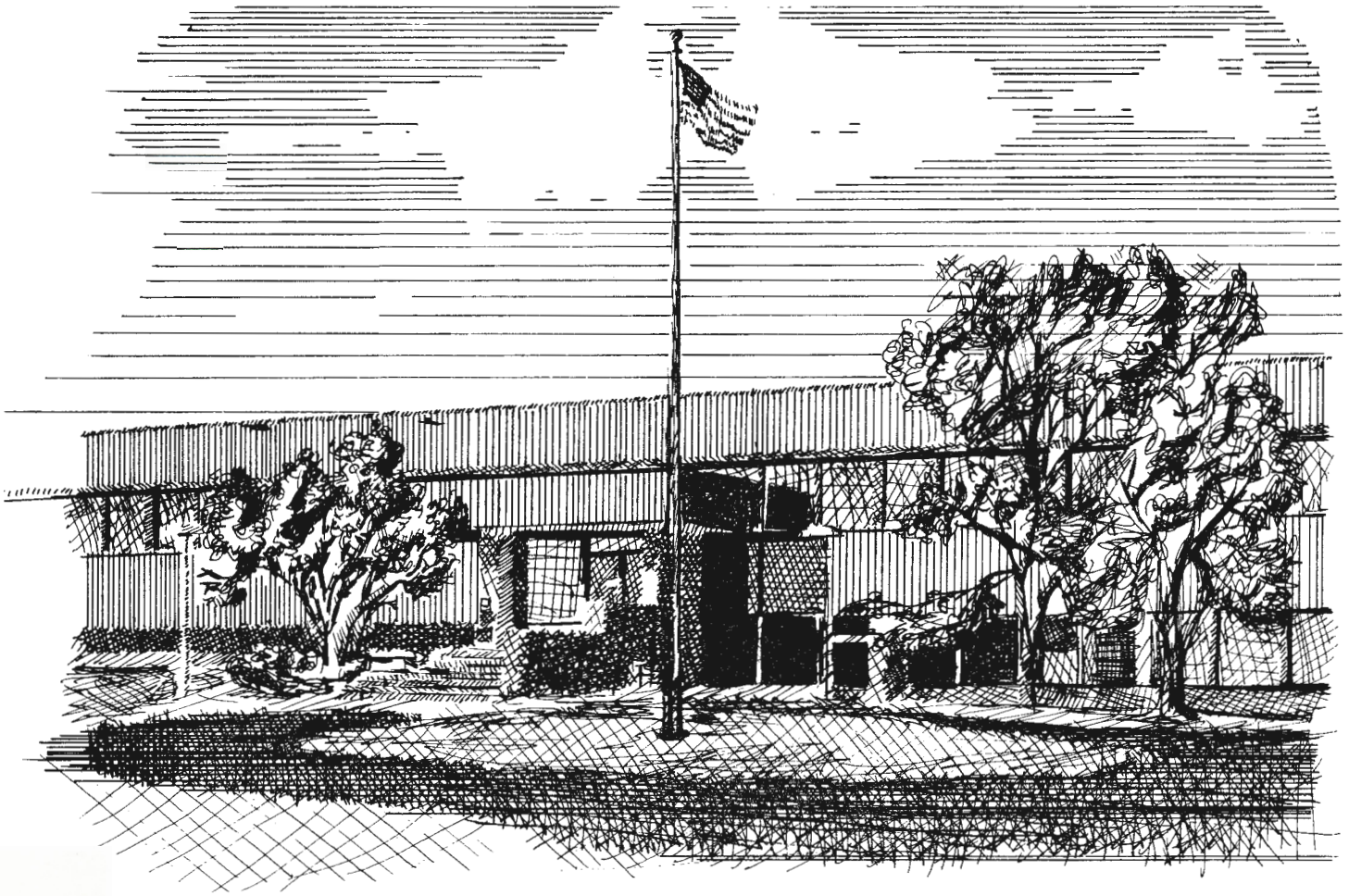
1989 ANNUAL REPORT



GEORGE W. KUHN
DRAIN COMMISSIONER

OAKLAND COUNTY, MICHIGAN

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GEORGE W. KUHN
OAKLAND COUNTY DRAIN COMMISSIONER
ONE PUBLIC WORKS DRIVE
PONTIAC, MICHIGAN 48054
858-0958
FAX # (313) 858-1066

ROBERT H. FREDERICKS
Chief Deputy Commissioner
858-0970

GLEN YRJANAINEN
Chief Engineer
858-0981

April 1, 1990

OAKLAND COUNTY
Reference Library

Honorable Board of Commissioners
County of Oakland
1200 North Telegraph Road
Pontiac, Michigan 48053

Mr. Chairman, Ladies & Gentleman:

As required by the Michigan Drain Code, I enclose the Annual Report of the operations of the Drain Commissioner's Office during the period of January 1, 1989 through December 31, 1989

The Drain Office experienced a significant increase in project activity during 1989. This activity nearly tripled from $7.5 million in 1988 to over $21 million in 1989. A new sludge waste-water treatment plant for the City of Wixom and a water supply and sewage disposal system for the City of Farmington Hills were two of our major projects during the year.

I wish to extend my thanks and appreciation to all of the members of the Board of Commissioners for the excellent cooperation and assistance extended to this office during the past year.

Most sincerely,

George W. Kuhn

George W. Kuhn

GWK:bb
enc.

GEORGE W. KUHN

Oakland County Drain Commissioner

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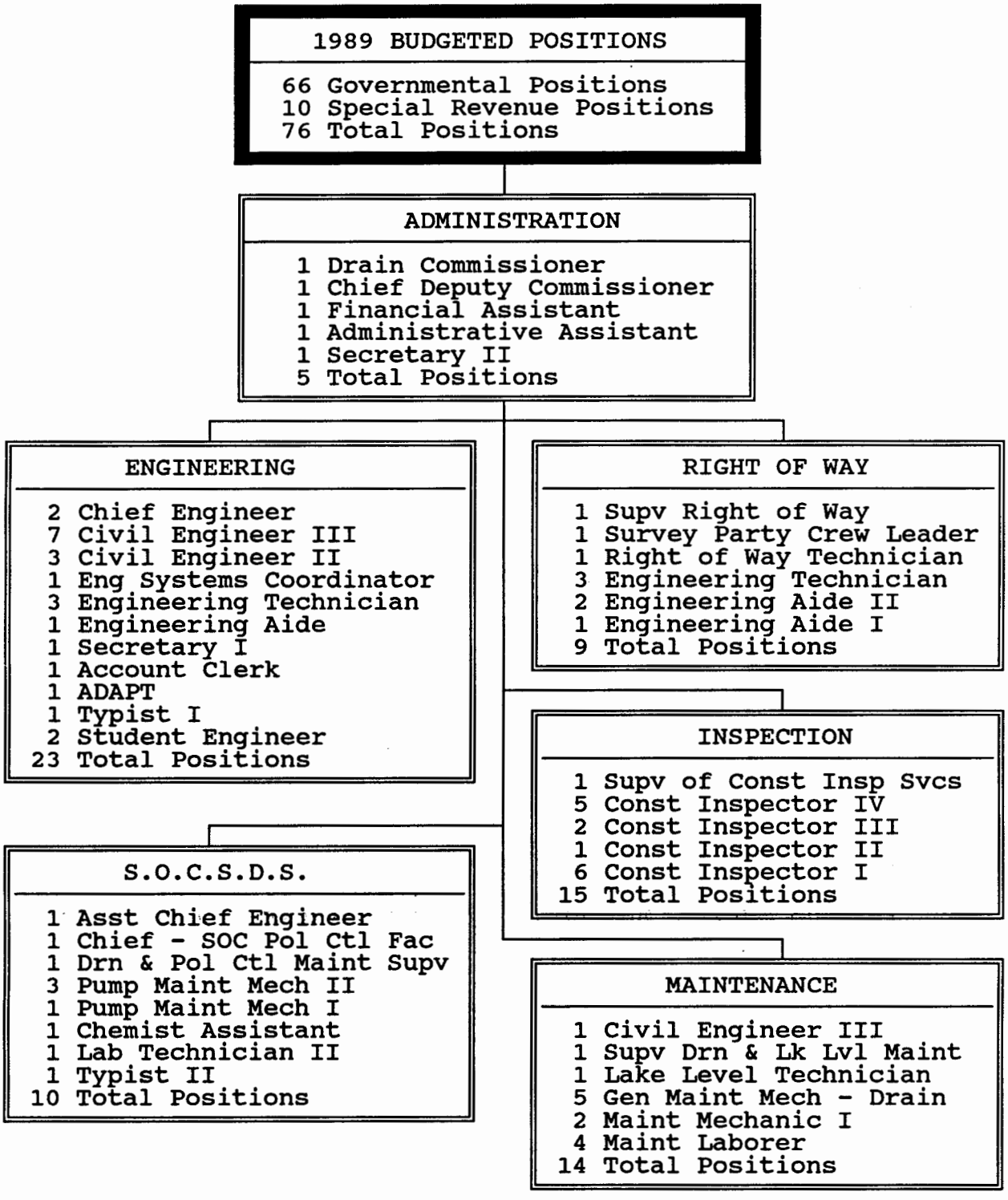
ORGANIZATION CHART

OAKLAND COUNTY DRAIN COMMISSIONER'S ORGANIZATIONAL CHART



ENGINEERING UNIT

THE COUNTY DRAIN COMMISSIONER

The County Drain Commissioner has broad powers and responsibilities under several state laws. His primary duties are described in the Michigan Drain Code, Act 40 of 1956. Additional powers and duties of the Drain Commissioner derive from the provisions of two public works acts, Act 342 of 1939 and Act 185 of 1957; the Inland Lake Level Control Act, Act 146 of 1961; the Subdivision Control Act, Act 288 of 1967; the Soil Erosion and Sedimentation Control Act, Act 347 of 1972; the Inland Lake Improvement Act, Act 345 of 1966; and various other statutes.

For purposes of organization, the functions of the Drain Commissioner as a part of Oakland County government are delegated to five operating units: Engineering, Right of Way, Inspection, Maintenance and S.O.C.S.D.S. The employees in each of these units perform a multitude of tasks necessary for the office of the County Drain Commissioner to construct and maintain a variety of public works facilities for the use of residents in all parts of Oakland County.

ENGINEERING UNIT

The staff of engineers and other technical personnel in this unit are responsible for the design and construction of public works facilities of various kinds including storm drains, sanitary sewers, water mains and lake level control structures. Two Chief Engineers, Herold J. Lueders, and Glen A. Yrjanainen, supervise the engineering functions of the unit. At the end of 1989 there were 22 employees in this unit. The following specific activities are performed in the Engineering Unit.

New Project Construction

Engineers and other support personnel administer the construction activity on new storm drains, sanitary sewers, water mains, and lake level control structures. This activity includes close cooperation with local units of government, state and federal agencies, consulting engineers, contractors and other interested parties. A summary of specific projects completed or under construction during 1989 is provided later in this report.

Plat Review

Under the provisions of the Subdivision Control Act, Act 288 of 1967, the Drain Commissioner reviews and approves all new subdivision plats in Oakland County. The review by the Drain Commissioner is made to ensure that adequate storm drainage facilities have been included in the engineering plans for the

proposed plat. In addition, the Mobile Home Commission Act, Act 419 of 1976, requires the Drain Commissioner to review and approve the outlet drainage for new mobile home developments.

In 1989, 50 preliminary plats, 53 sets of subdivision construction plans, 48 final subdivision plats, and the outlet drainage for three mobile home developments were reviewed by the engineering staff of the Drain Commissioner. A total of 24 Oakland County communities were represented in the projects reviewed. The final subdivision plats contained 10 commercial lots and 1,897 residential lots. Total revenue generated from plat review fees in 1989 was $16,100.97. Joseph P. Kozma, P.E. is the Drain Office engineer in charge of the plat review program.

Lake Level Program

Under the provisions of Act 146 of 1961, the Drain Commissioner's office participates in legal proceedings to establish and build lake level control structures for lakes in Oakland County.

Oakland County is approximately 30 miles from east to west, and 30 miles from north to south, with an area of approximately 900 square miles. For water management purposes, portions of the County are located within the basins of six rivers, the Clinton, Huron, Rouge, Flint, Shiawassee and Belle Rivers. There are 49 lakes in the County where levels have been established and assigned to the Drain Commissioner for control. The 49 lakes are in four river basins; 32 in the Clinton, 13 in the Huron, two in the Rouge, and two in the Shiawassee.

In some cases the level of more than one lake can be controlled from a single lake level control structure. A summary containing basic information about lakes under the jurisdiction of the Drain Commissioner in Oakland County appears on the two following pages of this report.

Ronald R. Karttunen, P.E. is responsible for the lake level program, which involves the operation and maintenance of 31 lake level control structures, and six lake level augmentation pumps.

Regular inspection of lake level control structures are made on a weekly basis, or more often as weather conditions may dictate. The level of each lake is read and recorded, and adjustments to the structures are made throughout the year. Every effort is made to maintain the established legal level. A good illustration of this is shown on page 7 of this report in the form of Sylvan-Otter Lake's 1989 hydrograph. These hydrographs are available for each lake level system.

Regular inspection also ensures that the structures are in good operating condition, and permits scheduled maintenance and re-

SUMMARY OF OAKLAND COUNTY LAKES WITH COURT ESTABLISHED LEGAL LEVELS

	LAKE	AREA (ACRES)	YEAR ESTABLISHED	LOCATION
CLINTON RIVER BASIN				
Lakeville Lake	Lakeville*	492	1961	Addison Twp
Oxford Multi-Lakes	Mickelson	61	1973	Oxford Twp
	Squaw	29		
	Clear	32		
	Long	33		
	Cedar	15		
	Tan	58		
	Mill Pond*	2		
Waterford Multi-Lakes	Cemetery	28	1966	Independence &
	Dollar*	6		Waterford Twps
	Greens	101		
	Maceday	234		
	Lotus	169		
	Lester	22		
	Van Norman*	27		
	Upper Silver	41		
	Silver	108		
	Mohawk	35		
	Wormer	38		
	Schoolhouse	40		
	Loon*	265		
	Williams*	175		
Oakland-Woodhull Lakes	Woodhull	135	1958	Waterford Twp
	Oakland*	235		
Watkins Lake	Watkins* (pump)	229	1960	Waterford Twp
Cass Lake	Cass*	1280	1969	Waterford Twp & Keego Harbor
Orchard Lake	Orchard* (pump)	850	1966	Orchard Lake & W Blmfld Twp
Indianwood	Indianwood*	122	1986	Orion Twp
Sylvan-Otter	Otter	81	1986	Waterford Twp,
	Sylvan	458		Pontiac,
	Dawson Mill Pond*	8		Sylvan Lake & Keego Harbor
Crystal Lake	Crystal*	51	1989	Pontiac

* Lake level structures are located at the outlet of the lakes marked with an asterisk

SUMMARY OF OAKLAND COUNTY LAKES WITH COURT ESTABLISHED LEGAL LEVELS

	LAKE	AREA (ACRES)	YEAR ESTABLISHED	LOCATION
HURON RIVER BASIN				
Big Lake	Big*	220	1967	Springfld Twp
White Lake	White* (pump)	540	1965	White Lake & Highland Twps
Duck Lake	Duck* (pump)	307	1962	Highland Twp
Pontiac Lake	Pontiac*	615	1944	White Lake Twp
Oxbow Lake	Oxbow*	286	1963	White Lake Twp
Cedar Island Lake	Cedar Island*	169	1964	White Lake Twp
Fox Lake	Fox*	39	1963	Commerce Twp
Union Lake	Union*	465	1949	Commerce Twp
Long Lake	Long* (pump)	175	1964	Commerce Twp
Upper Straits Lake	Upper Straits*	378	1964	W Blmfld Twp
Middle & Lower Straits Lake	Middle Straits	194	1963	Commerce Twp
	Lower Straits* (pump)	220		
Commerce Lake	Commerce*	262	1964	Commerce Twp
ROUGE RIVER BASIN				
Walled & Shawood Lakes	Shawood	45	1984	Novi & Walled Lake
	Walled*	670		
SHIAWASSEE RIVER BASIN				
Bevins Lake	Bevins*	31	1964	Holly Twp
Tipsico Lake	Tipsico*	301	1954	Rose Twp

* Lake level structures are located at the outlet of the lakes marked with an asterisk.

LAKE LEVEL EXPENDITURE SUMMARY
FOR THE YEAR 1989

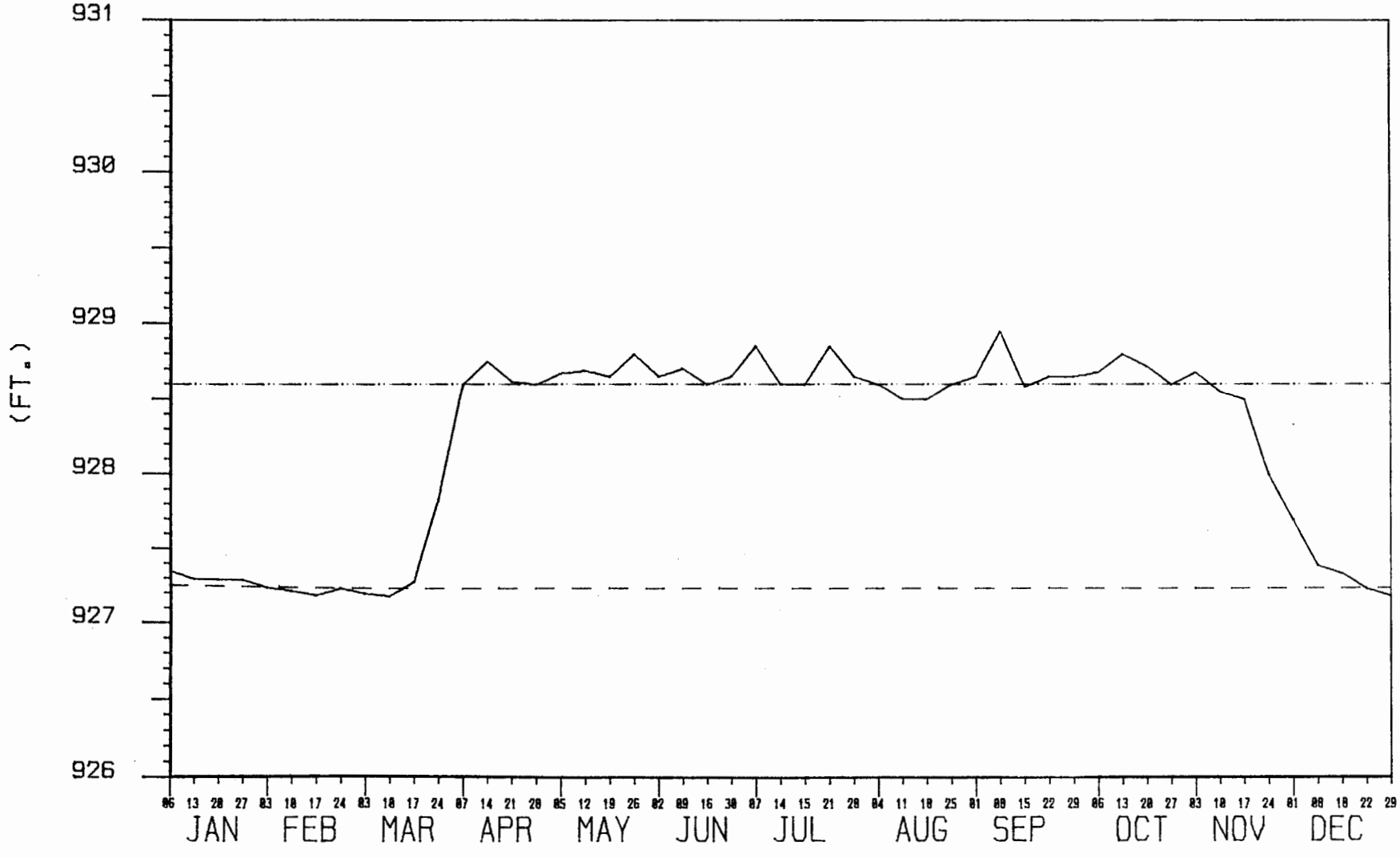
LAKE LEVEL	SALARIES & FRINGES	MATERIAL & SUPPLIES	MISC CHARGES	MILEAGE CHARGES	INSURANCE	ELECTRICAL SERVICE	CONTRACTED SERVICES	TOTAL EXPENDITURES
BEVINS	$999.15	$13.94	$71.24	$978.95	$110.36	$0.00	$924.00	$3,097.64
BIG	$1,224.16	$12.74	$253.80	$956.25	$143.04	$0.00	$882.00	$3,471.99
BUNNY RUN DAM	$2,704.24	$5.88	$78.40	$390.90	$0.00	$0.00	$10,300.00	$13,479.42
CASS	$6,504.82	$183.63	$113.70	$967.15	$1,001.37	$0.00	$882.00	$9,652.67
CEDAR ISLAND	$3,280.93	$49.27	$410.35	$946.70	$298.36	$0.00	$630.00	$5,615.61
COMMERCE	$2,370.78	$77.05	$6.12	$947.60	$404.65	$0.00	$504.00	$4,310.20
DUCK	$1,848.23	$150.99	$202.93	$1,007.45	$674.41	$1,563.26	$504.00	$5,951.27
FOX	$1,852.33	$31.43	$3.74	$960.95	$237.06	$0.00	$882.00	$3,967.51
INDIANWOOD	$1,443.78	$82.54	$4.10	$306.50	$490.48	$0.00	$0.00	$2,327.40
LAKEVILLE	$1,678.67	$28.12	$4.10	$973.60	$159.41	$0.00	$0.00	$2,843.90
LONG	$1,817.52	$33.45	$8.14	$934.25	$290.20	$3,843.81	$10,080.00	$17,007.37
MID/LOWER STRAITS	$2,037.05	$17.91	$4.10	$1,013.10	$506.81	$3,260.92	$1,008.00	$7,847.89
OAKLAND-WOODHULL	$7,646.01	$880.68	$336.78	$1,005.05	$1,226.18	$0.00	$704.98	$11,799.68
ORCHARD	$4,978.08	$436.45	$6.53	$1,033.05	$437.34	$1,068.07	$6,310.00	$14,269.52
OXBOW	$3,589.11	$52.04	$24.10	$990.80	$339.25	$0.00	$1,008.00	$6,003.30
OXFORD-MULTI	$2,278.30	$139.14	$6.53	$1,034.35	$972.78	$0.00	$0.00	$4,431.10
PONTIAC	$6,680.20	$893.37	$103.61	$1,526.60	$1,218.00	$0.00	$5,840.00	$16,261.78
SCOTT	$20.10	$0.00	$4.10	$220.80	$0.00	$0.00	$0.00	$245.00
SYLVAN-OTTER	$7,229.58	$240.93	$4.10	$399.75	$1,430.55	$0.00	$800.00	$10,104.91
TIPSICO	$994.55	$10.52	$75.40	$966.15	$32.69	$0.00	$0.00	$2,079.31
UNION	$2,177.17	$37.58	$1,204.50	$991.20	$232.97	$0.00	$630.00	$5,273.42
UPPER STRAITS	$1,674.82	$160.06	$4.10	$965.80	$61.30	$0.00	$315.00	$3,181.08
WALLED & SHAWOOD	$1,651.35	$31.27	$9.34	$305.75	$396.47	$0.00	$0.00	$2,394.18
WATERFORD-MULTI	$16,505.20	$262.66	$6.40	$992.00	$3,327.05	$0.00	$504.00	$21,597.31
WATKINS	$2,227.47	$56.28	$16.37	$927.95	$163.50	$4,023.21	$756.00	$8,170.78
WHITE	$1,469.98	$24.35	$19.85	$968.45	$1,091.31	$7,014.80	$483.00	$11,071.74
TOTAL	$86,883.58	$3,912.28	$2,982.43	$22,711.10	$15,245.54	$20,774.07	$43,946.98	$196,455.98

OAKLAND COUNTY
DRAIN COMMISSIONER

Note: Hydrograph derived from lake level elevation record readings, U.S.G.S. datum.

SYLVAN LAKE

HYDROGRAPH for 1989



pairs when needed. In order to effectively operate and maintain the lake level structures, two Lake Level Control Technicians are assigned to monitor the lake levels.

Special assessment districts were established by the Circuit Court for each project and, as necessary, annual assessment rolls are prepared to reimburse the cost of necessary maintenance expenditures. During 1989, maintenance work was performed on 24 lake level projects, and the Board of Commissioners approved assessments in the amount of $238,211.96 to assess property for the maintenance costs on these Lake Level Control Projects. In addition to these assessments, two lake level districts were assessed in the amount of $71,915.43 for a portion of the cost of construction of the Price Dam, and the Indianwood Dam.

Also in 1989, pursuant to Section 24 of the Inland Lake Level Act, the Drain Office engineering staff completed the triennial safety inspection for each of the lake level control structures that are under the control of the Drain Commissioner.

Soil Erosion and Sedimentation Control

The Drain Commissioner's Office is the designated enforcing agency for 34 municipalities in Oakland County for the Soil Erosion and Sedimentation Control Act.

In 1989, 811 applications for soil erosion permits were received by this office. The total revenue received in 1989 from soil erosion permit fees was $182,290.39, which exceeded the direct payroll cost of $156,731.76 for the employees assigned to the Soil Erosion Program. The net gain was $28,524.91 with $30,239.08 still to be paid for 1989 permits.

As in previous years, the Drain Commissioner continued informal instructional meetings with builders, developers, engineers, architects and property owners to improve soil erosion mitigation efforts in Oakland County.

The Erosion Control Manual was updated in 1989. It will be ready for distribution in February, 1990. This is the 3rd edition of the manual.

Ronald R. Karttunen, P.E. is in charge of the Drain Commissioner's Soil Erosion & Sedimentation Control program. During the year, one Engineer and one Inspector passed the course and examination given by the DNR and received their State Certification.

Construction Permits

The Drain Commissioner, under provisions of the Drain Code, requires that a permit be obtained before making connections to, or doing work affecting, a County drain. The permit program is under the direction of Robert F. Smith, an Engineering Technician.

During 1989 a total of 173 permits were issued for work items affecting County and Inter-County Drains. The number of permits does not directly reflect the extent of construction or modification of the affected drains. A single permit may involve only a single connection to a drain or many different direct points of connection or other involvement.

In most cases before a permit is issued, two sets of construction plans are submitted for review. Requests for a connection to a drain may be submitted by public agencies, engineering firms, private property owners or contractors retained by others to construct particular facilities. All plans submitted for review must conform to the engineering design standards that have been developed by the Drain Commissioner's office to protect the integrity and usefulness of existing facilities.
At the time of construction of any work for which a permit has been issued, an inspection is made to assure that the job is done properly and in accordance with the approved engineering plans. A fee, or fee and deposit, is charged to offset the cost of this inspection.

Review of Lateral Connections to the S.O.C.S.D.S.

All connections into any sewer that is tributary to the Southeastern Oakland County Sewage Disposal System are required to be first reviewed by the Drain Commissioner prior to being submitted to the Michigan Department of Natural Resources. This review helps protect established Drainage Districts and allows a record to be kept of all facilities outletting into County trunk lines, as well as assuring that proper and approved construction standards are used on new connections.

The Drain Commissioner works closely with local units of government. All plans sent to the Drain Office for review are transmitted through the municipality's engineer or Engineering Department, to ensure that sewer lines conform to the local community master plan for sewer service. During 1989 the Engineering Unit received and reviewed 19 sets of sanitary and combined sewer plans for facilities that will outlet into the Southeastern Oakland County Sewage Disposal System.

RIGHT OF WAY UNIT

RIGHT OF WAY

The Oakland County Drain Commissioner employs a trained and experienced staff of nine full time people, plus several part time people in this unit supervised by James W. Isaacs, Jr., R.L.S.

The primary purpose of this unit is the acquisition of easements for the construction of storm drains, sanitary sewer systems and water supply systems. The easements for these projects are obtained by contacting individual property owners. In order to obtain an easement, it is necessary to negotiate an acceptable agreement with the property owner. This process can be slow and difficult. It may be necessary to make several contacts with each owner, or in some cases with multiple owners. Easements are either permanent (land upon which facilities are located) or temporary (land required for use during construction only). Upon completion of a project, temporary easements revert to the owner, while permanent easements remain under the control of the County or the Drainage District.

Another important function of the Right-of-Way unit is to purchase property, in fee, for such things as pump station sites, retention ponds or other areas where large easements are required. Property may also be purchased for additional road Right-of-Way and later deeded to the local municipality.

The Right of Way staff becomes involved early in the planning stage of projects. It is necessay to accommodate possible route changes, land and soil conditions, landscaping, and the desires of the public. Any or all of these factors may affect the cost of a project. Staff members work closely with the engineer assigned to each project and make recommendations to help control or reduce costs.

Once the route and basic design of a project are determined, easement documents must be prepared to cover the area required for construction. A title search is necessary to determine the legal owners of record and all parties having an interest in the land, i.e., mortgage holders, land contract purchasers, etc. In many cases old records have to be researched, which can be both difficult and time consuming.

The easement description is written by calculating the exact location of the facility which will be constructed on private land. The description must be precise as it will become part of a recorded title document. After the easement documents are prepared, they are assigned to a Right of Way field agent who will contact the property owner. All signed easement documents are recorded at the Oakland County Register of Deeds.

When an easement cannot be obtained from a property owner, it is necessary to file a condemnation action in Circuit Court under the Uniform Condemnation Act, Act 87 of 1980. Right of Way staff works closely with the Oakland County Corporation Counsel or outside legal counsel in filing a condemnation action. In a condemnation proceeding, the Court, with the assistance of expert appraisers, awards the requested easement to the County and awards the property owners a sum of money deemed to represent the diminution in value to the property caused by the easement.

During 1989, approximately 1000 easement parcels were title searched, written and appraised by the Right of Way Staff. A total of 455 easement parcels were acquired.

During 1989 the Right of Way Unit began a program to record publicly all existing drain easements previously held on file only in the Drain Commissioner's Office. This project may involve thousands of easements and take several years to complete.

INSPECTION UNIT

INSPECTION UNIT

The Oakland County Drain Commissioner employs trained inspection personnel to inspect drain, sewer and water projects. At the end of 1989 there were fourteen employees in the Inspection Unit. The supervisor of the Inspection Unit is Edward T. Micol who schedules and coordinates all activities of the unit, and provides in-the-field assistance to individual inspectors. During each project assignment the individual inspector reports directly to the engineer responsible for the project.

The inspector insures that each facility is constructed in accordance with the plans and specifications, with particular attention paid to backfill material, proper compaction, and workmanship. Careful observation of the quality and proper placement of construction materials such as pipe, concrete and reinforcing steel in underground lines, pump stations and other structures are also important duties of the inspector.

The Drain Commissioner also strives to maintain good public relations with members of the public affected by the construction of various projects. Necessary services, such as mail delivery and garbage collection, and prompt restoration of access to private property, during and after construction, are expedited to reduce the inconvenience to the public.

Inspectors use radio and telephone communication with the office and local communities during working hours so that any complaints or inquiries or construction-related problems can be handled as quickly as possible.

Daily inspection reports and a log of the progress of construction are maintained by the inspector on each project. Daily records permit proper restoration of the construction site, and also assure that correct payment will be made to the contractors on the project.

Inspection staff also videotapes future construction sites and routes. Particular care is taken with easement areas where possible problems can be anticipated or where difficult types of restoration work will be needed. After construction, the video tapes are available as needed during restoration work, and can be used to resolve differences regarding the actual conditions that existed before construction. The video record is valuable to discourage litigation because a visual review of the prior condition of all property is possible.

An important responsibility of the inspector on each project is the preparation of an "as-built" plan, which is a plan that shows exactly how the project was constructed in the field, with dimensions identifying the location of all underground structures.

Future surface access for additional installations or service is thereby enhanced at a lower cost with a minimum of disturbance to the existing facility.

The Inspection Unit is responsible for the field inspection portion of the Soil Erosion and Sedimentation Control program, and meets with municipalities and private citizens to promote a reasonable and effective soil erosion policy in an effort to reduce the pollution of lakes and streams in Oakland County. The soil erosion inspection program is supervised by Dan MacLennan.

Inspection Staff is also responsible for inspecting connections and other involvements with county drains throughout Oakland County. The inspector is present to insure that the integrity of the existing system is maintained, and that proper compliance with state and local regulations is observed.

MAINTENANCE UNIT

MAINTENANCE UNIT

The Oakland County Drain Commissioner is responsible for the regular maintenance of established county storm drains located throughout Oakland County. The Drain Office engineer in charge of the Maintenance Unit is George A. Bondi. There were thirteen employees in this unit at the end of 1989. Maintenance personnel provide a wide variety of maintenance and repair services. Primary work includes the inspection and maintenance of approximately 600 miles of established county drainage and combined storm and sanitary systems. In addition, lake level control structures used in the regulation, operation and control of the legal levels of 49 Oakland County lakes are maintained by this unit.

In the performance of these functions, personnel use various types of vehicles and construction equipment, including basic and specialized hand and power tools and certain necessary safety equipment. Inventory, repair and proper care of these tools and equipment is a function of the Maintenance Unit.

Drain Inspection and Maintenance

Drains constructed prior to 1956 were financed by special assessment against the property served by the drain. Inspection and Maintenance charges for these drains are assessed against the special assessment district established when the drain was constructed. In 1989, the Board of Commissioners approved assessments in the amount of $51,171.43 to assess property for the inspection and maintenance costs of Chapter 4 Drains.

Routine inspections are made periodically on all drainage systems. Once inspected the necessary repairs are performed. This preventive maintenance system assures reliable drainage to the residents of Oakland County and avoids costly drain failures.

Periodic maintenance activities include removing roots, silt and other debris from enclosed drains; repairing structures that have failed or have been damaged; rehabilitating open drains by removing brush, debris, shoals and silt; cleaning and maintaining manholes and catch basins; and inspection and cleaning of diversion gates, meter chambers and outfall structures. During 1989 general drain maintenance was performed on 49 Chapter 20 drains, one Chapter 21 drain, 48 Chapter 4 drains and 12 Chapter 18 drains.

Maintenance of Lake Level Structures

The Maintenance Unit also maintains lake level control structures including dike repair, painting and repair of structures, repair of gates, and landscape maintenance. During 1989 maintenance was

performed at 27 lake level control locations.

Equipment

In order to increase efficiency while maintaining personnel at a constant level, the Maintenance Unit employs specialized power equipment.

The single most important piece of equipment is the Vactor Jet. The Vactor works with water pressure and vacuum to clean out storm and sanitary sewers. It is especially efficient in cleaning catch basins, manholes and sewer lines of 48-inch and lesser diameter pipe. By using the Vactor, more work can be done with a two-man crew than formerly could be done with hand equipment and substantially more manpower. It has enabled the Maintenance Unit to clean drains and sewers on a regular schedule. The result is decreased cost per job, and increased service to the public.

The Drain Commissioner employs the necessary safety equipment needed to meet OSHA and MIOSHA standards as well as the hazards of the particular drain maintenance work.

Rain Gauge Operations

There are 24 rain gauges located throughout Oakland County. Drain maintenance personnel install, maintain and repair rain gauges in cooperation with the U. S. Department of Agriculture Weather Service Office. Supplies are distributed to the various stations and recorded data is collected and processed.

Inter-Departmental Services

The Drain Commissioner also cooperates with other County departments to provide specialized personnel and/or equipment as required. By lending personnel and equipment at minimal rates, other County departments were able to reduce their costs to complete specific maintenance assignments. The Department of Facilities and Operations, Oakland-Pontiac Airport, Water and Sewer Engineering, Parks and Recreation, and the Oakland County Employees Credit Union utilized these available maintenance services during 1989.

SOUTHEASTERN OAKLAND COUNTY SEWAGE DISPOSAL SYSTEM

SOUTHEASTERN OAKLAND COUNTY SEWAGE DISPOSAL SYSTEM

The District

The Southeastern Oakland County Sewage Disposal System (S.O.C.S.D.S.) serves a district of approximately 46,000 acres and provides sewer service to all of the areas within the Cities of Berkley, Clawson, Ferndale, Hazel Park, Huntington Woods, Madison Heights, Oak Park, Pleasant Ridge, Royal Oak, and the Township of Royal Oak. Part of the area within the Cities of Birmingham, Southfield, Troy, and the Village of Beverly Hills also receive sewer service from the S.O.C.S.D.S. Of the 46,000 acres served, approximately 24,385 acres are served by combined sewers, and the remaining 21,615 acres, primarily in the Cities of Troy and Madison Heights, are served by separated sewer systems.

The Pollution Control Facility - Background

Prior to 1974 the Twelve Towns Relief Drains system collected combined sewage from the district and delivered it to the Dequindre Interceptor at the rate of 118 cubic feet per second. When the total flow exceeded 118 cubic feet per second, the excess was stored in the Twelve Towns system up to a retention capacity of 90 acre/feet. When a storm event occurred of such magnitude that the storage capacity of the Twelve Towns Relief system was exceeded, the excess combined sewage would spill into the Red Run Drain. Overflows occurred approximately 25 times every year and were causing pollution of the Red Run Drain. The Red Run Drain is a large, open inter-county Chapter 21 drain, approximately seven miles in length, flowing east from Twelve Mile and Stephenson Highway through Macomb County until it outlets into the Clinton River.

To mitigate this pollution of the Red Run Drain and the Clinton River, the Drain Commissioner as agent for the County of Oakland constructed the Pollution Control Facility, a storage facility 65 feet wide and approximately two miles long with a capacity of 190 acre/feet, which now receives overflows from the Twelve Towns Relief System. With this additional facility the storage capacity of the district has been increased to 280 acre/feet of combined sewage.

After a storm event, flows of combined sewage retained in the storage basin are pumped into the Dequindre Interceptor up to a capacity of 260 cubic feet per second. Only when the storage capacity of both the Twelve Towns Drain and the Pollution Control Facility are exceeded, will a spill occur to the Red Run Drain. Operators of the Pollution Control Facility can anticipate when such a spill is going to occur. With this knowledge, chlorine is pumped into the combined sewage spilling into the Pollution

Control Facility to kill bacteria so that the quality of effluent spilling into the Red Run Drain meets standards established by the Michigan Water Resources Commission.

Operations - 1989

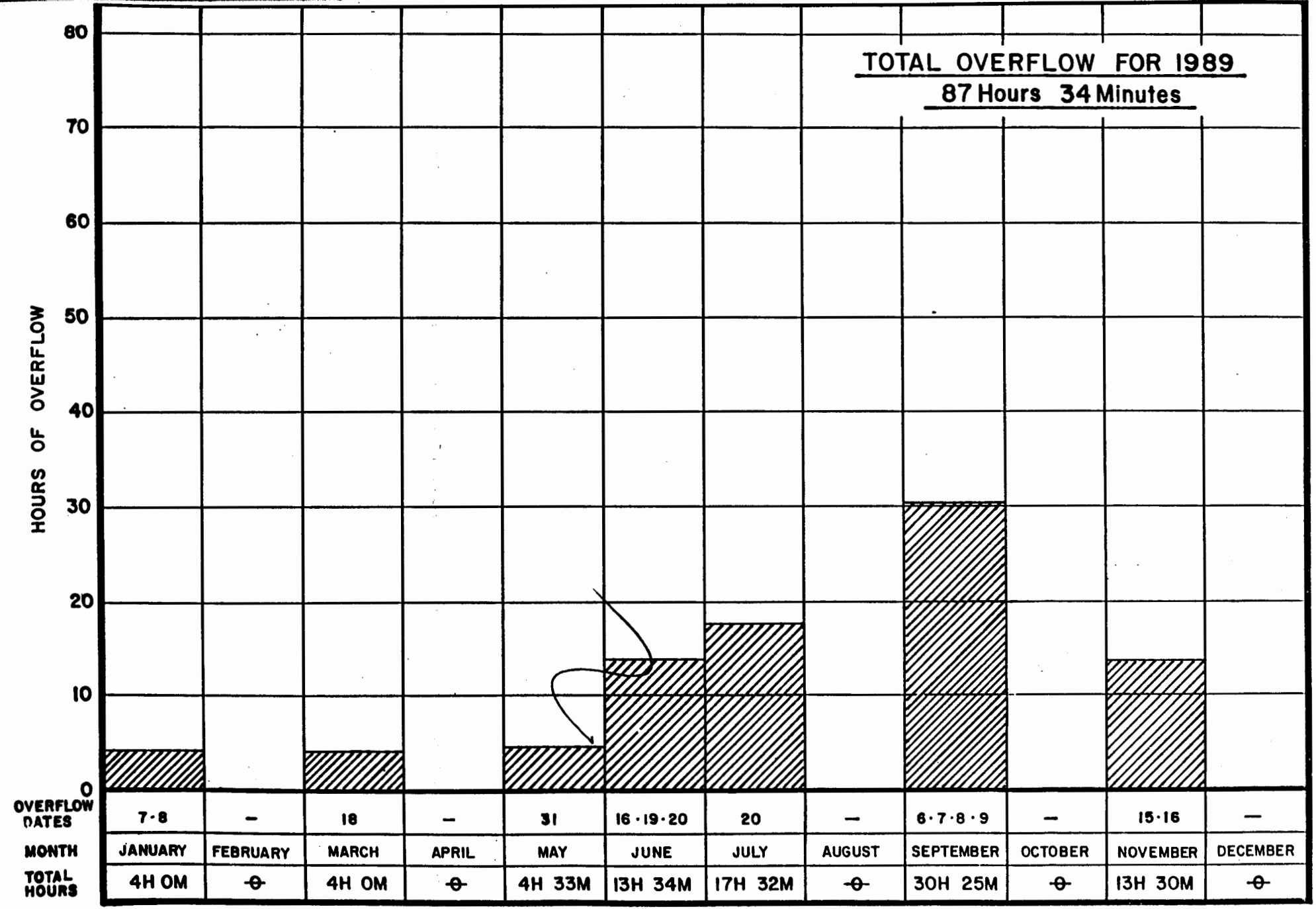
The Drain Commissioner currently employs nine people to maintain and operate the S.O.C.S.D.S. under the direction of William E. Klockow, P.E.

Laboratory staff collect and test samples to continually monitor contributors to the sewer system. The purpose of the monitoring program is to test sewage effluent from industries at designated locations so as to limit the users of the system to specific parameters of sewage strengths. The City of Detroit is notified of the results of these tests, and if a violation occurs the industry violating the sewage ordinance is notified. During 1989 approximately 20,000 analyses were performed on more than 4,000 samples collected within the district. Through these efforts the district has been able to control the strength of the effluent entering the system and later treated by the City of Detroit.

Field staff maintain and operate the Pollution Control Facility. Responsibilities include the operation of the pump station housing six dewatering pumps, which pump combined sewage from the Pollution Control Facility into the Dequindre Interceptor. Once the Pollution Control Facility has been pumped dry, a flushing system is activated to wash down the walls and floor of the Pollution Control Basin. After flushing, employees enter the Pollution Control Basin and remove any remaining debris.

During all of 1989 there were only 23 spills from the Twelve Towns system to the Pollution Control Facility, of which 15 were retained in the basin with no spill to the Red Run Drain. The remaining 8 spills were chlorinated before spilling to the Red Run Drain. The total overflows to the Red Run Drain were limited to a total period of only 87 hours and 34 minutes for the year. The total volume of flow spilled was approximately 137,430,000 cubic feet or approximately 1028 million gallons.

S.O.C.S.D.S. employees also operate and maintain the Red Run Drain, the outlet water course for the Pollution Control Facility, which begins at Thirteen Mile and Dequindre Road and runs northeasterly through Macomb County for approximately seven miles where it outlets into the Clinton River. This open water course is subject to erosion and shoaling. Funding for maintenance activities on the Red Run Drain is provided by assessments against the Chapter 21 inter-county drainage district for the Red Run Drain.



	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
OVERFLOW DATES	7·8	–	18	–	31	16·19·20	20	–	6·7·8·9	–	15·16	–
TOTAL HOURS	4H 0M	-0-	4H 0M	-0-	4H 33M	13H 34M	17H 32M	-0-	30H 25M	-0-	13H 30M	-0-

SOUTHEASTERN OAKLAND COUNTY SEWAGE DISPOSAL SYSTEM
JANUARY 1, 1989 THRU DECEMBER 31, 1989

DRAIN CONSTRUCTION COMPLETED IN 1988

DRAINS COMPLETED IN 1989

Beechmont Drain

On December 17, 1987, the Keego Harbor City Council adopted a petition to construct a new storm drain to alleviate flooding problems.

At a public hearing of the Drainage Board held on February 23, 1988, there were no objections to the project. The project was declared practicable and necessary for the public health and the Final Order of Determination was authorized and executed. Rowe Engineering, Inc., the consulting engineer for the City of Keego Harbor, was employed to prepare bid plans and specifications.

The project consists of a submersible duplex pumping station and approximately 700 lineal feet of 36" through 24" storm drain which runs along Beechmont Street from Wall Street to Schroeder. In 1988, final engineering plans were completed and permit applications were filed with governing agencies. The project is being financed with surplus construction funds from completed City of Keego Harbor water and sewer projects. Philip Sanzica, P.E. was designated as the project engineer.

Construction bids were received on July 12, 1988 and on July 26, 1988 the construction contract was awarded to the low bidder P & R Contracting, Inc. for their low bid in the amount of $260,793.00. The Contractor began laying pipe in the Fall of 1988 and was substantially complete by December 1988. The submersible pumping station and final restoration were completed in the spring of 1989.

Borden Drain

On June 23, 1987, a petition for the establishment of a drain was filed by the City of Rochester Hills with the Oakland County Drain Commissioner. On July 14, 1987, the first meeting of the Drainage Board was held and the project was formally named the Borden Drain.

On September 1, 1987, a public hearing was held, and no objections to the project were made. The project was declared practicable and necessary for the public health and the Final Order of Determination was authorized and executed. Hubbell, Roth and Clark, Inc. was employed as Consulting Engineer and Dickinson, Wright, Moon, VanDusen and Freeman were employed as Bond counsel. William E. Klockow, Assistant Chief Engineer, was selected as the Drain Office project engineer.

The cost of the project was financed by the sale of Oakland County drain bonds, in the amount of $345,000, for which the City of Rochester Hills pledged its full faith and credit for repayment. The bonds were sold on November 15, 1988, at an average effective interest rate of 6.65% over ten years.

Plans and specifications were received and approved on June 28, 1988. The drain is entirely located on property owned by the City of Rochester Hills where a new golf course, already under contract, was being constructed. To reduce the risk of damage by a third party contractor to the golf course construction, a contract was approved between the City of Rochester Hills and Golf Concepts to construct the necessary drainage structures.

Construction began in August of 1988, only to be halted due to problems concerning the Consumers Power easement which had conditions unacceptable to this office. On August 16, 1988, a condemnation resolution was adopted by the Drainage Board.

Construction of the drain was completed in 1989.

Karas Drain

A petition for the establishment of a drain was filed by the City of Rochester Hills with the Oakland County Drain Commissioner on November 6, 1986.

The first meeting of the Drainage Board was held on November 18, 1986. At this meeting, the project was tentatively determined to be practical and necessary for the public health and was formally named the Karas Drain.

At a meeting held on January 6, 1987, the Drainage Board adopted the Final Order of Determination, Hubbell, Roth and Clark, Inc. was employed as Consulting Engineer and Dickinson, Wright, Moon, VanDusen and Freeman was named Bond Counsel for the project. William E. Klockow, Assistant Chief Engineer, was selected as the Drain Office project engineer.

Engineering plans for the portion of the Karas Drain which traverses the Lutheran High School were prepared and construction followed in September of 1987. The City of Rochester Hills made payment to the Contractor for this early construction and were to be reimbursed by the Drainage District once bonds were sold.

On June 28, 1988, plans and specifications for the balance of the project were received, adopted and approved. The cost estimate submitted with the plans totaled $1,146,788. The project was advertised and construction bids were received with the contract being awarded to the low bidder, Roz-L Equipment Company, Inc., in the amount of $488,000 on August 16, 1988.

The cost of the project was financed by the sale of Oakland County drain bonds, in the amount of $875,000, for which the City of Rochester Hills pledged its full faith and credit for repayment. The bonds were sold on November 15, 1988, at an average effective interest rate of 6.64% over ten years.

By the end of 1988, 70% of the Karas Drain had been completed. The balance of construction was essentially completed in 1989. However, the contractor experienced some financial problems and did not finish the restoration as expected. We expect the work to be completed in 1990.

Fredericks Drain

On March 24, 1986 the Troy City Council adopted a petition for drainage improvements and extensions to the Page and Lanni Drains in Sections 9, 10, 15 and 16. The petition was received by this office on March 31, 1986, and the first meeting of the Drainage Board was held on April 8, 1986. The project was named the Fredericks Drain, and Donald L. Mills, P.E., was selected as the project engineer for the Drain Office.

At a meeting held May 22, 1986 the project was declared practical and necessary for the public health, the Final Order of Determination was adopted, and Hubbell, Roth & Clark, Inc. was employed as consulting engineer.

Phase I of the project originates at the westerly terminus of the Page Drain and runs westerly along the southerly limits of the City's D.P.W. yard to the existing Houghten Drain. Work was essentially complete and the project placed into service by the Fall of 1987.

Phase II of the project originates at the Lanni Drain at Rochester and Long Lake Roads, and runs westerly along Long Lake Road to I-75. Phase II consists of approximately 6,600 Lineal Feet of 54" to 90" Diameter pipe along with improvements to two existing Retention Basins. Construction bids were received on February 28, 1989 and the contract was awarded to the low bidder, L. D'Agostini & Sons, Inc. in the amount of $1,056,712.04. Actual construction began in April 1989 and was completed in the Fall of 1989. Minor cleanup and restoration remain to be completed in the Spring of 1990.

The Fredericks Drain was financed with surplus construction funds and completed drain projects under the provisions of Act No. 165 of the Public Acts of 1984.

Kemp Drain

In response to a request from West Bloomfield Township, repairs and improvements to the Kemp Drain, which was originally constructed in 1925, were undertaken in 1989. The project was necessary due to recent flooding on the Shenandoah Golf Course and neighboring properties in section 21 of West Bloomfield Township, The project included the removal of a section of the existing Kemp Drain on the golf course, and the installation of approximately 550 lineal feet of 57"x38" and 71"x47" corrugated metal arch pipe.

Construction bids were received on January 24, 1989, with the contract being awarded to the low bidder, Karl's Excavating, Inc. of Mt. Clemens, Michigan in the amount of $52,895.00. Construction began in February and was completed in May. The project was financed with surplus funds from completed West Bloomfield Township drain projects.

DRAINS UNDER CONSTRUCTION

Nelson Drain

A petition for certain drain improvements along the existing Gibson and Renshaw Drains in the northeastern part of the City of Troy was filed with the Drain Commissioner on May 7, 1984. At the first Drainage Board meeting held May 23, 1984, the project was named the Nelson Drain, and the public hearing on necessity was scheduled for July 11, 1984. No objections were received at the hearing, and as a result, the project was determined practicable and necessary for the public health and the Final Order of Determination was adopted. Mr. Donald L. Mills, P.E. was designated as the project engineer for the Nelson Drain, and Hubbell, Roth & Clark, Inc. was employed as consulting engineer.

Phase I of the Nelson Drain, consisting of a 25 acre Retention Basin on the east side of Rochester Road between Long Lake and Square Lake Roads, was completed in 1986.

Phase II of the project consists of Channel Improvements and widening from Dequindre Road westerly, and also immediately north and south of Long Lake Road. Construction bids were received on February 25, 1988, and the contract was awarded to the low bidder, L. D'Agostini & Sons, Inc., in the amount of $642,198.00. Actual construction began in May 1988 and was completed in the Fall of 1988.

During 1989, additional Channel Improvements at the John R. and Rochester Road crossing of the Nelson Drain were added to the contract by Work Order by the Drainage Board. It is anticipated that this work, totaling $47,000.00, will be completed by L. D'Agostini & Sons, Inc. in the Spring of 1990.

The Nelson Drain was financed with surplus construction funds from completed drain projects under the provisions of Act No. 165 of the Public Acts of 1984.

SEWER & WATER CONSTRUCTION COMPLETED IN 1988

Walled Lake Water Supply System Ext No.1

The City of Walled Lake requested Oakland County to proceed with the development of a project to extend the City of Detroit's water into the City of Walled Lake. In addition to approximately 5600 L.F. of 16" and 12" diameter transmission main, the project consists of a metered connection to the existing D.W.S.D. main at the intersection of 14 Mile Road and Decker Road and a closed connection between the existing Walled Lake and Commerce Township systems on Maple Road east of Decker.

An agreement between the City of Walled Lake and the County of Oakland was approved by the City Council on November 17, 1987, and by the Oakland County Board of Commissioners on December 10, 1987. The firm of McNamee, Porter & Seeley was retained to design the system and prepare the construction plans and specifications. Dickinson, Wright, Moon, VanDusen and Freeman was employed as Bond Counsel and Bendzinski & Company, Inc. was named Financial Consultant for the project. Donald L. Mills, P.E. was designated the Drain Office project engineer.

The entire cost of the project is to be financed by the sale of Oakland County bonds for which the City of Walled Lake pledged its full faith and credit. The bonds were sold on December 15, 1988, in the amount of $815,000, at the effective net interest rate of 7.21% over 15 years.

Construction bids were received on August 25, 1988 and the contract was awarded to the low bidder, ROZ-L Equipment Co., Inc., in the amount of $510,000.00. Actual construction began in October of 1988 was completed in the Fall of 1989. Minor cleanup and restoration remain to be completed in the Spring of 1990.

Coleman-Friedman Extension Improvements

In December, 1987, the Drain Commissioner received a request from the Charter Township of Waterford to remove infiltration and inflow from the sanitary sewer system in the Coleman-Friedman Subdivision located near the intersection of Cass Lake Road and Pontiac Lake Road, based on an engineering study prepared by Johnson and Anderson, Inc., Waterford Township's consulting engineer. The project was constructed utilizing surplus funds currently on deposit with the County.

An agreement between Waterford Township and the County of Oakland was approved by Waterford Township on January 11, 1988, and by the Oakland County Board of Commissioners on February 11, 1988. The Board also authorized the transfer of $484,000 in surplus funds from prior sewer construction to finance the work. Philip

Sanzica, P.E. was selected as the project engineer for the Coleman-Friedman Extension Improvement Project.

The consulting engineer firm of Johnson and Anderson, Inc. was retained to design the system and prepare construction plans and specifications. The system improvements consist of replacement of 2,820 lineal feet of 10" through 8" sanitary sewer and the rehabilitation of approximately 1,550 lineal feet of 8" and 10" sanitary sewers by relining using the Insituform process.

Construction bids were received on September 8, 1988 for Contract I. On September 29, 1988, the construction contract was awarded to the low bidder, Pacer Contracting Company, for the sewer replacement portion in the amount of $236,405.20. The Contractor began work in the Fall of 1988. The project was substantially complete by December of 1988 with final restoration and road resurfacing completed in the Spring of 1989.

Rehabilitation quotes were accepted on October 13, 1988 for Contract II. Insituform North, Inc. was awarded the contract in the amount of $107,210.20. The contractor began in the winter of 1988. This sewer relining project was completed by the spring of 1989, including minimal cleanup and final restoration.

SEWER AND WATER PROJECTS UNDER CONSTRUCTION

SEWER & WATER PROJECTS UNDER CONSTRUCTION

Oakland County Water Supply and Sewage Disposal System for Rochester Hills - 1988 Extensions

The City of Rochester Hills has requested Oakland County to proceed with acquiring right of way, construction and financing the above-referenced project. The total project cost is estimated at $12 million in several contracts which will be bid when plans and specifications are prepared by the consulting engineers, Hubbell Roth & Clark, Inc. The following is a summary of the Contracts to date.

Contract II
Bid November 10, 1988 at a cost of $1,570,630.00. Adamo Contracting Corporation was the successful bidder. This contract was completed in 1989 with only minor restoration items remaining to be completed in 1990.

Contract I
Bid April 27, 1989 at a cost of $521,263.00. Adamo Contracting Corporation was the successful bidder. This contract was scheduled to be completed in 1989, however supplies necessary were not delivered on time to allow the contractor to complete the work in the time provided. It is expected that the work will be completed in early 1990 with restoration work to follow.

Northwest Transmission Water Main
Bid April 27, 1989 at a cost of $1,904,065.76. D'Alessandro Construction, Inc. was the successful bidder. This contract was started in 1989 and witnessed satisfactory progress through the year. The original completion date was March 31, 1990. However, due to some construction delays and design changes, completion is anticipated in July, 1990.

Tienken Road Water Booster Station
Bid July 20, 1989 at a cost of $516,810.00. L. D'Agostini & Sons, Inc. was the successful bidder. Due to the nature of this facility it is not expected that construction will begin until 1990. Shop drawings and approvals of same were in process through 1989.

Contracts 3 & 4 are in preparation and expected to be bid in 1990. It is further expected that 3 additional contracts will be prepared for bids during 1990.

This project was financed by surplus funds held by Oakland County from prior water and sewer construction projects. When the existing surplus is exhausted, bonds will be sold to finance the remaining work.

Wixom Sewage Disposal System - Extension No. 2

An Agreement between the City of Wixom and the County of Oakland to construct a activated sludge wastewater treatment plant to treat an average of 3.0 million gallons per day was approved by the City Council on March 8, 1988. The County Board of Commissioners approved the Agreement and authorized the sale of bonds to finance the local share cost on August 4, 1988. Project development and construction was assigned to the Drain Commissioner as County Agency under the provisions of Act 342 of 1939.

The firm of Hubbell, Roth & Clark, Inc. of Bloomfield Hills, Michigan designed the entire project, prepared construction plans and specifications, and assisted in obtaining federal funding under the Public Law 92-500 Grant Program. Hubbell, Roth & Clark, Inc. will also provide Resident Engineer Inspection Services at the treatment plant site. Philip Sanzica, P.E. was designated as Project Engineer for the Wixom Sewage Disposal System - Extension No. 2 project.

Federal Funds for 55% of the grant eligible portions, plus an additional 20% for innovative technology and 20% for alternative technology will total approximately $9.5 million. Oakland County Bonds were sold on December 15, 1988, in the amount of $5.7 million, at an effective net interest rate of 7.30% over 20 years. The balance of the project funds -- $4.5 million -- were forwarded by the City of Wixom.

The project consists of an influent pumping station to lift the waste water to the aerated grit chamber and then through a Parshall Flume Flow Meter. The waste water then flows to two 1.5 million gallon aeration channels for biological treatment. The waste water will receive clarification in three 60 foot diameter circular clarifiers, and then is stored in two equalization tanks totaling 850,000 gallons. Extensive chemical treatment consists of alum feed equipment followed by parallel plate separators and sand filters to meet the stringent phosphorous limitation for this facility.

Biological solids will be thickened by Rotary Drum Thickeners before stabilization in two aerobic digesters. The digested sludge will then be stored in two 850,000 gallon above ground storage tanks. The chemical sludge may be dewatered in a Plate and Frame Filter Press if necessary for disposal to a landfill.

Three buildings will be included in the Wastewater Treatment Plant Project. An approximately 4,000 sq. ft. Administration Building will provide personnel offices and a fully equipped laboratory. A 30,000 sq. ft. two-story Treatment Building will be provided for the advanced chemical treatment and biological and chemical sludge dewatering equipment. And a 4,800 sq. ft. Utility Building will be provided for grit removal, ultraviolet disinfection, a 750 K.W. generator, electrical equipment and for mainte-

nance facilities.

The construction contract was awarded in October, 1988 to Lerner-Linden, Inc. and C. A. Hull, Inc., a joint venture, in the amount of $15,942,000.

Approximately 75% of the project, including the major structural concrete, building construction and equipment deliveries were completed in 1989. The remainder of the project, including mechanical, electrical, building finishes, and site work will be substantially completed and ready for service in 1990.

West Bloomfield Water Supply System - Section XI

West Bloomfield Township has requested Oakland County to proceed with the development of a project to complete the construction of the water transmission main along Haggerty Road northerly from Maple Road to Pontiac Trail, and easterly along Pontiac Trail to Green Lake Road in Sections 19 and 30 of the Township.

In addition to approximately 13,000 lineal feet of 20" diameter transmission main along Haggerty Road and Pontiac Trail, the project consists of a 400,000 gallon elevated storage tank to be constructed on Commerce Road east of Keith Road and a metered connection to the existing D.W.S.D. main to be built at the intersection of 14 Mile Road and Haggerty Road.

An agreement between West Bloomfield Township and the County of Oakland was approved by the Township Board on June 15, 1987, and by the Oakland County Board of Commissioners on July 23, 1987. The Township is paying the entire cost of the project, currently estimated to be $1,819,000.00, by advancing cash installments to the County.

The firm of Hubbell, Roth & Clark, Inc. was retained to design the system and prepare construction plans and specifications. Donald L. Mills, P.E. was selected as the Drain Office project engineer.

Contract No. 1 involved the construction of a 400,000 gallon elevated storage tank. Construction bids were received on October 4, 1988 and the contract was awarded to the low bidder, CBI Na-Con, Inc. in the amount of $597,500.00. Actual erection of the tank began in the Spring of 1989 and was completed in the Fall of 1989.

Contract No. 2 deals with the metered connection to the existing D.W.S.D. main. Construction plans have been completed by Hubbell, Roth & Clark, Inc. Easement acquisition is proceeding with actual construction to be underway by the Fall of 1990.

Contract No. 3 involves the construction of 13,000 L.F. of 20" diameter transmission main along Haggerty Road and Pontiac Trail.

Construction bids were received on May 17, 1989 and the Contract was awarded to the low bidder, Mago Construction Co., in the amount of $787,394.00. Actual construction began in the Fall of 1989. It is anticipated that work will be completed and the system placed into service in early 1990.

PROJECT EXPENDITURE SUMMARIES

OAKLAND COUNTY DRAIN COMMISSIONER
SUMMARY OF CONSTRUCTION EXPENDITURES
BY PROJECT FOR THE YEAR 1989

PROJECT	EXPENDITURE
DRAINS:	
FREDERICKS DRAIN	$1,052,191.44
KARAS DRAIN	$192,853.08
NELSON DRAIN	$146,520.23
BEECHMONT DRAIN	$105,562.00
IRELAND DRAIN	$103,032.02
HENRY-GRAHAM	$29,892.35
M-15 DRAIN	$29,614.42
KEEGO HARBOR DRAIN	$13,428.67
JOHNSON DRAIN	$12,639.17
CADDELL DRAIN	$11,355.16
TWELVE TOWNS RELIEF DRAIN	$10,405.54
LUEDERS DRAIN	$9,868.90
BORDEN DRAIN	$8,558.17
JOACHIM RELIEF DRAIN	$4,300.00
DOROTHY WEBB DRAIN	$2,205.17
EDWARDS RELIEF DRAIN	$50.00
TOTAL	**$1,732,476.32**
WATER:	
W BLMFLD WATER SECT XI	$1,376,927.41
WALLED LAKE WATER #1	$252,502.97
W BLMFLD WATER SECT XII	$90,807.32
AUBURN HILLS WATER #3	$64,922.65
WATERFORD WATER #3	$9,460.78
W BLMFLD WATER SECT IX	$1,160.37
TOTAL	**$1,795,781.50**
SEWER:	
WIXOM SDS #2	$11,951,790.40
ROCHESTER HILLS OCWS & SDS	$2,938,485.99
EVER/FARM SDS SEG I	$1,083,199.91
EVERGREEN/FARM SEWER	$713,688.62
WATERFORD SEWER PHASE VI	$216,225.00
WALLED LAKE/NOVI WWTP	$198,015.64
COLEMAN/FRIEDMAN SEWER	$185,152.28
MILFORD SEWER #2	$103,187.29
AMY RELIEF SEWER	$84,909.60
NORTH HURON VALLEY/ROUGE WWCS	$67,767.81
AUBURN HILLS SEWER #2	$61,008.86
EVER/FARM SDS SEG II LATHRUP VILL	$34,026.63
EVER/FARM SEWER - WALNUT LK	$12,982.54
SOCSDS	$8,853.21
W BLMFLD SEWER #2	$5,118.85
HOLLY SDS	$4,270.00
TOTAL	**$17,668,682.63**
DAMS:	
CRYSTAL LAKE DAM	**$68,915.25**
GRAND TOTAL	**$21,265,855.70**

PROJECTS UNDER DEVELOPMENT

DRAINS UNDER DEVELOPMENT

King Drain

A petition for certain drain improvements along Square Lake Road from the existing open drain crossing approximately 2,500 feet east of Livernois Road, westerly to just east of Crooks Road, was filed by the City of Troy with the Drain Commissioner on August 23, 1988. At the first drainage board meeting held September 7, 1988, the project was named the King Drain, and the public hearing on necessity was scheduled for October 25, 1988. No objections were received at the hearing and therefore the project was determined practicable and necessary for the public health and the Final Order of Determination was adopted.

The project consists of approximately 7,500 Lineal Feet of 12" through 60" diameter Storm Sewer and miscellaneous appurtenances. Construction of this project will provide storm drainage for future widening and improvements to be made to Square Lake Road, and also to the Crooks Road and I-75 overpass which is to be reconstructed at Square Lake Road by the Michigan Department of Transportation. Preliminary construction plans have been completed with easement and permit acquisition currently underway.

A short summary of other pertinent project information follows:

Consulting Engineer	-	Hubbell, Roth & Clark, Inc.
Drain Office Project Eng.	-	Donald L. Mills, P.E.
Estimated Project Cost	-	$1,400,000
Estimated Construction Start Date	-	Spring 1991

The King Drain is being financed with surplus construction funds from completed drain projects under the provisions of Act No. 165 of the Public Acts of 1984.

SEWER & WATER PROJECTS UNDER DEVELOPMENT

During 1989, there were many new water and sewer projects in various phases of preliminary engineering design and easement acquisition. A brief summary of the more significant projects follows.

Huron-Rouge Sewage Disposal System
Walled Lake-Novi Wastewater Treatment Plant 1989 Enlargement

The cities of Walled Lake and Novi have requested Oakland County to construct a new activated sludge treatment unit, a new administration building and a new blower building to house the process blowers, sludge pumps and rotary sludge thickener. The proposed improvements also include necessary site revisions to accommodate these additions and a sludge storage tank for stabilization of sludge. Listed below are other pertinent facts concerning this project which is scheduled for construction in 1990.

Consulting Engineer - McNamee, Porter and Seeley
Estimated Bid Date - August 1990
Drain Office Project Eng. - Gary Aho, P.E.

Total Estimated Project Cost - $ 6,000,000

Orchard Lake Village Sanitary Sewer

The City of Orchard Lake Village has requested the Oakland County Drain Commissioner to proceed with the development of a project to provide sanitary sewer service to the entire community. An Agreement between the City and the County was approved by the City Council on September 20, 1989, and was ratified by a majority vote of the electorate on November 7, 1989. Approval by the Oakland County Board of Commissioners is anticipated early in 1990.

The project consists of approximately 96,600 lineal feet of 6" to 10" diameter sanitary sewer along with the construction of eleven Sewage Lift Stations. Construction of this project will eliminate existing and potential sources of pollution from individual on-site septic systems, into Orchard, Upper Straits, and Cass Lakes. When completed, the entire system will outlet into the Evergreen-Farmington Sewage Disposal System and ultimately to the City of Detroit Wastewater Treatment Plant.

A short summary of other pertinent project information follows:

Consulting Engineer	-	Hubbell, Roth and Clark, Inc.
Drain Office Project Eng.	-	Donald L. Mills, P.E.
Estimated Project Cost	-	$ 8,400,000
Estimated Construction Start Date	-	Spring 1992

Amy Relief Sewers/Evergreen-Farmington S.D.S.

This project is being developed under a contractual agreement between the Drain Commissioner and the following municipalities: The Township of Bloomfield, the City of Bloomfield Hills and the City of Auburn Hills.

The project consists of approximately 25,000 lineal feet of 10" through 24" diameter sanitary sewer, a 4,500 GPM pumping station and miscellaneous appurtenances. The project is designed to provide sanitary relief for the North Evergreen Interceptor within the above communities.

During 1988, the scope of this project was modified by the Department of Natural Resources. The DNR modifications necessitated contract and plan revisions. It is anticipated that these revisions, and the resulting delays in obtaining the necessary easements and permits, will postpone the start of construction until the Fall of 1990. A short summary of other pertinent information concerning the project follows.

Consulting Engineer	-	Hubbell, Roth and Clark, Inc.
Drain Office Project Eng.	-	Donald L. Mills, P.E.
Project To Be Financed By	-	Available Local Funds & Bond Sale
Revised Estimated Project Cost	-	$ 3,700,000

West Bloomfield Water Supply System - Section XII

West Bloomfield Township has requested the County of Oakland to construct approximately 14,300 lineal feet of 20" diameter water transmission main along Green Lake Road northerly from Pontiac Trail to Commerce Road and then westerly to the new 400,000 gallon elevated storage tank (Contract 1 of Section XI) at the Westacres Subdivision. Also, 4,850 lineal feet of 30" and 24" diameter water transmission main in Commerce Road from Green Lake Road easterly to Hiller Road, and 3,300 lineal feet of 16" diameter water transmission main in Willow Road from east of Keith Road easterly to Arneth Road.

An Agreement between West Bloomfield Township and the County of Oakland was approved by the Township Board on April 4, 1988 and by the Oakland County Board of Commissioners on April 28, 1988. A short summary of other pertinent project information follows:

Consulting Engineer - Hubbell, Roth and Clark, Inc.
Drain Office Project Eng. - Donald L. Mills, P.E.
Project To Be Financed By - Available Local Funds & Bond Sale

Estimated Project Cost - $ 2,575,000

Anticipated Construction
Start Date: Contract 1 (30" & 24") - Spring 1990

Contract 2 (20" & 16") - Spring 1991

LAKE LEVEL PROJECTS

Under the provisions of the Inland Lake Level Act, Act No. 146 of 1961, the Drain Commissioner's office participates in legal proceedings to establish lake levels, and build lake level control structures for lakes in Oakland County. During 1989, two new lake level projects were under development.

Crystal Lake - Walter Moore Dam

On May 13, 1986, petitions were received by the Oakland County Drain Commissioner to establish a legal level for Crystal Lake. The petitions also requested that a dam be constructed at the outlet of Crystal Lake sufficient to keep and maintain the level of the lake at its normal elevation. Crystal Lake is located in Section 32 of the City of Pontiac and has a surface area of approximately 51 acres.

In a resolution dated June 7, 1988, the City of Pontiac authorized the advance of $200,000 to finance the entire cost of constructing a new dam which is to be known as the Walter Moore Dam. Subsequently Professional Engineering Associates, Inc., was retained to prepare the construction plans and specifications for the new dam. Mr. Ronald R. Karttunen, P.E. was assigned as the Drain Office project engineer for the construction of the Walter Moore Dam.

On September 22, 1988, the Oakland County Board of Commissioners approved a resolution authorizing the establishment of a lake level for Crystal Lake. On March 8, 1989 the Honorable Fred M. Mester, Circuit Court Judge, established a legal level for Crystal Lake.

On March 21, 1989 Construction bids were received for the Walter Moore Dam, and a contract was awarded to P&M Marine of Mt. Clemens, Michigan for their low bid of $131,958.00. Construction of the new dam began in June 1989 and is approximately 90% complete. It is anticipated that the Walter Moore Dam will be completed in mid 1990.

Bunny Run Lake Dam

On August 30, 1988, petitions were received by the Drain Commissioner requesting that a legal level be established for Bunny Run Lake. The petitions also request that a new dam be constructed, to replace the existing deteriorated structure, at the outlet of Bunny Run Lake sufficient to maintain the level of the lake at its current elevation. Bunny Run Lake is located in Section 1 of Orion Township and has a surface area of approximately 11.0 acres.

Conceptual plans for the new dam were prepared by Glen Yrjanainen, P.E. of the Drain Office engineering staff. Hampton Engineering Associates, Inc was retained to prepare final construction plans and specifications for the new dam utilizing the conceptual plans as the basis for the design. Ronald R. Karttunen, P.E. was designated the project engineer for the Bunny Run Lake Dam project.

It is anticipated that the legal level for Bunny Run Lake will be established in Circuit Court in June of 1990 with construction of the dam to follow shortly thereafter.

LAKE IMPROVEMENT BOARDS

LAKE IMPROVEMENT BOARDS

There has been a substantial increase in the number of Lake Improvement Boards in Oakland County during the last several years. At the present time there are 31 Lake Improvement Boards operating in 12 townships and the City of Troy. Ten members of the Board of Commissioners serve on one or more Lake Improvement Boards. C. Hugh Dohany, the Oakland County Treasurer, serves as the Treasurer for 17 of the Lake Improvement Boards. The Township Treasurers of Bloomfield, Waterford and White Lake Townships serve as the Treasurer for 14 Lake Improvement Boards.

Each Lake Improvement Board may decide to pursue one or more lake improvement projects on a lake. Most frequently, the Lake Improvement Board project will be intended to improve water quality and clarity by the mechanical harvesting of aquatic weeds or the chemical treatment of weeds in the lake. During 1989, Lake Improvement Boards on 8 lakes were involved in the mechanical harvesting of weeds from their lake. Lake Improvement Boards on 9 lakes used a program of chemical treatment to kill aquatic weed growth. On 5 lakes, both mechanical weed harvesting and chemical treatment were used. Information containing data on Lake Improvement Board expenditures for 1989, where Oakland County is the Treasurer, has been summarized on the following page.

Engineering studies on several lakes have also identified the value of a lake dredging program to remove muck and bottom sediments from all or a portion of several lakes. However, several factors made proceeding with a lake dredging project extremely difficult. First, there is an extremely high cost associated with a dredging project. Secondly, locating and obtaining a disposal site for material dredged from the bottom of the lake can be very difficult. Finally, problems can be encountered when trying to obtain the necessary permits from the Michigan Department of Natural Resources.

All Lake Improvement Board programs are financed by special assessment rolls against real property abutting the lake or having access to the lake. The total amount of the special assessment rolls spread in 1989 on the 17 lakes for which Oakland County is the Treasurer was $509,801.23.

Lake Charnwood Dredging Project

In May of 1986, the City of Troy, acting on signed petitions of the Lake Charnwood lakefront property owners, passed a resolution to establish a Lake Board for Lake Charnwood pursuant to Act 345 of 1966. In September of 1986, the Lake Board selected Progressive Engineers/Architects/Planners to conduct a feasibility study for lake improvements. This study recommended that the lake be dredged to remove accumulated muck and sediment.

In June of 1987, the lake residents expressed strong support to proceed with the project at a public hearing of practicability. In August/September of 1987, the Oakland County Board of Commissioners authorized a $200,000.00 advance to finance the project with monies to be repaid at 6% interest over ten years by special assessment.

The project was initially to be accomplished by hydraulic dredging with spoils deposited in a nearby upland disposal site. The owners of the disposal site subsequently changed their position on acceptance of the dredged material. The loss of this disposal site led to a revision in the project scope whereby the lake would be temporarily drawn down, earth moving equipment would be used to remove the bottom sediment and place it on the subdivision park, a peninsula of land extending into the lake.

On July 20, 1988, a second hearing of practicability was held on the revised scope of work with strong support again shown by the residents. In October of 1988, a one-year special assessment roll was confirmed to cover engineering costs for the project. Construction bids were received on April 5, 1989. In May of 1989, a ten year special assessment roll was confirmed to pay the construction costs for the project.

The contract was awarded to the low bidder, Earthwork Engineers, Inc. of Wixom, Michigan, in the amount of $120,300.00. Construction began in July of 1989 and was completed by the fall of 1989 with the exception of final restoration and landscaping work which will be completed in the spring of 1990. The contractor removed approximately 14,080 cubic yards of material. Total project cost for the work was approximately $216,000.00.

LAKE IMPROVEMENT EXPENDITURE SUMMARY
FOR THE YEAR OF 1989

PROJECT	ENGINEER SERVICES	HARVESTING SERVICES	TREATMENT SERVICES	PUB LEGAL NOTICES	DETROIT EDISON	MISC CHARGES	ATTORNEY FEES	TOTAL EXPENDITURES
BIG LAKE	$0.00	$52,500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$52,500.00
CHARLICK LAKE	$0.00	$0.00	$3,938.00	$36.32	$2,345.66	$179.00	$0.00	$6,498.98
DIXIE LAKE	$168.73	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$168.73
DUCK LAKE	$6,000.00	$21,500.00	$16,750.00	$379.63	$0.00	$3,746.18	$0.00	$48,375.81
INDIANWOOD LAKE	$1,000.00	$24,750.00	$0.00	$0.00	$0.00	$0.00	$0.00	$25,750.00
LAKEVILLE LAKE	$0.00	$27,300.00	$0.00	$0.00	$0.00	$0.00	$0.00	$27,300.00
LOUISE LAKE	$2,607.43	$0.00	$9,300.00	$0.00	$0.00	$0.00	$0.00	$11,907.43
PONTIAC LAKE	$6,850.00	$44,079.00	$78,280.00	$0.00	$0.00	$5,096.15	$1,878.73	$136,183.88
TOMAHAWK LAKE	$0.00	$0.00	$1,287.00	$0.00	$0.00	$5.50	$0.00	$1,292.50
VAN NORMAN LAKE	$1,600.00	$4,000.00	$4,797.00	$0.00	$0.00	$198.34	$0.00	$10,595.34
WALTERS LAKE	$1,850.00	$9,399.00	$7,475.00	$0.00	$0.00	$386.90	$0.00	$19,110.90
WHITE LAKE	$5,500.00	$2,245.00	$49,155.00	$65.64	$0.00	$64,737.87	$753.77	$122,457.28
WOODRUFF LAKE	$0.00	$0.00	$3,864.00	$0.00	$2,404.24	$25.25	$0.00	$6,293.49
	$25,576.16	$185,773.00	$174,846.00	$481.59	$4,749.90	$74,375.19	$2,632.50	$468,434.34

*** NOTE - MISCELLANEOUS CHARGES INCLUDE:

COPIER CHARGES
PHOTO COPY EXPENSES
POSTAGE EXPENSES
EQUIPMENT RENTAL CHARGES
MILEAGE CHARGES

** PONTIAC LAKE INCLUDES $3,000 IN MANAGEMENT FEES
** WHITE LAKE INCLUDES $64,385 FOR LAKE DREDGING
** DUCK LAKE INCLUDES

FINANCIAL STATEMENTS

FINANCIAL STATEMENTS

Summary financial statements for the Southeastern Oakland County Sewage Disposal System and for major current projects discussed in the Annual Report are included in this volume. Volume II of this Annual Report contains complete financial statements for every County drainage district, and itemized statements of all of the various accounts maintained in connection with the construction, operation, and maintenance of all of the projects under the jurisdiction of the Oakland County Drain Commissioner.

Reference should be made to the Table of Contents of the Financial Statements Volume (Volume II) for reference to any specific project or fund account not included in these summary statements.

OAKLAND COUNTY DRAIN COMMISSIONER
SOUTHEASTERN OAKLAND COUNTY SEWAGE DISPOSAL SYSTEM
COMBINED BALANCE SHEET, DECEMBER 31, 1989

ASSETS	87700 SEWAGE DISPOSAL	87710 POLLUTION CONTROL	TOTAL
CURRENT ASSETS:			
CASH - OPERATING	$ 651,348.75	$ 526,622.79	$ 1,177,971.54
CASH - INVESTMENTS	1,963,526.48	1,500,000.00	3,463,526.48
DUE FROM MUNICIPALITIES	1,081,006.87	876,885.70	1,957,892.57
DUE FROM CITY OF DETROIT	0.00	295,725.00	295,725.00
DUE FROM OTHER FUNDS	36,996.63	32,833.34	69,829.97
PREPAID EXPENSES	12,940.68	3,513.15	16,453.83
ACCOUNTS RECEIVABLE	4,500.00	57.30	4,557.30
ACCRUED INTEREST RECEIVABLE	15,775.68	12,879.17	28,654.85
TOTAL CURRENT ASSETS	3,766,095.09	3,248,516.45	7,014,611.54
PROPERTY AND EQUIPMENT AT COST:			
DRAINS AND INTERCEPTORS	53,888,410.08	19,830,235.17	73,718,645.25
FLOWAGE RIGHTS	1,132,889.68	1,363,307.92	2,496,197.60
BUILDINGS AND IMPROVEMENTS	87,038.46	2,737,033.98	2,824,072.44
EQUIPMENT	137,759.88	241,011.45	378,771.33
LAND AND IMPROVEMENTS	1,533.25	624,465.22	625,998.47
	55,247,631.35	24,796,053.74	80,043,685.09
LESS: ALLOWANCE FOR DEPRECIATION	30,951,961.68	9,949,762.64	40,901,724.32
PROPERTY AND EQUIPMENT - NET	24,295,669.67	14,846,291.10	39,141,960.77
TOTAL ASSETS	$28,061,764.76	$18,094,807.55	$46,156,572.31
LIABILITIES AND FUND EQUITY			
CURRENT LIABILITIES:			
DUE TO CITY OF DETROIT	$ 1,886,397.10	$ 1,402,364.76	$ 3,288,761.86
DUE TO MUNICIPALITIES	24,065.73	295,724.98	319,790.71
DUE TO OTHER FUNDS	18,863.24	16,840.43	35,703.67
VOUCHERS & ACCOUNTS PAYABLE	72,668.80	6,060.20	78,729.00
ACCRUED PAYROLL	0.00	0.00	
UNDISTRIBUTED FUNDS	13,526.48	0.00	13,526.48
TOTAL CURRENT LIABILITIES	2,015,521.35	1,720,990.37	3,736,511.72

OAKLAND COUNTY DRAIN COMMISSIONER
SOUTHEASTERN OAKLAND COUNTY SEWAGE DISPOSAL SYSTEM
COMBINED STATEMENT OF REVENUES, EXPENSES AND CHANGES IN RETAINED EARNINGS
FOR THE YEAR ENDED DECEMBER 31, 1989

	87700 SEWAGE DISPOSAL	87710 POLLUTION CONTROL	TOTAL
REVENUE FROM SERVICE SALES	$ 8,658,407.69	$ 6,099,999.96	$14,758,407.65
LESS: TREATMENT COSTS	8,363,269.34	5,609,459.10	13,972,728.44
GROSS GAIN ON SALES	295,138.35	490,540.86	785,679.21
LESS: OPERATING EXPENSES	445,215.89	491,769.87	936,985.76
GAIN OR (LOSS) ON OPERATIONS	(150,077.54)	(1,229.01)	(151,306.55)
OTHER REVENUE (EXPENSES):			
GAIN ON SALE OF EQUIPMENT	0.00	2,300.00	2,300.00
REIMBURSEMENT-SALARIES	39,621.87	0.00	39,621.87
INCOME ON INVESTMENTS	189,268.08	133,766.66	323,034.74
DISPOSAL PERMITS	12,792.00	0.00	12,792.00
MISCELLANEOUS	0.00	250.03	250.03
TRANSFER TO UNDISTRIBUTED FUNDS	(13,526.48)	0.00	(13,526.48)
RENTAL - EQUIPMENT	10,100.00	0.00	10,100.00
REIMBURSEMENT-ACCOUNTING SERVICES	21,217.34	21,217.33	42,434.67
TOTAL OTHER REVENUE (EXPENSES)	259,472.81	157,534.02	417,006.83
NET GAIN OR (LOSS) BEFORE DEPRECIATION ON ASSETS ACQUIRED FROM CONTRIBUTED CAPITAL	109,395.27	156,305.01	265,700.28
DEPRECIATION ON ASSETS ACQUIRED FROM CONTRIBUTED CAPITAL	1,019,396.40	610,897.80	1,630,294.20
NET GAIN OR (LOSS) AFTER DEPRECIATION ON ASSETS ACQUIRED FROM CONTRIBUTED CAPITAL	(910,001.13)	(454,592.79)	(1,364,593.92)
ADD BACK DEPRECIATION ON ASSETS ACQUIRED FROM CONTRIBUTED CAPITAL	1,019,396.40	610,897.80	1,630,294.20
NET GAIN OR (LOSS)	109,395.27	156,305.01	265,700.28
RETAINED EARNINGS AT 01/01/89	1,673,943.37	1,471,550.76	3,145,494.13
RETAINED EARNINGS AT 12/31/89	$ 1,783,338.64	$ 1,627,855.77	$ 3,411,194.41

OAKLAND COUNTY DRAIN COMMISSIONER
SOUTHEASTERN OAKLAND COUNTY SEWAGE DISPOSAL SYSTEM
COMBINING SCHEDULE OF OPERATING EXPENSES
FOR THE YEAR ENDED DECEMBER 31, 1989

	87700 SEWAGE DISPOSAL	87710 POLLUTION CONTROL	TOTAL
SALARIES	$154,283.42	$167,989.07	$322,272.49
FRINGE BENEFITS	59,984.20	68,163.68	128,147.88
CONTRACTUAL SERVICES:			
ACCOUNTING SERVICES	44,621.12	44,621.08	89,242.20
AUCTION EXPENSE	0.00	144.90	144.90
AUDITING SERVICES	4,475.00	4,475.00	8,950.00
BUILDING MAINTENANCE	506.72	4,529.15	5,035.87
DEPRECIATION-OPERATING EQUIPMENT	4,845.21	16,068.69	20,913.90
EQUIPMENT REPAIR - OPERATIONS	723.57	10,082.66	10,806.23
EQUIPMENT REPAIR - MOTOR VEHICLES	2,904.69	2,753.21	5,657.90
ENGINEERING AND SURVEY	0.00	3,363.44	3,363.44
EQUIPMENT RENTAL	0.00	450.00	450.00
EQUIPMENT REPAIRS AND MAINTENANCE	672.75	7,972.02	8,644.77
GARBAGE AND RUBBISH DISPOSAL	0.00	160.00	160.00
GAS - NATURAL	1,892.09	2,889.35	4,781.44
INSURANCE	5,260.08	4,008.22	9,268.30
INVESTMENT FEES	309.06	238.45	547.51
LANDS AND GROUNDS MAINTENANCE	777.40	2,388.61	3,166.01
LAUNDRY AND CLEANING	1,321.69	2,534.47	3,856.16
LEGAL EXPENSE	122,315.16	1,825.50	124,140.66
LIGHT AND POWER	8,008.52	29,876.35	37,884.87
MAINTENANCE CONTRACTS	3,314.88	3,876.36	7,191.24
MAINTENANCE EQUIPMENT RENTAL	0.00	180.40	180.40
MEMBERSHIP, DUES AND PUBLICATIONS	192.45	424.90	617.35
PROTECTIVE CLOTHING AND EQUIPMENT	264.48	1,860.43	2,124.91
SEWER MAINTENANCE	12,480.00	0.00	12,480.00
TRAVEL AND CONFERENCE	59.00	1,369.24	1,428.24
WATER PURCHASES	0.00	9,804.41	9,804.41
WATER AND SEWER UTILITIES	955.16	1,053.94	2,009.10
TOTAL CONTRACTUAL SERVICES	215,899.03	156,950.78	372,849.81
COMMODITIES:			
CHLORINATION SUPPLIES	0.00	77,596.80	77,596.80
FILM AND PROCESSING	0.00	127.90	127.90
LABORATORY SUPPLIES	4,169.94	0.00	4,169.94
OFFICE SUPPLIES	579.48	269.93	849.41
POSTAGE	40.34	14.91	55.25
SHOP SUPPLIES	13.44	6,275.19	6,288.63
TOTAL COMMODITIES	4,803.20	84,284.73	89,087.93

OAKLAND COUNTY DRAIN COMMISSIONER
SOUTHEASTERN OAKLAND COUNTY SEWAGE DISPOSAL SYSTEM
COMBINED BALANCE SHEET, DECEMBER 31, 1989

	87700 SEWAGE DISPOSAL	87710 POLLUTION CONTROL	TOTAL
FUND EQUITY:			
CONTRIBUTED CAPITAL	$24,262,904.77	$14,745,961.41	$39,008,866.18
RETAINED EARNINGS:			
RESERVED FOR:			
OPERATIONS AND MAINTENANCE	1,025,000.00	0.00	1,025,000.00
REPLACEMENT	25,000.00	0.00	25,000.00
MAINTENANCE AND REPLACEMENT	0.00	700,000.00	700,000.00
	1,050,000.00	700,000.00	1,750,000.00
UNDESIGNATED EARNINGS	733,338.64	927,855.77	1,661,194.41
TOTAL RETAINED EARNINGS	1,783,338.64	1,627,855.77	3,411,194.41
TOTAL FUND EQUITY	26,046,243.41	16,373,817.18	42,420,060.59
TOTAL LIABILITIES & FUND EQUITY	$28,061,764.76	$18,094,807.55	$46,156,572.31

OAKLAND COUNTY DRAIN COMMISSIONER
SOUTHEASTERN OAKLAND COUNTY SEWAGE DISPOSAL SYSTEM
COMBINING SCHEDULE OF OPERATING EXPENSES
FOR THE YEAR ENDED DECEMBER 31, 1989

	87700 SEWAGE DISPOSAL	87710 POLLUTION CONTROL	TOTAL
INTERNAL SERVICES:			
DPW WATER & SEWER EQUIPMENT	$ 893.62	$ 893.63	$ 1,787.25
RADIO COMMUNICATIONS	1,375.56	1,920.36	3,295.92
MOTOR POOL	2,241.15	5,329.43	7,570.58
EQUIPMENT RENTAL - OFFICE	120.00	120.00	240.00
STORES - STOCK	382.48	722.50	1,104.98
TELEPHONE COMMUNICATIONS	1,175.10	1,337.57	2,512.67
DRAIN EQUIPMENT	4,058.13	4,058.12	8,116.25
TOTAL INTERNAL SERVICES	10,246.04	14,381.61	24,627.65
TOTAL OPERATING EXPENSES	$445,215.89	$491,769.87	$936,985.76

OAKLAND COUNTY
CHAPTER 20 CONSTRUCTION FUNDS
BALANCE SHEET
BEECHMONT DRAIN

DECEMBER 31, 1989

		CONSTRUCTION FUND NO 81663
ASSETS		
CASH	$	3,368.36
INVESTMENTS		48,000.00
ACCRUED INTEREST RECEIVABLE		170.67
FIXED ASSETS		313,401.44
TOTAL ASSETS	$	364,940.47
LIABILITIES		
DUE TO OTHER FUNDS	$	305.57
TOTAL LIABILITIES		305.57
FUND-BALANCE		
INVESTMENT IN FIXED ASSETS		313,401.44
UNDESIGNATED		51,233.46
TOTAL FUND BALANCE		364,634.90
TOTAL LIABILITIES & FUND BALANCE	$	364,940.47

OAKLAND COUNTY
CHAPTER 20 CONSTRUCTION FUNDS
STATEMENT OF REVENUE & EXPENDITURES
BEECHMONT DRAIN

DECEMBER 31, 1989

	CONSTRUCTION FUND NO 81663
REVENUES	
INCOME FROM INVESTMENTS	$ 3,992.92
TOTAL REVENUES	3,992.92
EXPENDITURES	
SALARIES - REGULAR	5,936.35
PER DIEM	175.00
FRINGE BENEFITS	3,207.89
INVESTMENT FEES	23.15
CONTRACTED SERVICES	107,901.59
ELECTRICAL SERVICE	932.50
TRANSPORTATION	2.50
MATERIAL & SUPPLIES	20.49
OFFICE SUPPLIES	.59
DPW WATER & SEWER EQUIPMENT	511.62
DRAIN EQUIPMENT	1,259.71
TOTAL EXPENDITURES	119,971.39
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	(115,978.47)
EXCESS (DEFICIENCY) OF REVENUES AND OTHER SOURCES OVER EXPENDITURES AND OTHER USES	$(115,978.47)

OAKLAND COUNTY
CHAPTER 20 CONSTRUCTION FUNDS
BALANCE SHEET
BORDEN DRAIN

DECEMBER 31, 1989

		CONSTRUCTION FUND NO 81656
ASSETS		
CASH	$	3,882.78
INVESTMENTS		350,500.00
ACCRUED INTEREST RECEIVABLE		1,813.84
FIXED ASSETS		45,626.49
TOTAL ASSETS	$	401,823.11
LIABILITIES		
DUE TO OTHER FUNDS	$	2,122.33
TOTAL LIABILITIES		2,122.33
FUND-BALANCE		
INVESTMENT IN FIXED ASSETS		45,626.49
UNDESIGNATED		354,074.29
TOTAL FUND BALANCE		399,700.78
TOTAL LIABILITIES & FUND BALANCE	$	401,823.11

OAKLAND COUNTY
CHAPTER 20 CONSTRUCTION FUNDS
STATEMENT OF REVENUE & EXPENDITURES
BORDEN DRAIN

DECEMBER 31, 1989

	CONSTRUCTION FUND NO 81656
REVENUES	
INCOME FROM INVESTMENTS	$ 29,905.71
TOTAL REVENUES	29,905.71
EXPENDITURES	
SALARIES - REGULAR	1,897.77
PER DIEM	100.00
FRINGE BENEFITS	971.63
BOND PROSPECTUS EXPENSE	1,525.00
INVESTMENT FEES	204.92
LEGAL EXPENSE	8,558.17
FINANCIAL CONSULTANT FEES	2,901.00
PURCHASE OF LAND & EASEMENT	(1,300.00)
RECORDING FEES	11.00
TRANSPORTATION	11.00
OFFICE SUPPLIES	28.66
DRAIN EQUIPMENT	577.60
TOTAL EXPENDITURES	15,486.75
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	14,418.96
EXCESS (DEFICIENCY) OF REVENUES AND OTHER SOURCES OVER EXPENDITURES AND OTHER USES	$ 14,418.96

OAKLAND COUNTY
CHAPTER 20 CONSTRUCTION FUNDS
BALANCE SHEET
KARAS DRAIN

DECEMBER 31, 1989

	CONSTRUCTION FUND NO 81640
ASSETS	
CASH	$ 5,116.66
INVESTMENTS	628,500.00
ACCRUED INTEREST RECEIVABLE	2,793.33
FIXED ASSETS	648,130.78
TOTAL ASSETS	$ 1,284,540.77
LIABILITIES	
ACCOUNTS PAYABLE	$ 35,000.00
ADVANCES AND LOANS PAYABLE	255,014.75
DUE TO OTHER FUNDS	6,732.63
TOTAL LIABILITIES	296,747.38
FUND-BALANCE	
INVESTMENT IN FIXED ASSETS	648,130.78
UNDESIGNATED	344,294.61
DESIGNATED	(4,632.00)
	987,793.39
TOTAL LIABILITIES & FUND BALANCE	$ 1,284,540.77

OAKLAND COUNTY
CHAPTER 20 CONSTRUCTION FUNDS
STATEMENT OF REVENUE & EXPENDITURES
KARAS DRAIN

DECEMBER 31, 1989

	CONSTRUCTION FUND NO 81640
REVENUES	
INCOME FROM INVESTMENTS	$ 56,690.34
TOTAL REVENUES	56,690.34
EXPENDITURES	
SALARIES - REGULAR	16,342.06
PER DIEM	300.00
FRINGE BENEFITS	8,786.65
INVESTMENT FEES	405.71
LEGAL EXPENSE	7,931.83
CONTRACTED SERVICES	82,675.00
FINANCIAL CONSULTANT FEES	5,016.93
MATERIAL & SUPPLIES	193.00
OFFICE SUPPLIES	28.67
DRAIN EQUIPMENT	606.60
TOTAL EXPENDITURES	122,286.45
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	(65,596.11)
EXCESS (DEFICIENCY) OF REVENUES AND OTHER SOURCES OVER EXPENDITURES AND OTHER USES	$(65,596.11)

OAKLAND COUNTY
CHAPTER 20 CONSTRUCTION FUNDS
BALANCE SHEET
FREDERICKS DRAIN

DECEMBER 31, 1989

	CONSTRUCTION FUND NO 81625
ASSETS	
CASH	$ 425.68
INVESTMENTS	1,337,500.00
DUE FROM MUNICIPALITIES	168,994.32
ADVANCES & LOANS RECEIVABLE	25,000.00
ACCRUED INTEREST RECEIVABLE	7,526.03
FIXED ASSETS	2,064,322.80
TOTAL ASSETS	$ 3,603,768.83
LIABILITIES	
ACCOUNTS PAYABLE	$ 4,450.00
DEPOSITS	7,500.00
DUE TO OTHER FUNDS	4,759.99
TOTAL LIABILITIES	16,709.99
FUND-BALANCE	
INVESTMENT IN FIXED ASSETS	2,064,322.80
UNDESIGNATED	1,512,707.68
DESIGNATED	10,028.36
	3,587,058.84
TOTAL LIABILITIES & FUND BALANCE	$ 3,603,768.83

OAKLAND COUNTY
CHAPTER 20 CONSTRUCTION FUNDS
STATEMENT OF REVENUE & EXPENDITURES
FREDERICKS DRAIN

DECEMBER 31, 1989

	CONSTRUCTION FUND NO 81625
REVENUES	
INCOME FROM INVESTMENTS	$ 160,990.04
PERMITS	200.00
TOTAL REVENUES	161,190.04
EXPENDITURES	
SALARIES - REGULAR	39,589.66
PER DIEM	415.56
FRINGE BENEFITS	21,513.53
INVESTMENT FEES	1,077.54
LEGAL EXPENSE	11,771.17
APPRAISAL FEES	2,500.00
CONTRACTED SERVICES	919,610.01
COPIER MACHINE RENTAL	(6.14)
EQUIPMENT RENTAL	(169.93)
LICENSES AND PERMITS	2,098.27
MISCELLANEOUS	(274.20)
OTHER ENGINEERING SERVICES	14,891.64
PUBLISHING LEGAL NOTICES	195.50
PURCHASE OF LAND & EASEMENT	7,950.00
RECORDING FEES	56.05
TRANSPORTATION	(652.16)
ENGINEERING SUPPLIES	(57.87)
FILM & PROCESSING	230.33
MATERIAL & SUPPLIES	490.51
OFFICE SUPPLIES	28.67
DRAIN EQUIPMENT	7,478.49
TOTAL EXPENDITURES	1,028,736.63
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	(867,546.59)
EXCESS (DEFICIENCY) OF REVENUES AND OTHER SOURCES OVER	$(867,546.59)

OAKLAND COUNTY
ACT 342 CONSTRUCTION FUNDS
BALANCE SHEET
COSDS-COLEMAN-FRIEDMAN EXT IMP

DECEMBER 31, 1989

	CONSTRUCTION FUND NO 87072
ASSETS	
CASH	$ 1,011.02
INVESTMENTS	36,000.00
ACCRUED INTEREST RECEIVABLE	203.55
FIXED ASSETS	472,322.84
TOTAL ASSETS	$ 509,537.41
FUND-BALANCE	
INVESTMENT IN FIXED ASSETS	$ 472,322.84
UNDESIGNATED	37,214.57
TOTAL FUND BALANCE	509,537.41
TOTAL LIABILITIES & FUND BALANCE	$ 509,537.41

OAKLAND COUNTY
ACT 342 CONSTRUCTION FUNDS
STATEMENT OF REVENUE & EXPENDITURES
COSDS-COLEMAN-FRIEDMAN EXT IMP

DECEMBER 31, 1989

	CONSTRUCTION FUND NO 87072
REVENUES	
INCOME FROM INVESTMENTS	$ 7,959.07
TOTAL REVENUES	7,959.07
EXPENDITURES	
SALARIES - REGULAR	14,674.42
FRINGE BENEFITS	7,489.78
INVESTMENT FEES	17.77
CONTRACT ADMINISTRATION	1,762.67
CONTRACTED SERVICES	177,122.55
DESIGN FEES	1,704.43
LAYOUT AND STAKING	4,674.07
MATERIAL & SUPPLIES	26.31
DRAIN EQUIPMENT	1,965.45
TOTAL EXPENDITURES	209,437.45
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	(201,478.38)
EXCESS (DEFICIENCY) OF REVENUES AND OTHER SOURCES OVER EXPENDITURES AND OTHER USES	$(201,478.38)

OAKLAND COUNTY
ACT 342 CONSTRUCTION FUNDS
BALANCE SHEET
WALLED LAKE WSS EXT. NO. 1

DECEMBER 31, 1989

	CONSTRUCTION FUND NO 87425
ASSETS	
CASH	$ 10,364.21
INVESTMENTS	30,000.00
ACCRUED INTEREST RECEIVABLE	106.67
FIXED ASSETS	788,173.06
TOTAL ASSETS	$ 828,643.94
LIABILITIES	
DUE TO OTHER FUNDS	$ 367.35
TOTAL LIABILITIES	367.35
FUND-BALANCE	
INVESTMENT IN FIXED ASSETS	788,173.06
UNDESIGNATED	27,077.11
DESIGNATED	13,026.42
	828,276.59
TOTAL LIABILITIES & FUND BALANCE	$ 828,643.94

OAKLAND COUNTY
ACT 342 CONSTRUCTION FUNDS
STATEMENT OF REVENUE & EXPENDITURES
WALLED LAKE WSS EXT. NO. 1

DECEMBER 31, 1989

	CONSTRUCTION FUND NO 87425
REVENUES	
INCOME FROM INVESTMENTS	$ 13,276.59
SALE OF BONDS	815,000.00
TOTAL REVENUES	828,276.59
EXPENDITURES	
SALARIES - REGULAR	20,293.14
FRINGE BENEFITS	10,692.10
BOND ATTORNEY FEES	6,922.88
BOND PRINTING EXPENSE	591.00
BOND PROSPECTUS EXPENSE	3,720.99
INVESTMENT FEES	32.52
LEGAL EXPENSE	4,158.60
CONTRACTED SERVICES	221,092.84
DESIGN FEES	18,729.01
DISCOUNT ON BONDS	15,787.00
FINANCIAL CONSULTANT FEES	5,391.71
PERSONAL MILEAGE	46.00
PUBLISHING LEGAL NOTICES	4,230.80
SOIL TEST BORINGS	1,634.28
MATERIAL & SUPPLIES	51.32
DRAIN EQUIPMENT	4,492.75
TOTAL EXPENDITURES	317,866.94
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	510,409.65
EXCESS (DEFICIENCY) OF REVENUES AND OTHER SOURCES OVER EXPENDITURES AND OTHER USES	$ 510,409.65