles below Ingersoll.



Part of channel improvement between Beachville and Ingersoll.

The Authority consented to sponsor the scheme, providing the benefitting property owners, through the three municipalities involved, paid the full 25 per cent of the Authority's share of the cost. The companies affected, Chemical Lime, Gypsum Lime and Alabastine and American Cyanamid agreed, realized that unless the work was done their limestone quarry operations could not be expanded. The levy against the municipalities, to be paid by the companies, was North Oxford, 75.25 per cent; West Oxford, 19.75; Ingersoll, 5 per cent. The Province agreed to pay 75 per cent and the scheme became the first to be undertaken under the Conservation Authorities Act of 1946.

A construction committee was formed, composed of G. W. Pittock, chairman; A. D. Robinson, Harry Collins, E. E. Pearson and James Calder. When tenders were opened it was estimated that the over-all cost of the project would be close to \$800,000. Work started on April 6, 1949. In November it was learned that another \$100,000 would be required to place additional riprap and do other necessary work.

By August, 1950, there were further complications. Mr. Pittock reported that 40,000 cubic yards of earth had washed into the channel where no riprap had been placed. He said also that one of the contractors, Sutherland Construction Company of Westhill, was dissatisfied with the estimates of Engineer Reid and claimed \$198,000 for additional work said to have been performed. Settlement was made for \$35,000. Dissatisfaction with the services of Mr. Reid led to his release. The Kilborn Engineering Company of Toronto took over, and the firm of Aiken & McLachlan, St. Catharines, completed the construction work for \$68,000. This brought the total cost to just under \$1,000,000. The other contractor on the job was Storms Construction Company Ltd. Mr. Reid presented his account for \$38,000, but settlement was reached for \$7,516.

Except for a small amount of work the contract was completed as of December 31, 1950. An official inspection was made on December 1, followed by a dinner, sponsored by the Chamber of Commerce. Hon. William Griesinger, Minister of Planning and Development, represented the Ontario Government and Dr. Wilson the Authority.

In 1952 the Authority sold to the town a piece of property between the railways and Mutual and Pemberton Streets for \$2,500. This was developed and later occupied by four industries.

FANSHAWE DAM AND RESERVOIR

Plans to construct Fanshawe dam and reservoir, the second large project, were launched at a meeting in St. Marys in October, 1948, the same day the proposal to build a dam at Wildwood was rejected.

The city of London could wait no longer. It had been long suffering from floods and the previous year had started a \$175,000 program on its own to ease flood conditions. With the Provincial government agreeing to pay 75 per cent of engineering costs, the Niagara Falls consulting engineering firm of H. G. Acres was commissioned, in May, 1949, to do the work and provide cost estimates. The Federal government consented to give financial assistance. As the directly-benefitting municipalities, the city of London agreed to bear 95 per cent and the township of London five per cent of the Authority's 25 per cent share of the cost. The other 75 per cent was shared by the Federal and Provincial governments.

In September, 1950, the construction contract was awarded jointly to the Foundation Company of Canada and Fred Mannix & Company Limited. An advisory board was formed composed of Dr. J. Cameron Wilson, chairman; Charles M. Kirk, Charles Cousins, Dr. G. H. Jose, N. A. Bradford, William Goddard, Alster Clarke, Michael Messerschmidt, J. G. Bell and E. A. Boug.

The sod-turning ceremony, held November 30, 1950, was an historic occasion as it marked the first move in all Canada directed toward the conservation and management of the nation's inland waters. Wielding shovels at the ceremony were Ontario's Premier Leslie Frost; Hon. Robert Winters, Federal Minister of Resources and Development and Hon. William Griesinger, Ontario Minister of Planning and Development. Premier Frost presented shovels to Mayor George Wenige of London and Reeve Roy Bloomfield of London Township, emphasizing the three levels of government involved. Dr. Wilson was master of ceremonies.



Left to right, Reeve Bloomfield, Mayor Wenige, Mr. Winters, Mr. Griesinger, Premier Frost, Dr. Wilson.

Fanshawe Dam, built across the valley of the North Branch of the Thames, about five miles above London, is the largest flood control structure in the Province. Completed in December, 1952, its cost, including reservoir, property, roads and bridges, was \$4,895,000.

The dam is a gravity-type earth-fill structure with an impervious clay core and a concrete spillway section. Its crest length is 2,100 feet; crest width, 44 feet; crest height above riverbed, 77 feet. Into the embankment went 440,310 yards of fill. The stilling basin below is 125 feet long. Built on, and keyed into, the ledge rock, the concrete spillway has a 24-foot roadway, a four-foot sidewalk, six steelgates fabricated by Canadian Vickers Limited, Montreal, each weighing 37 tons, and two discharge valves, each five feet in diameter. Maintenance costs on the roadway have been substantial, due to the heavy traffic. Opening of the Clarke Sideroad bridge in 1967, long advocated by the Authority, resulted in a reduction of vehicular traffic over the dam.

There are two buildings on the spillway section of the dam. The original specifications called for one-storey structures for storage and control. Apparently no consideration had been given to office space, so in November, 1952, the Authority awarded a contract to Ellis Don of London for two two-storey service buildings. The Ellis Don bid was much lower than that submitted by Foundation-Mannix, and the fact that the latter firm did not get the contract led, in part, to arbitration at a later date.



View of Dam and Spillway.

The building at the north end initially contained administrative and general offices and a board room, and housed the elevator shaft. On the ground floor at the south end were pumps intended to serve a projected London Public Utilities Commission filtration plant (that did not materialize) as well as an emergency unit for the dam. The second floor housed the control panels for the gates, water and sump pumps, and stream gauge recorders. To cope with the Authority's expanding program the boardroom at the north end was converted into offices in 1963 and the space occupied by the PUC pumps became the boardroom. A parking area and observation platform was built at the north end in 1968.

In November, 1961 the University of Western Ontario, through the Federal Observatory, placed seismic equipment in the inspection tunnel of the dam. It formed part of a Canada-wide system for detecting earth tremors, caused by natural forces or atomic detonations in any part of the world. It was used by the geography department of the University for teaching and research purposes, but was removed in 1967 for an unexplained reason.

Backed by Fanshawe Dam is a four-mile long permanent lake, with a total storage capacity of 38,880 acre feet of water. (One acre foot equals 271,379 imperial gallons.) It is little wonder then that the city of London, concerned about its dwindling water supply and increasing population looked to Fanshawe reservoir as a new source.

Discussions started in 1953 between the Authority and the London PUC as the Commission studied plans for a million dollar filtration plant, to be located on Authority property and tie in with the two water pumps already installed at the dam.

The Commission also studied a water spreading technique as an alternative to chlorination. The Authority permitted the installation of a 20-inch pipeline from the lake to a spreading area on the north side. Pumps at the lake forced the water into low-lying pockets or kettles where it seeped naturally into the soil through a layer of gravel, raising the underground water levels. The experiment proved successful and the PUC undertook to draw about 3,000,000 gallons a day, paying at the rate of \$1,000 per year for each million gallons.

The plan to construct a filtration plant, drawing initially 3,000,000 gallons a day and eventually 30,000,000, never materialized. The city of London, in 1963, decided in favor of a pipeline from Lake Huron. For work done to the benefit of the PUC when the dam was built, the Commission agreed to pay the Authority \$7,500 a year for 20 years, dating from 1958.

The official opening of the dam and reservoir took place on September 18, 1953 when assembled Federal, Provincial and municipal leaders termed it a "pilot project in conservation of resources and flood control that might extend across the nation." Premier Frost and Mr. Winters again were on hand and jointly declared the project officially opened.



Left to right, London mayor A. J. Rush, Premier Frost, Dr. Wilson, Mr. Winters.

During the construction period, differences arose between the Authority and Middlesex County over the cost of replacing the Thorndale bridge. The matter was resolved in January, 1953 with the Authority paying 24.85 per cent of the cost and the County the balance, subsidized by the Province. Cost of the bridge was about \$220,000. It was opened officially on June 25, 1954 by Hon. George Doucett, Ontario Minister of Highways.

In 1954 Foundation-Mannix entered a claim for \$2,218,296 over the amount of their contract for the dam and reservoir. The claim was based on dissatisfaction with the general terms of the contract, for extra work said to have been performed, and for loss of work and profit on the control and office buildings. After lengthy legal proceedings, and before going to court, the claim for work on the dam was reduced to \$750,000. In 1959 the contractors were awarded \$6,277 in connection with the control-office building contract.

WILDWOOD DAM AND RESERVOIR

Projected as the first major flood control structure on the Upper Thames in 1947, many years elapsed before Wildwood Dam, on Trout Creek, southeast of St. Marys, became a reality.

The Wildwood project received priority immediately after the Authority was formed, and engineering was authorized in February, 1948. Tenders were opened in September of the same year. Estimated cost was \$547,595, including land purchase. Eighteen years later, in 1965, the dam and reservoir were completed. Expenditures to December 31, 1967 totalled \$3,118,949.

Decision to call the area Wildwood was announced by Dr. Richardson at a meeting in London in 1948. A post office by that name was at one time located there.

The dam, a concrete and earth-fill structure, has a crest length of 2,100 feet and a crest width of 48 feet; maximum width at the base, 340 feet and height of crest above the foundation, 71 feet. There are four 12-foot sluice gates, each with a clear opening height of 12 feet. Below is a 90-foot stilling basin. The dam was designed for a total discharge capacity of 20,000 cubic feet per second.

The five and three quarter mile-long reservoir has an average width of 1,500 feet; the drainage area embraces 54.6 square miles. The surface area at maximum water level is 1,225 acres and total storage capacity 20,150 acre feet. Known as a draw-down dam, the structure was designed primarily for flood control, but plenty of water has been available for recreational purposes.

The project seems to have been shelved in 1948 for one reason -- the people in the Wildwood area were not certain that they wanted it. Such an undertaking was something new in the Province and there were no precedents by which to judge the idea. The Upper Thames Authority was the first in Ontario to plan big river control works and Wildwood was to be the starting point. Petitions were brought forward opposing construction of dams as being not in the best interests of the country as a whole. Alternatives were offered, such as assisting farmers with plans to hold water on their wastelands and to reforest the banks of the stream and steep hillsides. Farmers were concerned about suitable compensation for the land which would be flooded to build the reservoir. There were also differences of opinion among the municipalities on the cost sharing basis.

The Wildwood idea was revived briefly in 1956 when the Ontario government offered to increase its contribution to such schemes from 37-1/2 to 50 per cent. No action was taken, the Authority still hoping for a favorable reply to its 1954 brief to the Federal government, asking that government to share 75 per cent of the cost of

flood control measures with Ontario. When the Federal government assented late in 1960, the Wildwood project started to move. By this time the people of the area were better prepared for it. They had knowledge of the benefits accruing to the London area through the construction of Fanshawe Dam.

M. M. Dillon, Limited, London consulting engineers, presented a preliminary report which was adopted by the full Authority on October 4, 1961. Clearing operations started almost immediately. Contract for the four sluice gates went to Canada Machinery Corporation of Galt in September, 1962, and the general contract to Fraser-Brace Engineering Company, Montreal, in May, 1963. In May, 1964, the tender of John Gaffney Construction Company, Limited, Stratford, to build two bridges and a road link, was accepted. The same firm was engaged to place 6,850 cubic yards of riprap at the approaches to the bridges, to prevent erosion. The bridges are on Trout Creek, on the East Nissouri-West Zorra Township line and the Barron bridge, between concessions one and two in West Zorra. The road link, in Downie Township, was built between the Perth-Oxford county line and the Murray Conservation Forest.

To acquaint officials of the municipalities to be affected by the program with what was planned, a meeting was held at Fanshawe on September 25, 1961, attended by representatives of the townships of Downie, Blanshard, East Nissouri and West Zorra and the town of St. Marys. The Authority was represented by Chairman G. W. Pittock and the chairman of the Wildwood advisory board, Grant Sutherland. Closing and relocation of roads and building new roads was discussed and the meeting paved the way for subsequent approvals from all the municipalities concerned.

On December 11, 1961 Mr. Pittock, Mr. Sutherland and Secretary-Treasurer L. N. Johnson, met at St. Marys with property owners to outline land acquisition procedures. It was explained that three independent appraisers would separately evaluate all the properties and, among themselves, set a fair price on the properties required. Each property owner would then be advised of the price placed on his land and buildings, and would be offered an additional 10 per cent for forceful taking, plus \$6 an acre if arbitration was not required. While some prices were adjusted in the light of further information, it is significant that only one of the 37 properties covering about 3,000 acres, required lengthy litigation.

With the knowledge that No. 7 Highway was to be diverted south of St. Marys, the Authority opened negotiations with the Department of Highways in 1961, to have the new road pass over the dam. The department's offer of \$220,000 for use of the face of the dam was accepted. Work on the by-pass started late in 1967.

The official sod-turning ceremony for the dam took place June 4, 1963 with John Turner, parliamentary secretary to Hon. Arthur Laing, Minister of Northern Affairs and National Resources, representing the Federal government; Hon. A. Kelso Roberts, Minister of Lands and Forests, the Provincial government and Mr. Pittock, the Authority. Mr. Sutherland was chairman.



Left to right, Mr. Turner, Mr. Pittock, Mr. Roberts.

Work did not proceed as rapidly as had been anticipated and completion was delayed by more than a year. In the early stages the general contractor encountered organizational and labor troubles. The final inspection was made November 23, 1965, shortly after the contract had been completed.

Early in 1965 there was concern over seepage below the dam. Investigation showed that the seepage was coming from around the ends of the dam, through weathered bedrock joints and bedding planes, and not through the dam or its treated foundation. The engineering firm advised that the conditions did not jeopardize the

safety of the dam embankment, but did preclude unrestricted use of the reservoir for impounding water. Remedial steps were taken at a cost of more than \$56,000.

The sole piece of property involved in the Wildwood project that required lengthy litigation was owned by Edward Bartlett. In March, 1962 Mr. Bartlett was offered \$16,220 for his 100-acre farm, but rejected it. Notice of expropriation was registered in May, 1963 and a month later Mr. Bartlett was ordered by Perth County Judge H. D. Lang to vacate the property. In April, 1964, Mr. Bartlett's claim for \$28,000 compensation was heard by the Authority's land acquisition advisory board which recommended that the compensation should be \$22,000. This the Authority executive rejected on the advice of its solicitor. Sitting on the board were J. G. Lind, chairman; F. L. Jenkins and P. V. V. Betts, all of London. Negotiations continued between counsel for both parties, and in April, 1965 a settlement was announced, with the Authority agreeing to pay Mr. Bartlett \$20,750.

In 1965 the general contractors, Fraser-Brace, entered a claim for \$483,254, plus costs, for extra expenditures involved in the project. The Authority entered a counter-claim for \$147,246, and the matter went to arbitration. After some 43 hearings during the summer of 1966 the arbitration board handed down its decision in November, 1967. The contractor was awarded \$130,048 and the Authority \$32,470.



Wildwood Dam and Reservoir.

Official opening of the dam did not take place until June 15, 1967. Jack Davis, parliamentary secretary to Hon. J. L. Pepin, Minister of Energy, Mines and Resources, represented the Federal government; J. C. Thatcher, Deputy Minister, Department of Energy and Resources Management, the Ontario government; L. E. Walker, executive engineer, the Ontario Department of Highways and N. A. Bradford, who was chairman, the Authority.



Left, front to back, J. G. Lind, MP, G. W. Pittock, Robert Rudy, Hon. J. Waldo Monteith, MP, A. S. L. Barnes, Mrs. C. E. Cline, mayor of St. Marys; right, Mr. Davis, Mr. Thatcher, Mr. Bradford, Neal Olde, MPP, J. Fred Edwards, MPP.

The Authority's 25 per cent share of the cost of the dam and reservoir was borne 80 per cent by the city of London, 14 per cent by the town of St. Marys and six per cent was spread among the municipalities in the watershed.

Members of the Wildwood advisory board were Grant Sutherland, chairman; W. D. Murray, R. G. Innes, Harry Duffin and J. D. Hossack.

WOODSTOCK DAM AND RESERVOIR

Involvement with railways, differences with civic administration and difficulties in effecting land settlements, the latter even reaching the floor of the Provincial legislature, made the Woodstock project the most complex of all the Authority's major undertakings.

A survey of the area, made in 1952, was included in the brief that went to Ottawa in 1954. With Federal government financial participation assured late in 1960, the Authority, in January, 1961, commissioned the Woodstock consulting engineering firm of Vance, Needles, Bergendoff and Smith, to commence preliminary engineering. Preliminary plans were unveiled at a meeting in Ingersoll in December, 1961, attended by members of the Woodstock planning board, Woodstock suburban planning board and representatives of the property owners and the Authority. Two alternatives were offered.

Alternative No. 1 called for a high-level dam 2,300 feet upstream from Highway No. 59, approximately at the foot of Wellington Street in Woodstock. This plan included channel improvements on Cedar Creek, relocation of the CPR line from the south to the north side of the Thames, and creation of a lake.

Alternative No. 2 provided for two low-level dams, one within 1,000 feet west of the first plan and the other on Cedar Creek, upstream and to the south of Highway No. 401 near Woodstock. Including the relocation of the railway and utilities, the immediate saving in cost in choosing alternative No. 1 was \$1,591,300. It was calculated that the high dam would provide more than 13,000 acre feet of water storage and the two low dams a combined storage of 12,200 acre feet.

On March 13, 1962 the full Authority accepted the executive's proposal for a high level dam and at the same time approved a motion, by Mayor William Downing of Woodstock and F. L. Jenkins of London, to name the dam the Gordon Pittock Dam, in tribute to the then chairman of the Authority. Mr. Pittock, Ingersoll's representative on the Authority, cast the only dissenting vote. Ingersoll town council was not satisfied with its assessment toward the cost

of the dam and directed its representative to vote against the project. The town later accepted its share of the cost. Estimated cost of the entire project was \$4,130,000.

The earth-fill and concrete structure has a crest length of 2,000 feet, a maximum base width of 180 feet and a crest width of 18 feet. The crest height above the foundation is 48 feet, and the stilling basin below is 88 feet long. There are five sluice gates 24 feet high with a clear opening width of 21 feet.

The drainage area of the reservoir is 95.5 square miles. At elevation 950 it is 5.30 miles long, with an average width of 1,760 feet; at elevation 937.5 it is 4.25 miles long, with an average width of 1,010 feet. Total storage capacity: 13,400 acre feet.

Preliminary engineering studies for relocation of the CPR line were authorized in May, 1961, but it was not until early in 1964 that the agreement between the railway and the Authority was ratified and work commenced. Part of the delay was caused by misinformation given the Authority by its solicitor, E. H. Slater. Led to believe that the report on the CPR had been sent to that company's solicitors for ratification, the Authority did not learn until late in 1963 that the report was still in Mr. Slater's office. The first train rolled over the relocated line on June 2, 1966.

While negotiations were still under way with the CPR, Woodstock requested the Authority to have the Board of Transport Commissioners consider pooling the CPR and CNR lines through the city as an alternative to relocating the CPR line. The question was studied by railroad engineers but was considered to be not feasible.

In January, 1963 CPR engineers asked that their line be double-tracked across Highway No. 59. As this would have resulted in an undesirable grade, the question of a grade separation came to the fore and resulted in the Ontario Department of Highways advising Woodstock to initiate the construction of an overpass. The highways department approved the overpass in January, 1964. Cost was estimated at \$773,400, shareable by the department, the city, and the Board of Transport Commissioners, which administers the railway crossing fund. The Authority provided necessary land. The bridge was opened to traffic in September, 1967.

In July, 1964, the contract for the construction of the dam and reservoir was awarded to Crossland Construction Company and Hacquoil Construction Limited, Toronto, for \$1,984,515. The contract for the sluice gates went to the Canadian Machinery Corporation, Galt, in November, at a cost of \$191,515.

The sod-turning ceremony took place on July 31, 1964. Hon. Arthur Laing, Minister of Northern Affairs and National Resources, represented the Federal government; A. S. L. Barnes, Chief Conservation Officer for Ontario, the Provincial government; Mayor William Downing, the city and G. W. Pittock, the Authority. K. C. Hilts was chairman.



Left to right, Mr. Pittock, Mr. Barnes, Mr. Laing.



Gordon Pittock Dam and Reservoir at Woodstock.

Construction of the dam and reservoir progressed reasonably well. There were, of course, inevitable delays and changes in specifications, with resulting additional costs. The final inspection took place on August 24, 1967. Upon completion of their phase of the work the Crossland-Hacquoil firms entered a claim for \$92,290.57 in additional costs. The consulting engineers recommended that the Authority endeavor to settle with the contractors for \$75,753. The Authority authorized its director of operations, R. D. McCall, to confer directly with the contractors and a compromise settlement of \$65,956 was reached. Total expenditure to the end of December, 1967 was \$4,692,338.

LAND ACQUISITION

Property appraisers began work in the fall of 1962 on about 2,000 acres, in 49 ownerships, required for the Pittock Dam. In November, 1963 the Conservation Authorities Branch advised the Authority that the appraisals, with one exception, had been approved.

The Authority had intended to follow the same land acquisition procedure as that used at Wildwood. CAB ruled, however, that in the case of Woodstock, the appraisals were to be used as a basis for negotiations, that each owner must be contacted personally, and that the approved appraised price be the basis of a lump sum offer in negotiating. Due to the time consumed in obtaining approval of the property appraisals, the year end approached with no required properties purchased.

To be assured of the properties when the contractors moved in, particularly for the relocation of the CPR line, the Authority decided to expropriate all the properties and the owners were so advised in January, 1964. At the same time they were informed that possession would be required by May 1 of the same year. In March, when it was apparent that construction tenders could not be called immediately, the possession date was changed to July 1, and the Authority undertook to consider claims for crop damage, up to September 15, if such damage was due to the activities of the contractors.

Ripples of discontent among the property owners began to appear, centred around the take-over date and the claim that the appraisers were visiting the properties collectively, instead of individually. One property owner claimed that in March, 1963 Authority Chairman Pittock had promised that two years' notice to vacate would be given, but that this had now been reduced to a matter of months. Mr. Pittock replied that the landowners had been told in 1962 that their properties would not be required for two years and that this time had now expired. Speaking for the appraisers, J. A. Wallace, Woodstock advisory board chairman, said that they had visited each property together initially to familiarize themselves with the property and returned later individually to make their appraisals.

Opposition continued to rise and soon developed into a full-scale storm. About two dozen owners gathered at a meeting in Woodstock on March 13, 1964 and charged that they were not getting a fair deal on their land. They claimed that the Authority was being evasive and was using unfair tactics to acquire the land. The group decided to enlist the help of the Ontario Federation of Agriculture. Later they turned to Donald C. MacDonald, leader of the New Democratic Party in Ontario, and some appealed to the courts. Mr. Pittock, in a written statement, answered the charges of the property owners' group and outlined the method of procedure as laid down by the Conservation Authorities Branch.

At a meeting in April, at which a representation from the Authority was present, Donald Middleton, director of properties of the OFA, suggested that a four-man committee of property owners be named to negotiate a settlement with the Authority. Believing

if best to adhere to the established policy of dealing only with individual owners, the Authority rejected the proposal, but agreed to pay the dissenting owners 85 per cent of the offered purchase price on production of title documents. The owners had complained that, in many cases, a 50 per cent payment, required by law, would not give them sufficient money to relocate their families after clearing the debts on the properties they were forced to vacate.

The now explosive situation first reached the floor of the Legislature in April when NDP leader MacDonald quoted charges in a London newspaper that the owners were being paid much below the market value for their land. Mr. Pittock, then a member of the Legislature, denied the charges. During the same month applications for stays of possession by 10 owners came before Judge Eric Cross in Woodstock, but were set over until May 28, for possible further negotiations.

On May 28 Judge Cross rejected three of the 10 applications. Agreement was reached on the other seven, giving the owners until October 1 to vacate their property, rather than July 1.

On June 17, K. C. Hilts, chairman of the Woodstock advisory board, met in Toronto with Hon. J. R. Simonett, Minister of Energy and Resources Management which, by then, was administering the CAB. Mr. Simonett told Mr. Hilts that a delegation of property owners had met with Deputy Premier J. N. Allan and that it was evident that the poor public relations engendered by the Authority's property negotiations had become a matter of concern to the Department. He recommended that the Authority obtain fee appraisals by accredited licensed appraisers on all unsettled properties by July 15 if possible. The Authority agreed to the Minister's proposal and nine appraisers were engaged. New written offers, based on the new accredited appraisals, were made to the dissatisfied owners as they became available.

In December the NDP leader toured the area, and renewed his attack on the Authority and its chairman. Mr. Pittock was charged with conflict of interest as chairman of the Authority and as a member of the Legislature for Oxford.

A new year dawned, but land acquisition problems continued. Mr. Hilts resigned as chairman of the Woodstock advisory board, giving "pressure of business" as the reason. He was succeeded by Cecil Riddle. Early in January, 1965, Mr. Pittock recommended to the Authority executive that landowners, with whom no settlement had been reached, be given an additional 10 per cent to be added to the fee appraisal figures. He said he felt such an offer would be in line with those that were negotiated with the landowners with whom settlement had already been reached. The executive rejected the proposal, stating that negotiations were closed and that the entire matter would go to arbitration.

On January 23 Premier John P. Robarts announced in the Legislature that he was considering naming a tribunal to settle the disputes. This he did a short time later, with Authority approval. The appointees were: E. J. Parker, manager of the Provincial Real Estate Board, as chairman; H. P. Jones, retired chief property appraiser for the Ontario Department of Highways and A. A. Outram, retired chief of the property branch of the Department of Public Works. Mr. Robarts also wrote letters to the dissenting owners, asking for their full co-operation with the appraisers, who started meeting the owners in March.

Liberal leader Andrew Thompson and his successor, Vernon Singer, supported Mr. MacDonald's view that Mr. Pittock should vacate either his seat in the Legislature or the chairmanship of the Authority. Mr. Singer placed part of the blame for the situation at the door of the Robarts government which, he said, refused to adopt recommendations of a select committee on expropriation, headed by former Attorney General Fred Cass. On February 5, Mr. Pittock announced that he would ask to be relieved of his duties with the Authority at its annual meeting in St. Marys on March 12. His resignation was accepted and N. A. Bradford of London, was named chairman.

Of the 49 properties involved, 14 were settled and 14 were in the process of being settled by the Authority prior to the appointment of the tribunal. The remaining 21 properties were referred to the tribunal which settled 14. At the time this was written, apart from the tribunal settlements, the Authority had attained voluntary settlement on 30 properties and one leasehold claim; The Ontario Municipal Board had ruled on two property settlements and one leasehold claim; two properties were awaiting OMB hearings and one property was under negotiation. Land acquisition costs totalled \$957,000 as against \$65,170 approved by the CAB in 1963.

The Authority still was not finished with property transactions on the Pittock project. When the CAB decided to raise the normal operating level of the reservoir from elevation 937.5 to 940 feet, properties previously considered not required became involved. Meetings were held with the interested parties and settlements begun. A parcel of Woodstock-owned land on the south side of the river was also purchased.

Cost sharing on the project, percentage-wise, was as follows: Woodstock, 47; London, 32.9; Ingersoll, 9.4; Beachville, .752; Blandford, .11; East Oxford, .15; North Oxford, 1.598; West Oxford, 1.760; East Zorra, .330 and six per cent spread over all municipalities on the watershed.

Serving on the Woodstock advisory board were: J. A. Wallace, T. H. Dent, R. M. Barney, A. D. Robinson, W. J. McDonald, Oscar

Sippel, K. C. Hilts, W. A. Downing, Ross Edwards, T. J. Slater, C. M. Riddle, Harry Collins and James Hutchison. Serving, in turn, as chairmen, were Barney, Wallace, Hilts and Riddle.

CEDAR CREEK

When the decision was reached in 1962 not to construct a dam on Cedar Creek, attention was focused on channel improvement. Conservation Branch engineers recommended that the work be carried out from the Ingersoll Road to where the creek enters the Thames, rather than from Mill Street as originally intended. The Woodstock advisory board concurred. City Council, however, favored the entire project and was supported by the project engineers. Estimated cost for the full project was \$300,000 and \$112,000 for the shorter stretch. The Authority deferred to the wish of the city which, as the sole benefitting municipality, would pay 25 per cent of the cost.

In February, 1964 City Council approved an Authority scheme to acquire flood plain lands on Cedar Creek, between Butler and Finkle Streets. Negotiations for property purchases and easements were completed in July, 1965, and senior governments subsequently gave their approval to call for tenders. Estimated cost by that time had reached \$750,000. There was no response to the tender call, probably because of an overload on the construction industry. Tenders were again called in February, 1966, and four were received. The bids ranged from \$1,117,252 to \$1,974,044. In view of the cost Woodstock Council advised the Authority it was not prepared to proceed with the work.

MITCHELL DAM AND CHANNEL IMPROVEMENT

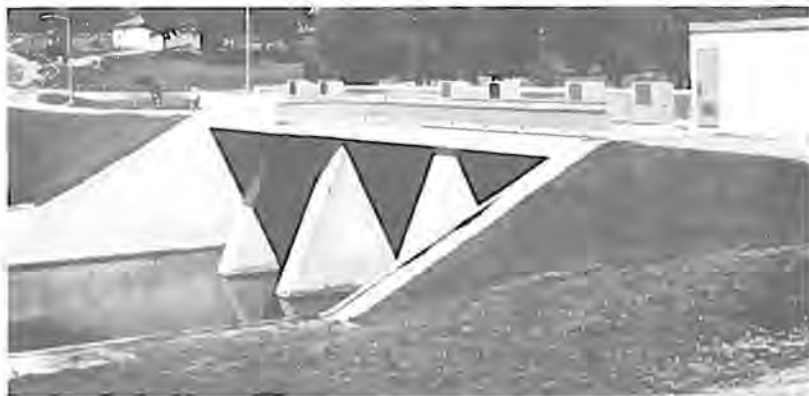
Mitchell's plea for flood control measures was as old as the Authority itself, and if perserverence is a virtue that community holds a high spot on the totem pole. Plagued by floods over the years, Mitchell welcomed the formation of the Authority, hopeful that it would receive financial aid in instituting a remedial program. The Authority appreciated Mitchell's plight and the dam in that town was the first to be started under the 10-year flood control agreement with senior governments, signed in 1961.

As early as 1948 H. A. Cook, Mitchell's representative on the Authority, asked for a survey for flood control and preliminary engineering was done in 1949, as far down as Motherwell. Following unsuccessful approaches to both Provincial and Federal governments to bear 75 per cent of the cost, Mitchell agreed to pay 50 per cent and proceed with part of the project. Work was undertaken

in 1959 on deepening, widening and straightening the Thames south from Toronto Street to the CNR line, and removal of a sandbar downstream from the CNR line. The contract was awarded to Star Construction Company of Ottawa but was not finished before the construction firm went bankrupt. In 1961, with the Federal government now participating, Robert K. Clarke, Mitchell, picked up the unfinished part of the Star contract and with Robert Nicholson & Son, Mitchell, also carried out channel improvements on Whirl Creek.

Meanwhile preliminary engineering plans had been prepared for a dam by R. K. Kilborn & Associates, Toronto. Senior government approval for construction of the dam was given in August, 1962, and the contract was awarded to Looby Construction Limited, Dublin. The new dam, on the site of the old and lower structure, is just north of No. 8 Highway. The dam consists of a concrete free-fall spillway with rolled earth-filled embankments and concrete wing-walls on each side. There are three sluice gates, 24 by 10 feet, fabricated by Richards-Wilcox Canadian Company, London, and an overflow weir extending 36 feet upstream from the dam. The top of the embankment has a 15-foot wide paved road leading to the concrete deck of the dam. The enlarged reservoir behind the dam has a water storage capacity of 1,200 acre feet and has provided an excellent recreation area.

The channel work between the dam and the highway involved the purchase and removal of a Public Utilities Commission building and the Hesky Flax Company building, both of which had been subject to flooding for years. The PUC building was bought for \$5,000. The Hesky company was offered \$8,000, but declined to accept. Expropriation proceedings were started in 1963 and in February, 1965 the Ontario Municipal Board awarded the company \$14,300. It had asked for \$45,000.



Mitchell Dam.

The Hesky solicitors gave notice of appeal and the firm tried to have the expropriation order reviewed. In February, 1967 the company filed a writ in Osgoode Hall, Toronto, charging the Authority with trespassing on its Mitchell property. The case was set for hearing at the Perth County court house in Stratford in the fall of 1967, but was postponed indefinitely at the request of the company's solicitors.

The official opening ceremony took place at the dam on September 22, 1964. John N. Turner, parliamentary assistant to Hon. Arthur Laing, Minister of Northern Affairs and National Resources, represented the Federal government; T. H. Hilliard, Deputy Minister of the Department of Energy and Resources Management, the Provincial government; Mayor H. A. Cook, the town; Warden David White, the County of Perth and Chairman G. W. Pittock, the Authority. The structure was blessed by Rev. W. H. Godden, Anglican rector at Mitchell.



Left to right, Mayor Cook, Mr. Pittock, Mr. Hilliard.

Cost of the project was approximately \$327,000, with Mitchell paying the Authority's 25 per cent share.

In 1966 the Authority leased the park area near the dam to the town for development, as a Centennial project. The attractive park was opened August 7, 1967 by Mr. Pittock.

Associated with the project, as members of the Mitchell advisory board, were J. Wilson Brown, chairman; N. A. Bradford, Alvin Rohfritsch, F. Adair Campbell, Clayton Smith, William Chaffe, John Stephen, Fred Schlotzhauer, Donald McTavish, Malcolm Norris and H. A. Cook.

STRATFORD FLOOD CONTROL PROJECT

Between 1950 and 1953, according to Authority records, Stratford asked that steps be taken to alleviate flooding on the Avon river. A committee, composed of Wilfrid Murray, R. Thomas Orr and Lawrence Feick, was named to investigate. Estimates on the cost of a survey were obtained, but there is no record to show that the city formally gave permission to proceed. Therefore no provision was made for a Stratford scheme in the Authority's brief sent to the Federal government in 1954.

In September, 1954, however, another delegation from the city asked the Authority to see what could be done toward removing silt from Lake Victoria and improving the channel downstream from the dam. The Provincial government, at the request of the Authority, agreed to pay 75 per cent of the cost of engineering; the Authority absorbed the balance. The survey was carried out by R. K. Kilborn & Associates, Toronto, and a report was presented to the city early in 1955. The city took no immediate action on the report.

Early in 1961, after considerable prodding from the board of park management and the local advisory committee of the National Employment Service, City Council requested the Authority to have a survey made for a new dam to replace the then 50-year-old structure and to obtain revised estimates on the cost of removing silt from the lake and improving the channel. The report was presented in September.

The next step was to have the city participate in the Authority's \$10,000,000 program, approved by the Federal and Provincial governments late in 1960. The city's request for inclusion was approved by the full Authority in October, 1961 and in December of the same year city council agreed to absorb 25 per cent of the cost of the program. By June, 1962, both senior governments had given their consent.

The Stratford project was divided into three stages: Removal of silt from the lake from the CNR bridge near Romeo Street to the dam; construction of a new dam; channel improvements westerly from Huron Street. Construction of the dam commenced in October, 1963 and was completed in June of the following year.



R. Thomas Orr Dam, Stratford.

The contractor was the Canadian Engineering and Contracting Company, Hamilton. The sluice gates were supplied by Richards-Wilcox Canadian Company, London. The structure was named the R. Thomas Orr dam, in honor of a veteran Stratford parksman and the first vice president of the Authority. The dam consists of a concrete spillway structure with earthfill wings extending from the spillway. There are two electrically-operated sluice gates, each 24 feet wide and 11.5 feet high, separated by a 20-foot wide concrete free overfall weir section extending 20 feet upstream. The stilling basin below is 45 feet long. The paved deck provides a pedestrian walk.

Excavation of the lake to provide approximately 670 acre feet of water storage, commenced October 16, 1963, but ceased 10 days later following a difference between the engineering firm and the contractor, Regan Hauling and Excavating, Agincourt, over the terms of the contract. The Regan firm was taken off the job and later entered suit against the Authority, which was still pending when this was written. A new contract was awarded to the Tripp Construction Company, Port Perry, in May, 1964. Work was started in September and, with the exception of landscaping, was completed in mid-December.

Increased costs of the first two phases caused the senior governments to take another look at the downstream program, and more than two years elapsed before it was undertaken. This phase included straightening and widening the channel, removal of a small bridge, construction of a new bridge at St. Vincent Street, replacement of a weir upstream from John Street, and lengthening of the John Street bridge.

Senior governments declined to share in the cost of the St. Vincent Street bridge or channel improvements below John Street. The remainder of the program was approved and the contract was awarded to Logan Contracting Limited, Stratford, in September, 1966. Meanwhile the Ontario Department of Highways agreed to pay one-third of the cost of the St. Vincent Street bridge, with the city paying the balance. Work downstream from John Street was deferred. Operations commenced in mid-October, 1966, and the job was completed about a year later. Total cost of the three-part project was approximately \$883,497. Cost of the bridge was about \$126,420. Stratford paid the Authority's 25 per cent share.



Downstream Channel Improvement, Stratford.

The official opening took place at the R. Thomas Orr dam on October 24, 1967, with Dr. C. M. Isbister, Deputy Minister, Department of Energy, Mines and Resources, representing the Federal government; M. K. McCutcheon, Executive Director, Department of Energy and Resources Management, the Provincial government and N. A. Bradford, chairman, the Authority.



Left to right, Mr. Bradford, Mr. McCutcheon, Mr. Dolan, Dr. Isbister.

Members of the Stratford advisory board were: T. J. Dolan, chairman; C. H. Meier, A. B. Manson, J. D. Douglas, Harry Rhodes and G. L. Mavity.

ST. MARYS CHANNEL IMPROVEMENT

St. Marys is a flood-conscious town and not without good reason because, over the years, it has been visited by numerous costly and damaging floods. Nestling in the bottom of a valley it was battered, during the flood season, by the waters of Trout Creek and the North Branch of the Thames. Construction of Wildwood Dam, on Trout Creek, alleviated the situation substantially, but the town will not be able to consider itself "safe" until the Glengowan Dam is constructed to harness the waters of the North Branch.

St. Marys was disappointed in 1948 when the Authority, by a narrow margin, defeated a proposal to proceed with the construction of Wildwood Dam. But St. Marys officials kept pressing and in the two succeeding years, through their representative, John G. Bell, the town's flood problem was placed before the Authority. Mr. Bell called for the construction of Wildwood Dam and said that the town was willing to pay its share of the 25 per cent cost to the Authority if the Province would pay 75 per cent.

At the same time consideration was given to channel improvement within the town, and a report was prepared by the R. K. Kilborn engineering firm of Toronto. None of the projects proceeded at the time because the Provincial government could not see its way clear to contribute 75 per cent of the cost.

In 1963 the Provincial government agreed to share, on a 50-50 basis, the cost of channel improvement below the town dam. By now the town was committed to its share of the cost of the Wildwood Dam construction and felt it could do only limited work on the channel. A few months later the St. Marys Cement Company made a proposal to relocate a section of the road on the south side of the river in the area of the company's property. It was also agreed to do some channel improvement, all at no cost to the town or the Authority. The thought behind the company's proposal was to protect some of its property from flooding and to make available more land for quarrying purposes. The proposal was accepted, and in 1964 the new road was built above flood level. The town proceeded to clear and widen about three-quarters of a mile of the channel, not included in the Cement Company operation, with government assistance, through the Authority. V. Marziala of St. Marys was the contractor. Cost of the work was just over \$4,000.

A St. Marys advisory board was formed in 1961 and serving on it were: J. A. Stephen, chairman; J. G. Bell, W. D. Murray, David White, Alvin Rohfritsch and Alister McIntosh.

LONDON'S PROBLEMS

Since 1949, when the city of London agreed to pay 95 percent of the Authority's share of the cost of building Fanshawe Dam, that municipality has not turned its back on sound conservation practices. Now it is engaged in a three-pronged program: To correct a serious erosion situation in the vicinity of Springbank Park, to rehabilitate Springbank Dam, and to acquire flood plain lands along the entire length of the Thames within the city for conservation, restoration and development of natural resources.

The erosion problem became so bad in 1962 that the Public Utilities Commission was in danger of losing the road that runs along the river bank in Springbank Park, and spent \$7,000 on temporary control measures. City council asked the Authority for assistance and the wheels began to move. On receipt of the engineer's report it was decided to spread the work over a 10-year period. Government approval was received and the first phase was completed in 1967, with Westminster Township coming in as a benefiting municipality.

The rehabilitation of Springbank Dam had been discussed since 1965, and the Authority adopted it as a scheme in 1967. Originally it was intended to restore the dam to a functional condition at an estimated cost of \$214,500. When the CAB provided the engineers, Peter T. Mitches & Associates Limited, London, with terms of reference in regard to the design criteria of the structure, the over-all scope of the work increased, and the estimated cost rose to \$308,000. When tenders were opened the lowest bid was in excess of \$500,000. London agreed to pay its share of the increased cost. Government approval was subsequently received. The \$538,489 tender of Ruliff Grass Construction Company Limited, Thornhill was accepted and work started in June, 1968.

The plan to develop the open space and flood plain lands on the Thames, within the city, was a long-term project that had been in the thinking stages for years. No little credit for its promotion belonged to the London Kiwanis Club. Years ago the Kiwanians established a park at Pottersburg, in southeast London, and then branched out by sparking the formation of a joint parks committee with the city planning department, the PUC and elected city officials. Unable to provide staff to make a complete survey of the river within the city, as requested, the CAB made available to the city's consulting engineers all the information it had on hand.

In September, 1963, an Authority committee met with the city's joint parks committee to work out a definite basis for the proposed scheme. In February, 1964 the Authority agreed to a 10-year scheme to be carried out in three stages: Purchase of lands; channel improvements; development. A possible outlay of \$4,000,000

was envisaged. When application was made to the CAB for permission to proceed with the purchase of land, the Branch suggested that the scheme be enlarged to include all urban municipalities. This was done, and the scheme was approved by the Minister in April, 1965. This placed the Authority in a position to obtain grants of 50 per cent of the cost of acquiring flood plain lands in London, or in any other urban municipality in the watershed desiring to do so.

There were about 100 properties, nearly 3,000 acres, involved in the London scheme, seven of which have been obtained with the cost shared by the city and the Province.



Author Use Gabion Baskets to Fight Streambank Erosion.

Another project in London and London Township, carried out with the co-operation of the Authority, was streambank erosion control behind the University of Western Ontario and near St. Peter's Seminary. Requests for assistance came from officials of the two institutions, which agreed to share the cost. With provincial government approval the two schemes were combined and were completed early in 1961, under the winter works program for which grants of 75 per cent were available toward labor costs.

WATER AND GAUGES

Where is the water? When is it there? How much is there?

The answers to these questions have been sought by mankind for countless years. It is a never-ending task and the Upper Thames Authority is playing a vital role in keeping track of it. The operation is probably not well known to the general public, yet everyone is affected by it.

Covering the watershed is an ever-expanding system of gauges for measuring water in the stream or as it falls from the sky. In 1966 the Authority adopted a scheme to improve the flood warning system by installing telemeters on the stream gauges at the most strategic points on the Thames River. Four have been installed.

The stream gauges indicate and record water levels at the different main branches and tributaries of the river. The information is used to operate the flood control system in the watershed and to assist in regulating summer flow. The gauges were installed with the co-operation of the Inland Waters Branch of the Federal Department of Energy, Mines and Resources. Inland Waters uses the information as part of the study of the water supply and its runoff for the whole of Canada.

Two types of stream gauges are in use in the watershed -- recording and manual. The telemarked gauges link directly with Provincial and Fanshawe flood control centres by telephone and provide the people engaged in flood routing with instant water measurements at any time, day or night. The recording gauges give a continuous record of water levels while the manual gauges were located on the less critical tributaries for supplementing the main stream gauges.

Telemarked stream gauges first operated at Byron, St. Marys, Thamesford and Ingersoll.

Recording stream gauges are located at or near Fanshawe, Plover Mills, Avonbank, Wildwood, Ealing, Woodstock, Prospect Hill and Fairview.

Manual stream gauges have been set up on Medway Creek, near London; the Thames River, near Mitchell; Cedar Creek, near Woodstock and on the Wye Creek, near Thorndale.

Recording rain gauges at Tavistock and Fullarton were designed to tell not only how much it is raining, but at what time and how hard. This information, most important in determining if there will be a runoff from a storm, along with streamflow data, allow the Provincial hydrometeorologist to more effectively route flood waters down the Thames.

The Authority, in 1968, also had ready for distribution 50 manually-read plastic rain gauges to supply supporting information for the flood warning system. Interested persons in the watershed, who agree to accept these gauges, are asked to report to the control centre at Fanshawe if more than an inch of rain falls within a 12-hour period.

There are also 10 snow courses in the watershed, with readings taken twice a month from January until the snow disappears. This information, forwarded to the Provincial meteorologist in Toronto, is important in calculating runoff from snowmelt.

Do the gauges operate in the winter? Yes, by putting antifreeze in the collector section of the recording rain gauges and adjusting the recording data accordingly, or by electric heat cables in the

recording stream gauges. The collection of this data is just as important in the winter as in the summer for the operation of the Authority's flood control system.

The first man assigned to the Authority, to carry out hydraulic studies in the watershed and to assist in the operation of Fanshawe Dam, was William McNaughton. Coming to London in 1955, Mr. McNaughton played an important role in the development of the flood control system up to the time of his sudden death on December 17, 1960. The now-expanded program was in charge of Craig R. Leuty, project engineer, until the end of April, 1968, when he was transferred to other duties outside the watershed. L. N. Johnson moved in as temporary supervisor.

HYDROLOGIC RESEARCH STATION

Between 1957 and the spring of 1967, when it was determined that it had fulfilled its major usefulness, a hydrologic research station was in operation at the Fullarton Conservation Area.

The station was established by the Authority and the Conservation Branch, Ontario Department of Planning and Development, in conjunction with the Meteorological Branch, Federal Department of Transport, the Ontario Water Resources Commission, the Water Resources Branch of the Federal Department of Northern Affairs and National Resources, and the Tabulating Branch of the Ontario Treasury Department.

The particular objectives of the station were to enable the Authority to forecast more reliably the flow of the main branches of the Thames, particularly following severe storms; to study the winter snowpack melts and how the melt-water contributes to ground moisture, ground-water and river flow, leading to better river forecasting; to evaluate the causes of low flows in the river and drought conditions in the Fullarton watershed which covers 620 acres. This knowledge was used to help combat the serious effects of dry periods through the region. A supplementary program included studies of the growth rate of trout in the stream of a small watershed as related to water temperature and meteorological factors and the sediment load of the stream and its variations.

The instruments used at the station were provided by the Federal Department of Transport and the Ontario Conservation Branch. The Authority participated in the program by providing land, constructing a weir for the stream gauge and a protective fence for the instruments.

With its mission accomplished, the information obtained at the station, all of which is on punch cards with the department in Toronto, should lead to a better understanding of the constructive and destructive powers of our water resources, not only on the Thames, but throughout Southwestern Ontario.

CHAPTER THREE

FORESTRY AND LAND USE

Under an agreement made with the Ontario Department of Lands and Forests on September 11, 1951 more than 3,500 acres of Authority-owned forest and swampland came under the management of that department. Total cost of the land was approximately \$36,000.

Acquisition of land formed an important part of the Authority's reforestation and water conservation program. The establishment and maintenance of forest cover had several purposes or benefits, which may be broadly described as: Demonstration to the public of wise land use, actual wood production, water conservation, erosion control, recreation, and aesthetic values. For many persons the best lesson in conservation is field observation and the Upper Thames forest areas now are a living example of how marginal land can be wisely used.

Many of the natural woodland areas in the Upper Thames forest were in poor and rundown condition when acquired. Many had been overcut and heavily pastured. Many had the best trees removed over the years, leaving only poor specimens of inferior species. The aim was to improve these woodlands through the scientific management plan carried out by Lands and Forests, in order to secure maximum growth of valuable wood. In acquiring land for forestry purposes the Authority endeavored to purchase areas not suited to agriculture.

The largest Authority-owned tract under agreement in 1968 was the Ellice Swamp, in Perth County, covering 2,133 acres. The first 150 acres were purchased in 1948 from the Canada Company for \$785. Eighty acres, bought in 1967, cost \$2,500, an indication of rising prices. Other tracts in Perth County were purchased at Gadshill, in North Easthope Township, covering 666 acres and including the former Perth County forest; the Dr. Murray Forest, 175 acres, in the Gore of Downie; and at Fish Creek, Blanshard Township, 66 acres.

In Blandford Township, Oxford County, there is the Downey tract of 50 acres and in North Dorchester, Middlesex County, 387