ANNUAL CONSTRUCTION REPORT

1978 - 79

FIELD INVESTIGATIONS
CONSTRUCTION, UPGRADING
AND MAINTENANCE FOR
ONTARIO DISTRICT

DEPARTMENT OF THE ENVIRONMENT
INLAND WATERS DIRECTORATE
WATER RESOURCES BRANCH
WATER SURVEY OF CANADA

ANNUAL CONSTRUCTION REPORT

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FIELD INVESTIGATIONS CONSTRUCTION, UPGRADING AND MAINTENANCE FOR ONTARIO DISTRICT

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INTRODUCTION

This annual construction report, prepared by the Ontario District of the Water Survey of Canada, is for the fiscal year 1978-1979.

Funds for the construction activities, which include reconnaissance, construction, upgrading and maintenance, are provided under the Federal-Provincial Cost-Sharing Agreement.

Construction activities are divided into four categories:

1. FIELD INVESTIGATIONS

Reconnaissance, surveys, preparation of plans, meetings and correspondence to obtain approval to construct hydrometric installations on private or public land.

2. CONSTRUCTION

Installation of new stations (including artificial controls, cableways, etc., where required).

3. UPGRADING

Construction of controls, erection of larger shelters to house more sophisticated instruments, installation of electrical and telephone service at existing stations, installation of sediment sampling apparatus and other appurtenances.

4. MAINTENANCE

General maintenance (except minor repairs done by hydrometric staff).

CONSTRUCTION METHODS AND PROCEDURES, MATERIAL AND EQUIPMENT

WELL CONSTRUCTION

STILLING WELLS FOR STREAMFLOW GAUGES

These are in-bank installations of 16 gauge, 30 inch diameter galvanized "Hel-Cor" pipe. Fabrication of the stilling well is done at District Headquarters at a local shop and consists of welding in an 8 gauge steel bottom and a 2 inch galvanized tee and coupling for attachment of intake pipes, gate valve and stand-pipe. (See Figure 1)

At the job site, while the excavating is underway, the lower intake, valve, valve handle extension and heating cable are all attached to the well ready for installation. When the excavation is at the required depth this whole apparatus, with the intake supported by number 9 wire, is picked up by the excavating machine and lowered into the hole. The well is held plumb by taglines while the machine places backfill equally around the well. When the backfill reaches the 2 inch coupling the upper intake is attached and supported by suitable timbers or posts to maintain a horizontal position while the rest of the fill is placed.

When the lower intake exceeds 66 feet in length, additional sections of 22 feet are connected from a boat or raft before the backfilling is started in order to lift the end of the 66 feet length above the water surface to make these connections, after which normal backfilling takes place.

If a concrete pad is to be poured for the erection of a walk-in shelter, all the backfill above the water line is compacted at 1 foot intervals with a mechanical tamper. (See Figure 2)

WALK-IN SHELTER FOR BUBBLE GAUGES

An "Armco" walk-in shelter mounted on a poured-in-place concrete pad is used for the installation of stacom servomanometer and exactel gauges. The bubble tube is buried in the bank and supported in the river inside a length of steel conduit. This conduit is buried in the bank at one end and fastened securely to two steel fence posts driven into the river bottom. (See Figure 3)

STILLING WELLS FOR TIDES AND WATER LEVEL GAUGES

This type is facricated by welding a 36 inch diameter 16 gauge galvanized "Hel-Cor" pipe and a 60 inch diameter 16 gauge galvanized "Hel-Cor" pipe to a common 8 gauge steel bottom. A 5 foot long 2 inch diameter intake pipe is attached to a 2 inch tee with a 2 inch gate valve and stand-pipe. (See Figure 4)

The stilling well is lowered over the side of the dock and while resting plumb and evenly on the bottom it is secured to the dock by a cable while the top is formed to accommodate an "Armco" house. Concrete is placed and fills the 1 foot space between the two pipes from the bottom of the well to the top of the formwork.

INLET SYSTEMS

LOWER INTAKE (ACTIVE)

The lower intake is a 2 inch diameter galvanized steel pipe screwed into a 2 inch galvanized steel tee that is welded onto the inside of the well 9 inches up from the bottom which allows room to screw the 2 inch bronze gate valve on the inside and also leaves a 9 inch sediment sump at the bottom of the well. A Pyrotenax heating cable of suitable length is installed from the end of this intake up the stand-pipe through

a 2 inch X 1/2 inch X 1/2 inch double tapped bushing and connected to a number 4688 "Pyrotenax" thermostat (where electricity is available). The length of this lower intake is determined by the distance the stilling well is set back from the waters edge and may vary from 10 feet to 120 feet or longer.

UPPER INTAKE (AUXILIARY)

The upper intake is a 2 inch galvanized steel pipe screwed into a 2 inch galvanized coupling that is welded onto the outside of the stilling well at a distance above the lower intake to be about 6 inches above the winter ice cover level.

FLUSHING

Flushing of the active intake is accomplished by attaching the discharge hose of a gasoline driven pump to the 2 inch tee at the top of the stand-pipe and with the valve in the well closed forcing water under pressure through the intake system.

INSTRUMENT SHELTERS

LOOK-IN SHELTER

The standard Guelph-Type look-in shelter is installed at all sites using the 30 inch diameter stilling well and where the instrumentation consists of the Stevens A-71 analogue recorder only. Where electricity is available a 30 ampere service is installed with well heating cable and thermostat, light and outlets. Propane "Cata-Dyne" heaters are used at stations where electricity is not available.

WALK-IN SHELTERS

Armco metal buildings from 5 feet 4 inches X 5 feet 4 inches X 8 feet 0 inches to 16 feet 0 inches X 12 feet 0 inches X 8 feet 0 inches in size are used at all sites requiring room for several instruments and/or personnel accommodation. These buildings are insulated, panelled and, where electricity is available, provided with a 60 ampere service complete with well heaters, baseboard heaters, thermostats, lights and outlets. Propane heaters or wood stoves are used where power is not available.

SEDIMENT SHELTERS

Bridge mounted manual sediment sampling equipment is housed in the Guelph-Type sediment sampler shelter.

ARTIFICIAL CONTROLS AND WEIRS

STEEL

Most controls are made from Armco steel sheeting type 183, 18 inches in width, 8 gauge, 13.32 pounds per lineal foot and available in lengths from 6 feet to 16 feet.

The sections are cut and pointed on the job and driven into the stream bed with a hand operated pneumatic pile driver. The top is trimmed by flame cutting to approximately a 5 percent grade from the centre to each side and rip-rapped on the downstream side to prevent erosion.

CONCRETE

Some concrete controls and weirs of various designs are constructed. They are formed and poured in place in the stream bed.

TIMBER

Some timber controls used on small streams are constructed of perservative treated planks and plywood.

CABLEWAYS

WIRE ROPE

6 x 19 Independent Wire Rope Core right regular lay, preformed, galvanized, improved plow steel wire rope of 3/4 inch or 7/8 inch diameter, depending on the span, is used on most installations. Spelter or swaged sockets are installed on the ends of the wire rope at the factory.

Tower backstays are of 3/8 inch or 1/2 inch guy strand and attached by means of preformed guy grips or cable clips.

TOWERS

The cable is supported on "A" towers made from 8 inch X 8 inch perservative treated timbers mounted on concrete pedestals or 4 inch X 4 inch galvanized "H" beams (4 WF 13) resting on a concrete footing or steel pad. Wooden or steel landing platforms are constructed where required.

ANCHORS

The cable is anchored at each end to a poured-in-place concrete block, rock anchor or steel deadman and equipped at one end with a turn-buckle for adjustment of sag.

CABLE CARS

Cable cars are two man sit-down design constructed of plywood and galvanized steel and equipped with safety finger guards.

AIRCRAFT WARNING MARKERS

Where required, Department of Transport approved international orange coloured, conical shaped aircraft warning markers are suspended on a separate 3/8 inch wire rope cable above the main cable. Cable towers are also painted international orange and white to Department of Transport specifications.

FITTINGS

Sockets, turnbuckles, thimbles, shackles, saddles, sheaves, wire rope clips and all other metal parts are hot dipped galvanized.

EQUIPMENT

One standard full size station wagon equipped with 110 volt AC motor mounted electric generator, roof-top carrier, tailgate mounted vice, trailer hitch, heavy duty load lifters on rear suspension, and complete with safety screen for personnel protection, and one F-250 3/4 ton super cab pick-up equipped with fiberglass cap, 110 volt AC motor mounted electric generator, tailgate mounted vice and trailer hitch.

Two heavy duty boat trailers modified to carry wells, hydro poles, intake pipes and instrument shelters are used to transport equipment and material to the job site.

Tools include an air operated "Atlas Copco" pavement breaker equipped with a pile driving head, an electric "Skill" saw, electric 1/2 inch and 1/4 inch drills, electric hammer drill, 3 ton and 3/4 ton pullers, oxy-acetelene cutting torch and all other necessary hand tools.

PERSONNEL

All work was performed by the construction supervisor, construction foreman and two assistants. Excavating equipment with operator, compressors, scuba divers, etc. were rented on an hourly basis under service contract. Materials such as fill, concrete, rip-rap, lumber, etc. were purchased by service contract.

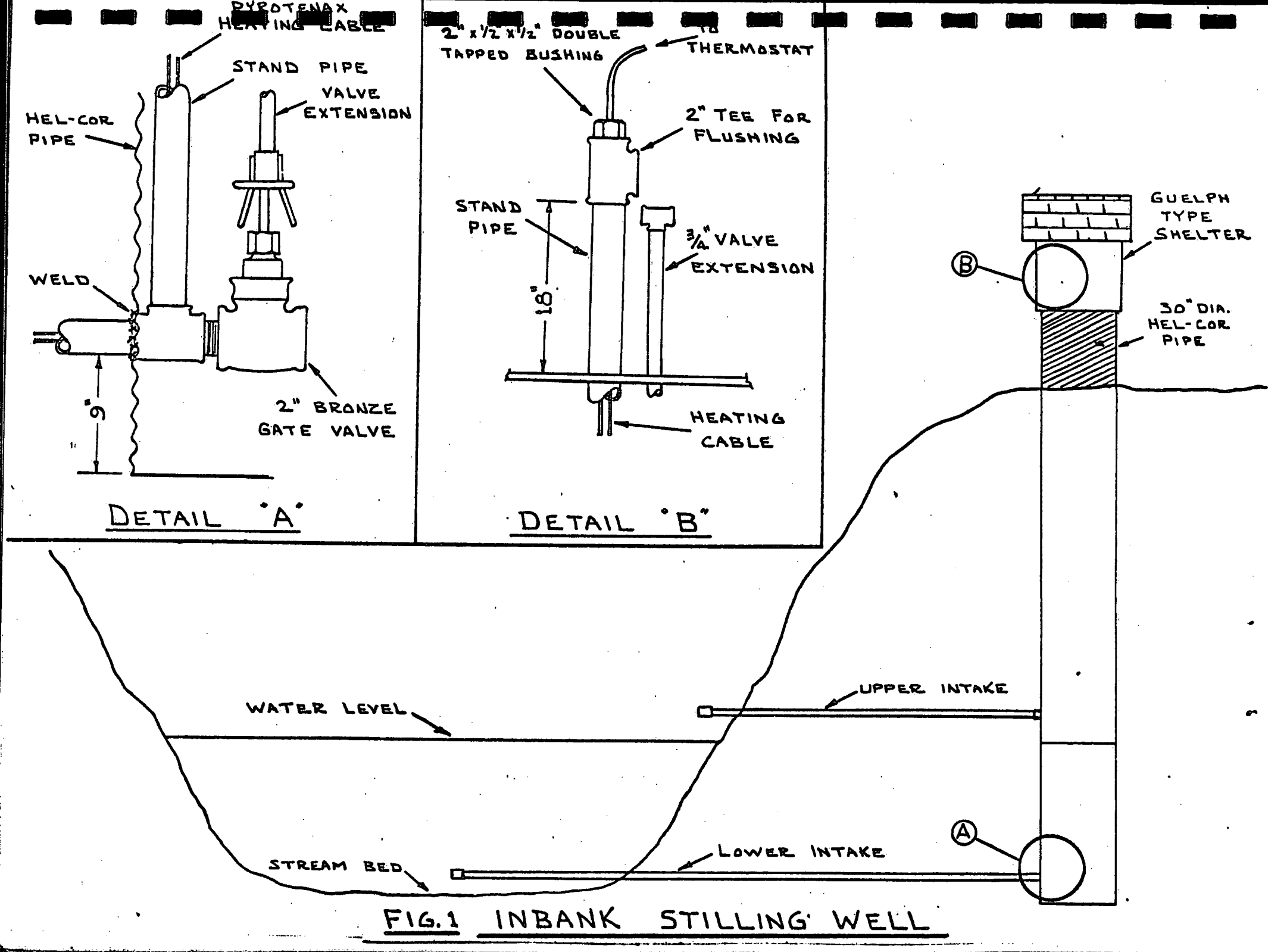


FIG. 1 INBANK STILLING WELL

FIG. 2

INBANK STILLING WELL WITH ARMCO SHELTER

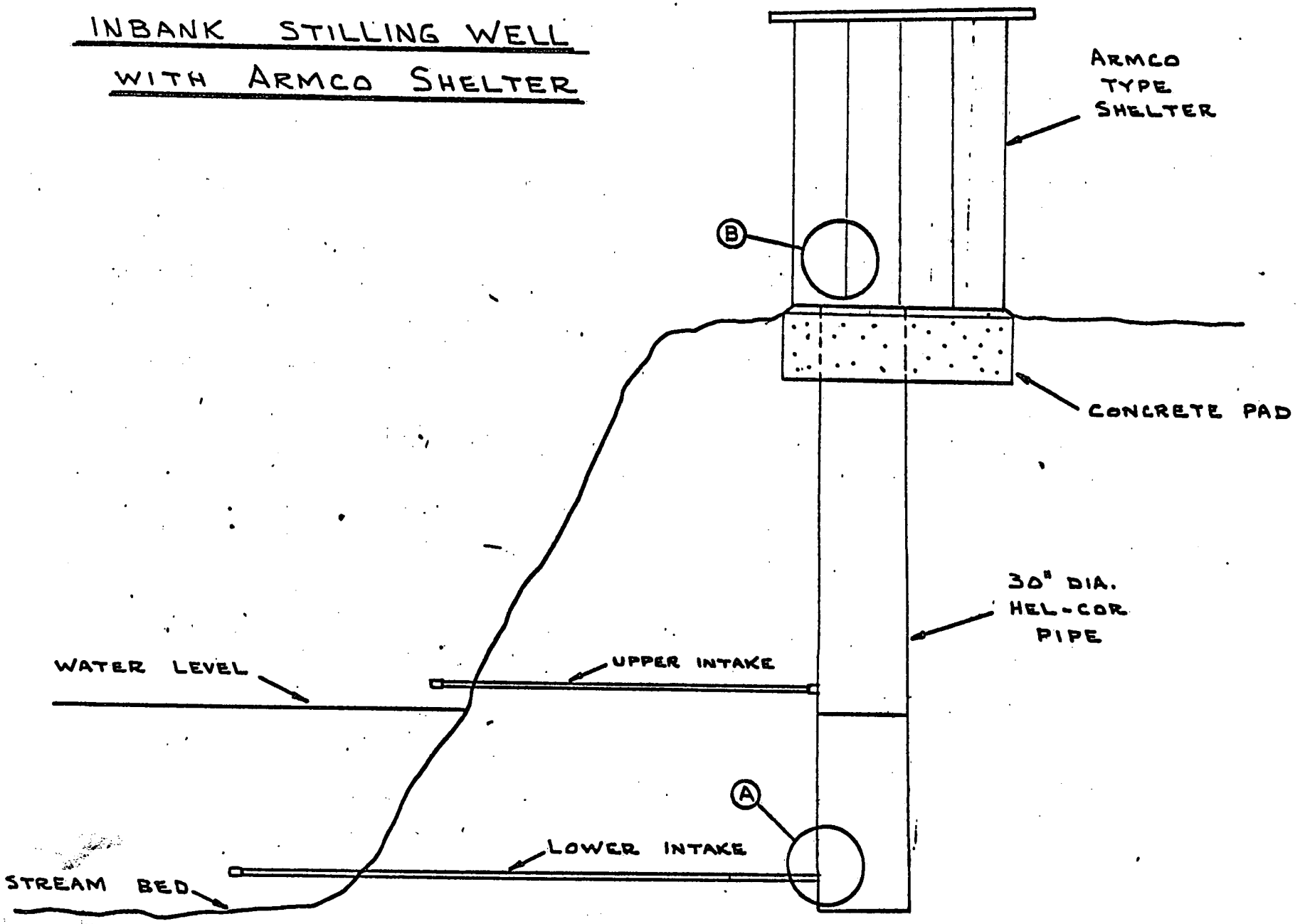
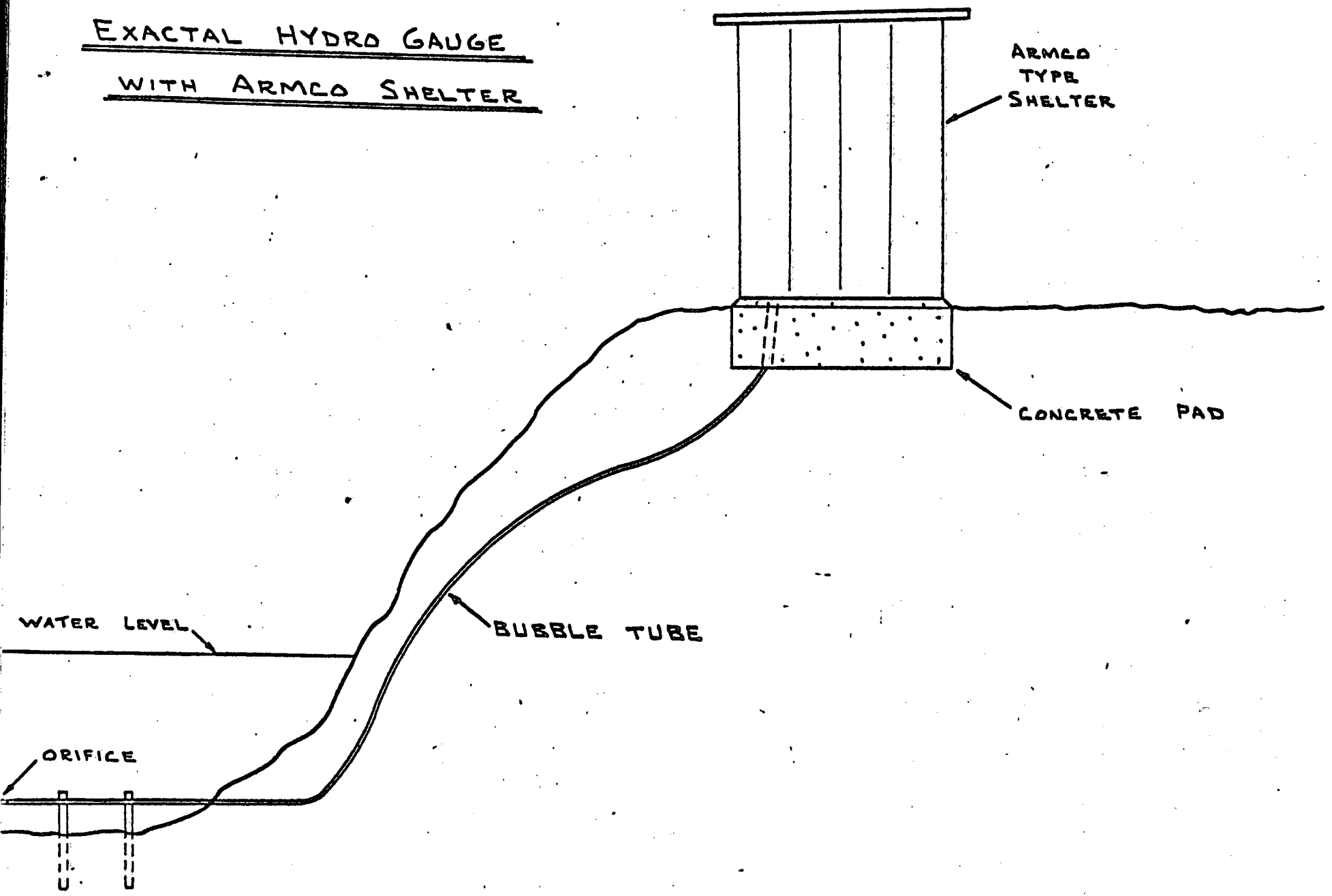


FIG. 3

EXACTAL HYDRO GAUGE

WITH ARMCO SHELTER



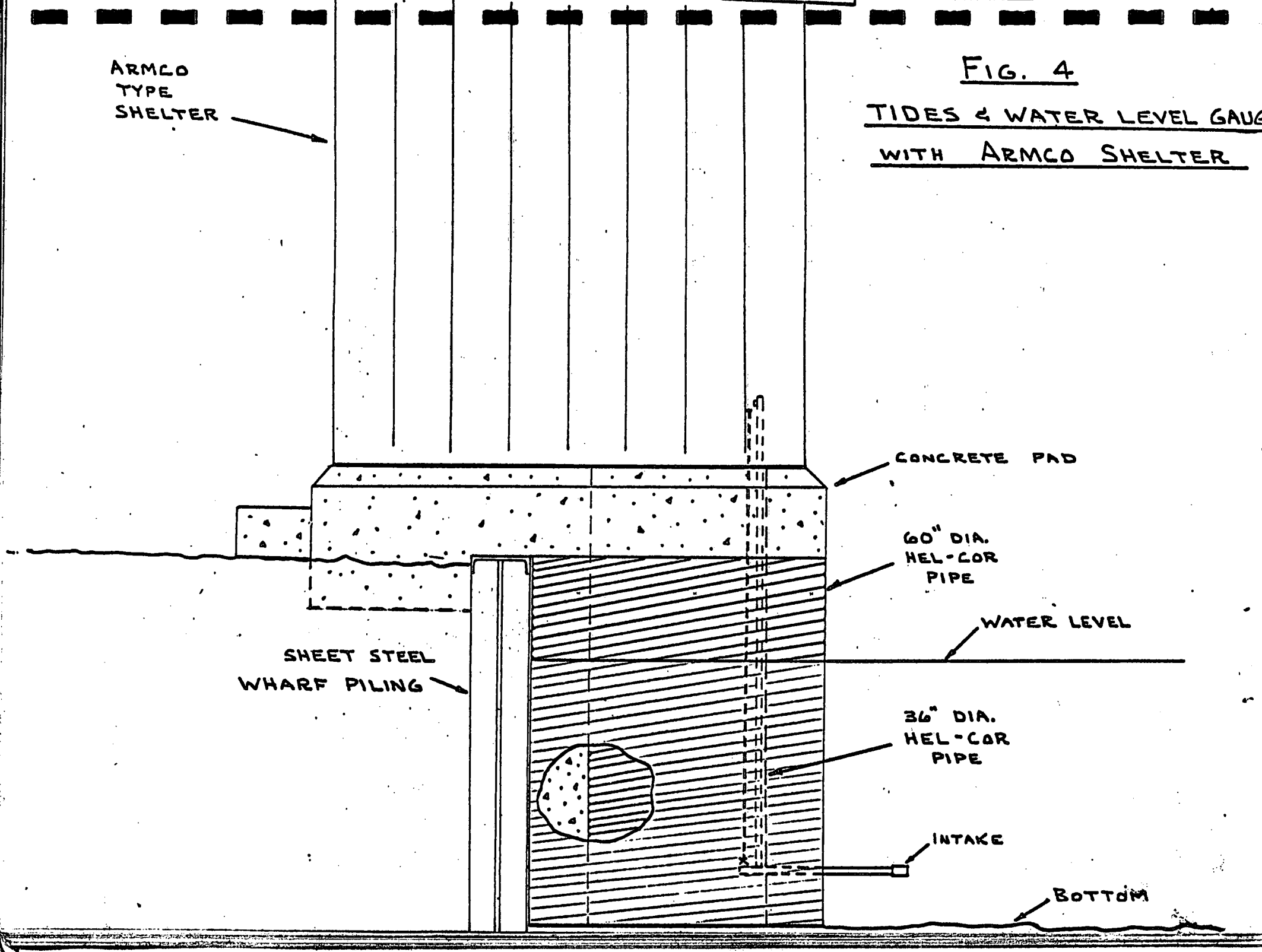


FIG. 4

TIDES & WATER LEVEL GAUG

WITH ARMCO SHELTER

STATION COST BREAKDOWN

The following is an interpretation of the headings used in this report for station cost breakdown.

SALARIES

Supervisor, foreman and casual labour.

BUILDING MATERIAL AND SUPPLIES

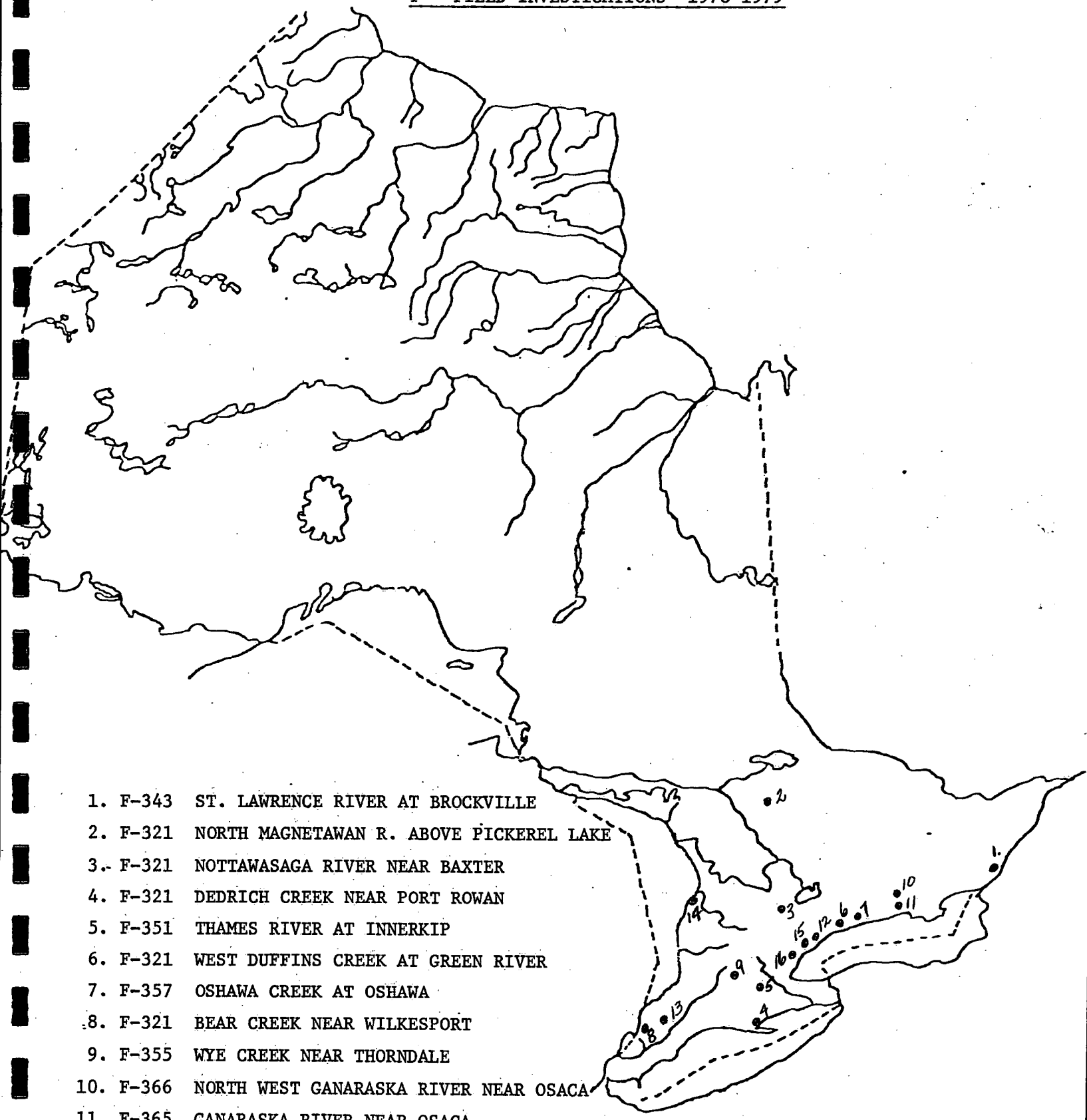
Stilling well, plumbing materials, electrical materials, concrete, instrument shelter, gravel, lumber, excavating machinery, rental equipment, steel, etc.

TRAVEL

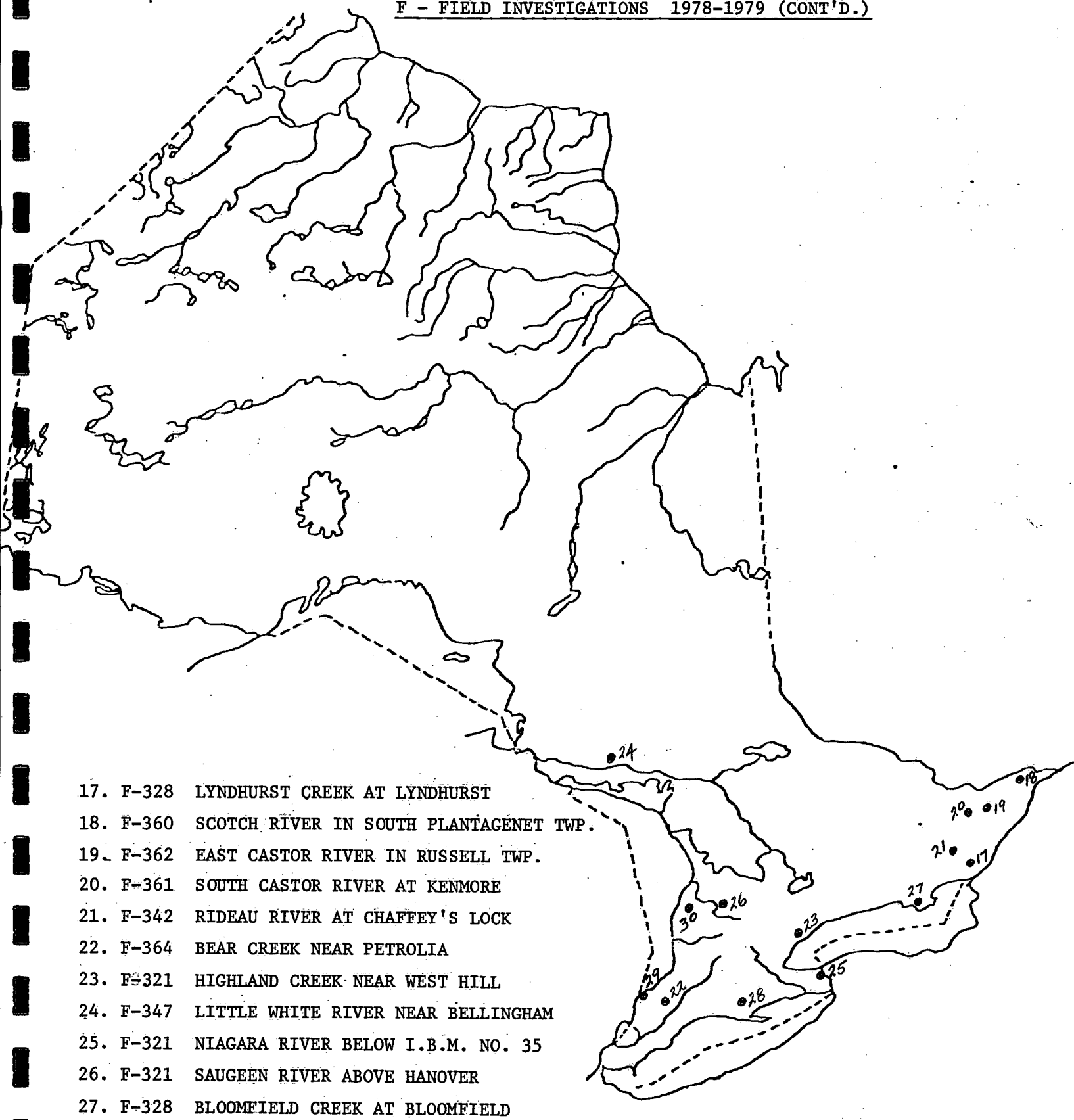
Meals and accommodation.

VEHICLE

Cost of operation (gasoline and depreciation).



1. F-343 ST. LAWRENCE RIVER AT BROCKVILLE
2. F-321 NORTH MAGNETAWAN R. ABOVE PICKEREL LAKE
3. F-321 NOTTAWASAGA RIVER NEAR BAXTER
4. F-321 DEDRICH CREEK NEAR PORT ROWAN
5. F-351 THAMES RIVER AT INNERKIP
6. F-321 WEST DUFFINS CREEK AT GREEN RIVER
7. F-357 OSHAWA CREEK AT OSHAWA
8. F-321 BEAR CREEK NEAR WILKESPORT
9. F-355 WYE CREEK NEAR THORNDALE
10. F-366 NORTH WEST GANARASKA RIVER NEAR OSACA
11. F-365 GANARASKA RIVER NEAR OSACA
12. F-321 BLACK CREEK AT SCARLETT ROAD
13. F-364 BEAR CREEK NEAR PETROLIA
14. F-321 SAUGEEN RIVER NEAR PORT ELGIN
15. F-321 MIMICO CREEK AT ISLINGTON
16. F-340 OAKVILLE CREEK AT MILTON



17. F-328 LYNDHURST CREEK AT LYNDHURST
18. F-360 SCOTCH RIVER IN SOUTH PLANTAGENET TWP.
19. F-362 EAST CASTOR RIVER IN RUSSELL TWP.
20. F-361 SOUTH CASTOR RIVER AT KENMORE
21. F-342 RIDEAU RIVER AT CHAFFEY'S LOCK
22. F-364 BEAR CREEK NEAR PETROLIA
23. F-321 HIGHLAND CREEK NEAR WEST HILL
24. F-347 LITTLE WHITE RIVER NEAR BELLINGHAM
25. F-321 NIAGARA RIVER BELOW I.B.M. NO. 35
26. F-321 SAUGEEN RIVER ABOVE HANOVER
27. F-328 BLOOMFIELD CREEK AT BLOOMFIELD
28. F-375 BIG OTTER CREEK AT TILLSONBURG
29. F-325 ST. CLAIR RIVER AT POINT EDWARD
30. F-321 LUCKNOW RIVER AT LUCKNOW

F - 343 ST. LAWRENCE RIVER AT BROCKVILLE

A field investigation was made with a representative from the National Water Research Institute, Canada Centre For Inland Waters, to locate a suitable site for a water level gauging station.

COST

Salaries	(0.2 M.W.)	$ 82.00
Travel		35.25
Vehicle		48.45
	TOTAL	$ 165.70

F - 321 NORTH MAGNETAWAN RIVER ABOVE PICKEREL LAKE

A field investigation was made with regard to the installation of a sediment sampler and housing on the bridge.

COST

Salaries	(0.2 M.W.)	$ 82.00
Travel		32.25
Vehicle		34.46
	TOTAL	$ 148.71

F - 321 NOTTAWASAGA RIVER NEAR BAXTER

A reconnaissance and survey were made with regard to the installation of a cableway for high water measurements.

COST

Salaries	(0.5 M.W.)	$ 188.12
Travel		42.30
Vehicle		33.74
	TOTAL	$ 264.16

F - 321 DEDRICH CREEK NEAR PORT ROWAN

A field investigation was made with regard to repairs to the concrete control.

COST

Salaries	(0.2 M.W.)	$ 73.50
Travel		-
Vehicle		13.63
	TOTAL	$ 87.13

F - 351 THAMES RIVER AT INNERKIP

A reconnaissance and survey were made and a suitable site was chosen for the installation of a hydrometric gauging station.

COST

Salaries	(0.3 M.W.)	$ 114.50
Travel		10.50
Vehicle		25.16
	TOTAL	$ 150.16

F - 321 WEST DUFFINS CREEK AT GREEN RIVER

A field investigation was made with regard to the removal of the sheet steel control.

COST

Salaries	(0.1 M.W.)	$ 36.75
Travel		7.00
Vehicles		7.96
	TOTAL	$ 51.71

F - 357 OSHAWA CREEK AT OSHAWA

A field investigation was made with regard to the installation of a sheet control. Due to road widening this work was postponed.

COST

Salaries	(0.1 M.W.)	$ 36.75
Travel		-
Vehicle		7.96
	TOTAL	$ 44.71

F - 321 BEAR CREEK NEAR WILKESPORT

A field investigation was made with regard to repairs to the sheet steel control.

COST

Salaries	(0.04 M.W.)	$ 16.40
Travel		7.68
Vehicle		4.46
	TOTAL	$ 28.54

F - 355 WYE CREEK NEAR THORNDALE

A field investigation was made with regard to the installation of a sheet steel control.

COST

Salaries	(0.04 M.W.)	$ 16.40
Travel		7.68
Vehicle		4.46
	TOTAL	$ 28.54

F - 366 NORTH WEST GANARASKA RIVER NEAR OSACA

A field investigation was made with regard to the installation of a sheet steel control.

COST

Salaries	(0.1 M.W.)	$ 36.75
Travel		-
Vehicle		7.96
	TOTAL	$ 44.71

F - 365 GANARASKA RIVER NEAR OSACA

A field investigation was made with regard to the installation of a sheet steel control.

COST

Salaries	(0.1 M.W.)	$ 36.75
Travel		-
Vehicle		7.96
	TOTAL	$ 44.71

F - 321 BLACK CREEK AT SCARLETT ROAD

A field investigation and survey were made with regard to the installation of a control device.

COST

Salaries	(0.2 M.W.)	$ 73.50
Travel		3.50
Vehicle		13.24
	TOTAL	$ 90.24

F - 364 BEAR CREEK NEAR PETROLIA

A field investigation was made with regard to repairs to the intake pipe and sheet steel control.

COST

Salaries	(0.04 M.W.)	$ 16.40
Travel		7.68
Vehicle		4.46
	TOTAL	$ 28.54

F - 321 SAUGEEN RIVER NEAR PORT ELGIN

A field investigation was made and the Bruce Municipal Telephone Company contacted with regard to a telephone service to operate telemetry equipment at this station.

COST

Salaries	(0.2 M.W.)	$ 82.00
Travel		3.50
Vehicle		29.87
	TOTAL	$ 115.37

F - 321 MIMICO CREEK AT ISLINGTON

A field investigation was made with regard to repairs to the concrete drop structure that serves as a control at this gauging station.

COST

Salaries	(0.2 M.W.)	$ 73.50
Travel		3.50
Vehicle		13.23
	TOTAL	$ 90.23

F - 340 OAKVILLE CREEK AT MILTON

A field investigation and on-the-site meeting were held with representatives of the Halton Region Conservation Authority, Design Engineers, General Contractor, Milton Hydro and Bell Telephone Company with regard to the scheduling of work between contractor and Environment Canada.

COST

Salaries	(0.3 M.W.)	$ 123.00
Travel		3.50
Vehicle		36.53
	TOTAL	$ 163.03

F - 328 LYNDHURST CREEK AT LYNDHURST

A field investigation was made with regard to the removal of this station from private property.

COST

Salaries	(0.2 M.W.)	$ 82.00
Travel		10.70
Vehicles		62.48
	TOTAL	$ 155.18

F - 360 SCOTCH RIVER IN SOUTH PLANTAGENET TWP.

A field investigation was made with a representative from the Ottawa Sub-office and a suitable site was chosen for the installation of a hydrometric gauging station.

COST

Salaries	(0.13 M.W.)	$ 51.33
Travel		14.30
Vehicles		19.35
	TOTAL	$ 84.98

F - 362 EAST CASTOR RIVER IN RUSSEL TWP.

A field investigation was made with a representative from the Ottawa Sub-office and a better site located than the one previously chosen.

COST

Salaries	(0.13 M.W.)	$ 51.33
Travel		14.30
Vehicles		19.35
	TOTAL	$ 84.98

F - 361 SOUTH CASTOR RIVER AT KENMORE

A field investigation was made with a representative from the Ottawa Sub-office and a suitable site was chosen on the Township of Osgoode right-of-way instead of the location previously selected on private property.

COST

Salaries	(0.13 M.W.)	$ 51.33
Travel		14.30
Vehicles		19.35
	TOTAL	$ 84.98

F - 342 RIDEAU RIVER AT CHAFFEY'S LOCKS

A field investigation was made with representatives from the Rideau Canal Waterways and the Ottawa Sub-office and a suitable site was chosen for the installation of a gauging station at this location.

COST

Salaries	(0.4 M.W.)	$ 154.00
Travel		37.75
Vehicles		89.79
	TOTAL	$ 281.54

F - 364 BEAR CREEK NEAR PETROLIA

A field investigation was made with regard to the availability of a private line telephone service to operate a telemark at this hydrometric gauging station.

COST

Salary	(0.2 M.W.)	$ 82.00
Travel		30.65
Vehicle		44.52
	TOTAL	$ 157.17

F - 321 HIGHLAND CREEK NEAR WEST HILL

A field investigation with the Area Engineer was made regarding the removal of the present gauging station and its relocation when the new bridge is built on Kingston Road.

COST

Salaries	(0.4 M.W.)	$ 167.00
Travel		7.00
Vehicle		38.85
	TOTAL	$ 212.85

At a later date a meeting was held with the Project Engineer of Cole, Sherman and Associates Limited with regard to the relocation and reconstruction of this gauging station. - No. Charge.

F - 347 LITTLE WHITE RIVER BEAR BELLINGHAM

A field investigation was made with regard to the installation of a stilling well and a Guelph instrument shelter at this location.

COST

Salaries	(0.8 M.W.)	$ 294.00
Travel		137.70
Vehicles		151.41
	TOTAL	$ 583.11

F - 321 NIAGARA RIVER BELOW I.B.M. NO. 35

A field investigation was made with regard to the blocked intake pipe.

COST

Salary	(0.06 M.W.)	$ 27.33
Travel		9.05
Vehicle		9.17
	TOTAL	$ 45.55

F - 321 SAUGEEN RIVER ABOVE HANOVER

A field investigation and survey were made and a site chosen for the installation of a hydrometric gauging stations on this river.

COST

Salary	(0.1 M.W.)	$ 41.00
Travel		3.50
Vehicle		32.34
	TOTAL	$ 76.84

F - 328 BLOOMFIELD CREEK AT BLOOMFIELD

A field investigation was made regarding backwater effect at this gauging station.

COST

Salaries	(0.2 M.W.)	$ 73.50
Travel		16.95
Vehicles		26.70
	TOTAL	$ 117.15

F - 375 BIG OTTER CREEK AT TILLSONBURG

A field investigation was made with regard to obtaining telephone service at this gauging station.

COST

Salaries	(0.1 M.W.)	$ 41.00
Travel		3.60
Vehicle		30.80
	TOTAL	$ 75.40

F - 325 ST. CLAIR RIVER AT POINT EDWARD

A field investigation was made with regard to finding a location for a shore facility on the Canadian side of the St. Clair River for the purpose of conducting a current meter program in co-operation with the Environmental Research Laboratories of the National Oceanic and Atmospheric Administration of the United States Department of Commerce.

COST

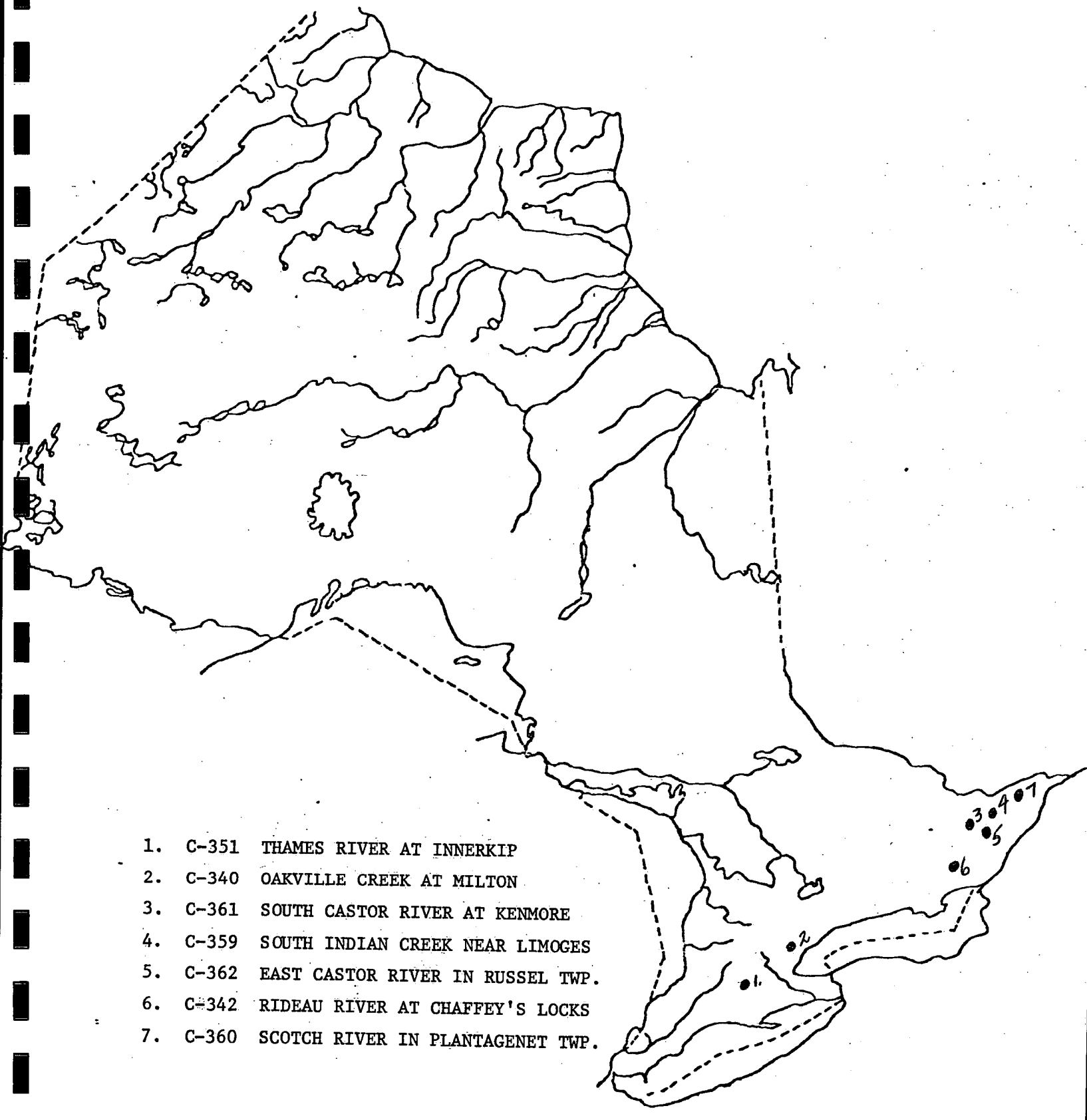
Salaries	(0.2 M.W.)	$ 76.00
Travel		28.00
Vehicle		21.00
	TOTAL	$ 125.00

F - 321 LUCKNOW RIVER AT LUCKNOW

A preliminary field investigation was made with the Area Engineer and a suitable site located for the installation of a hydrometric and telemetric station.

COST

Salaries	(0.4 M.W.)	$ 177.00
Travel		7.20
Vehicle		51.80
	TOTAL	$ 236.00



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4. C-359 SOUTH INDIAN CREEK NEAR LIMOGES
5. C-362 EAST CASTOR RIVER IN RUSSEL TWP.
6. C-342 RIDEAU RIVER AT CHAFFEY'S LOCKS
7. C-360 SCOTCH RIVER IN PLANTAGENET TWP.

C - 351 THAMES RIVER AT INNERKIP

Installed a 30" diameter galvanized steel "Hel-Cor" stilling well and intakes. Erected a 5'4" X 5'4" X 8'0" insulated steel "Armco" walk-in shelter, complete with a 60 ampere electrical service, on a 6' X 6' X 2' concrete pad.

COST

Salaries (3.1 M.W.)	$ 914.50
Building Material and Supplies	2528.48
Travel	516.95
Vehicles	140.57
TOTAL	$ 4100.50

C - 340 OAKVILLE CREEK AT MILTON

Installed a 30" diameter galvanized steel "Hel-Cor" stilling well and intakes. Erected a 5'4" X 5'4" X 8'0" insulated steel "Armco" walk-in shelter on a 6' X 6' X 2' concrete pad, complete with a 60 ampere electrical service and a Stevens analogue recorder. A galvanized steel artificial control was secured to the bottom of the concrete lined channel and galvanized steel steps were secured to the channel wall for access.

COST

Salaries (5.9 M.W.)	$ 1917.30
Building Material and Supplies	2617.65
Travel	110.00
Vehicles	351.98
TOTAL	$ 4996.93

C - 361 SOUTH CASTOR RIVER AT KENMORE

Installed a 30" diameter galvanized steel "Hel-Cor" stilling well, intakes and Guelph instrument shelter, complete with a 30 ampere electrical service and Stevens analogue recorder.

COST

Salaries	(1.21 M.W.)	$ 433.67
Building Material and Supplies		667.40
Travel		155.20
Vehicle		159.27
	TOTAL	$ 1415.54

In 1977-78, $825.95 were spent on building materials and supplies for this project. TOTAL PROJECT COST $ 2241.49

C - 359 SOUTH INDIAN CREEK NEAR LIMOGES

Installed a 30" diameter galvanized steel "Hel-Cor" stilling well, intakes and Guelph instrument shelter, complete with a 30 ampere electrical service and Stevens analogue recorder.

COST

Salaries	(1.98 M.W.)	$ 639.86
Building Materials and Supplies		526.80
Travel		385.25
Vehicles		281.04
	TOTAL	$ 1832.95

In 1977-78, $886.60 were spent on building materials and supplies for this project. TOTAL PROJECT COST $ 2719.55

C - 362 EAST CASTOR RIVER IN RUSSELL TWP.

Erected a 5'4" X 5'4" X 8'0" insulated steel "Armco" walk-in shelter, complete with a 60 ampere electrical service on a 6' X 6' X 2' concrete pad. Installed bubble tube from shelter to river.

COST

Salaries	(3.55 M.W.)	$ 1144.48
Building Materials and Supplies		457.77
Travel		520.25
Vehicles		571.95
	TOTAL	$ 2694.45

In 1977-78, $994.51 were spent on building material and supplies for this project. TOTAL PROJECT COST $ 3688.95

C - 342 RIDEAU RIVER AT CHAFFEY'S LOCKS

Installed a 30" diameter galvanized steel "Hel-Cor" stilling well and intakes. A natural stone walk-in shelter complete with a 60 ampere electrical service was constructed by the Rideau Canal Waterways of Parks Canada.

COST

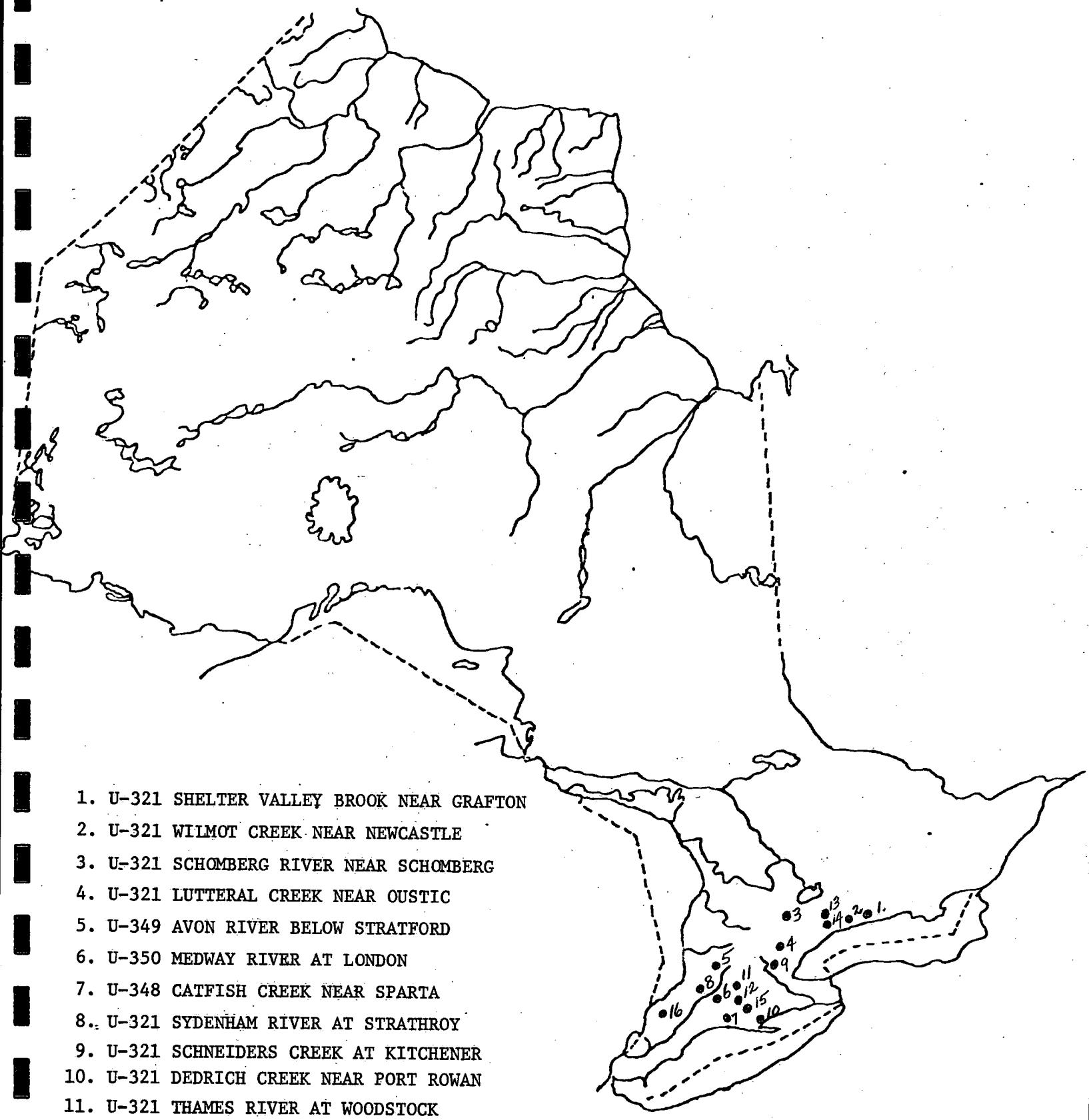
Salaries	(1.26 M.W.)	$ 429.10
Building Material and Supplies		33.73
Travel		184.85
Vehicles		249.96
	TOTAL	$ 897.64

C - 360 SCOTCH RIVER IN PLANTAGENET TWP.

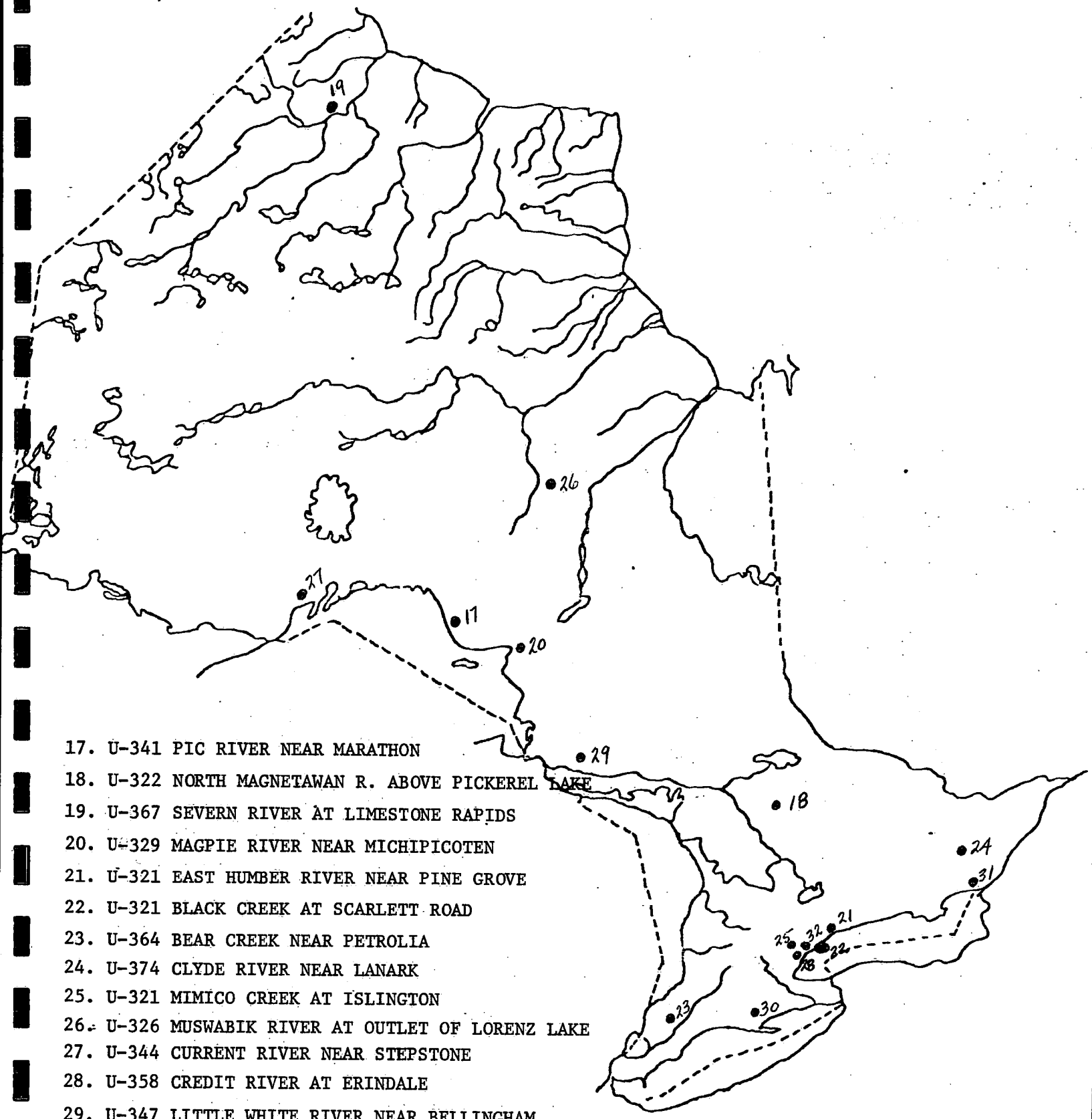
Installed a 30" diameter galvanized steel "Hel-Cor" stilling well, intake pipes, Guelph shelter complete with a 30 ampere electrical service and a Stevens analogue recorder.

COST

Salaries (2.8 M.W.)	$ 1051.77
Building Materials and Supplies	2262.53
Travel	376.70
Vehicle	529.00
TOTAL	$ 4220.06



1. U-321 SHELTER VALLEY BROOK NEAR GRAFTON
2. U-321 WILMOT CREEK NEAR NEWCASTLE
3. U-321 SCHOMBERG RIVER NEAR SCHOMBERG
4. U-321 LUTTERAL CREEK NEAR OUSTIC
5. U-349 AVON RIVER BELOW STRATFORD
6. U-350 MEDWAY RIVER AT LONDON
7. U-348 CATFISH CREEK NEAR SPARTA
8. U-321 SYDENHAM RIVER AT STRATHROY
9. U-321 SCHNEIDERS CREEK AT KITCHENER
10. U-321 DEDRICH CREEK NEAR PORT ROWAN
11. U-321 THAMES RIVER AT WOODSTOCK
12. U-321 WAUBUNO CREEK NEAR DORCHESTER
13. U-365 GANARASKA RIVER NEAR OSACA
14. U-366 N.W. GANARASKA RIVER NEAR OSACA
15. U-321 THAMES RIVER AT INGERSOLL
16. U-364 BEAR CREEK NEAR PETROLIA



17. U-341 PIC RIVER NEAR MARATHON
18. U-322 NORTH MAGNETAWAN R. ABOVE PICKEREL LAKE
19. U-367 SEVERN RIVER AT LIMESTONE RAPIDS
20. U-329 MAGPIE RIVER NEAR MICHIPICOTEN
21. U-321 EAST HUMBER RIVER NEAR PINE GROVE
22. U-321 BLACK CREEK AT SCARLETT ROAD
23. U-364 BEAR CREEK NEAR PETROLIA
24. U-374 CLYDE RIVER NEAR LANARK
25. U-321 MIMICO CREEK AT ISLINGTON
26. U-326 MUSWABIK RIVER AT OUTLET OF LORENZ LAKE
27. U-344 CURRENT RIVER NEAR STEPSTONE
28. U-358 CREDIT RIVER AT ERINDALE
29. U-347 LITTLE WHITE RIVER NEAR BELLINGHAM
30. U-375 BIG OTTER CREEK AT TILLSONBURG
31. U-421 LAKE ONTARIO AT KINGSTON
32. U-321 HIGHLAND CREEK NEAR WEST HILL

U - 321 SHELTER VALLEY BROOK NEAR GRAFTON

A thermostat was installed to control the well heating cable.

COST

Salaries	(0.1 M.W.)	$ 41.00
Building Material and Supplies		30.00
Travel		6.65
Vehicle		14.47
	TOTAL	$ 92.12

U - 321 WILMOT CREEK NEAR NEWCASTLE

A thermostat was installed to control the well heating cable.

COST

Salaries	(0.1 M.W.)	$ 41.00
Building Material and Supplies		30.00
Travel		4.05
Vehicle		14.47
	TOTAL	$ 89.52

U - 321 SCHOMBERG RIVER NEAR SCHOMBERG

A thermostat was installed to control the well heating cable.

COST

Salaries	(0.05 M.W.)	$ 20.50
Building Material and Supplies		30.00
Travel		3.60
Vehicle		5.25
	TOTAL	$ 59.35

U - 321 LUTTERAL CREEK NEAR OUSTIC

A thermostat was installed to control the well heating cable.

COST

Salaries	(0.05 M.W.)	$ 20.50
Building Material and Supplies		30.00
Travel		3.60
Vehicle		5.25
	TOTAL	$ 59.35

U - 349 AVON RIVER BELOW STRATFORD

Erected a 5'4" X 5'4" X 8'0" insulated steel "Armco" walk-in shelter, complete with a 60 ampere electrical service, on a 6' X 6' X 2' poured-in-place concrete pad around the existing well, replacing the Guelph shelter.

COST

Salaries (1.9 M.W.)	$ 688.44
Building Material and Supplies	1300.18
Travel	307.75
Vehicles	137.41
TOTAL	$ 2433.78

U - 350 MEDWAY RIVER AT LONDON

Erected a 5'4" X 5'4" X 8'0" insulated steel "Armco" walk-in shelter, complete with a 60 ampere electrical service, on a 6' X 6' X 2' poured-in-place concrete pad around the existing well, replacing the Guelph shelter.

COST

Salaries (1.7 M.W.)	$ 595.12
Building Material and Supplies	1229.07
Travel	342.55
Vehicles	131.18
TOTAL	$ 2297.92

U - 348 CATFISH CREEK NEAR SPARTA

Erected a 5'4" X 5'4" X 8' 0" insulated steel "Armco" walk-in shelter, complete with a 60 ampere electrical service, on a 6' X 6' X 2' poured-in-place concrete pad around the existing well, replacing the Guelph shelter.

COST

Salaries (1.9 M.W.)	$	540.84
Building Material and Supplies		1297.71
Travel		187.10
Vehicles		70.98
TOTAL	$	2096.63

U - 321 SYDENHAM RIVER AT STRATHROY

A thermostat was installed to control the heating cable.

COST

Salaries (0.1 M.W.)	$	41.00
Building Material and Supplies		30.00
Travel		17.63
Vehicle		13.45
TOTAL	$	102.08

U - 321 SCHNEIDERS CREEK AT KITCHENER

A thermostat was installed to control the heating cable.

COST

Salaries (0.1 M.W.)	$ 41.00
Building Material and Supplies	30.00
Travel	17.62
Vehicle	13.45
TOTAL	$ 102.07

U - 321 DEDRICH CREEK NEAR PORT ROWAN

Concrete work was done to repair the old dam that serves as a control at this station. Crushed stone fill was also placed around the well.

COST

Salaries (0.8 M.W.)	$ 213.68
Building Material and Supplies	82.70
Travel	149.30
Vehicle	47.55
TOTAL	$ 493.23

U - 321 THAMES RIVER AT WOODSTOCK

A thermostat was installed to control the heating cable.

COST

Salaries	(0.1 M.W.)	$ 41.00
Building Material and Supplies		30.00
Travel		5.36
Vehicles		12.00
	TOTAL	$ 88.36

U - 321 WAUBUNO CREEK NEAR DORCHESTER

A thermostat was installed to control the heating cable.

COST

Salaries	(0.1 M.W.)	$ 41.00
Building Material and Supplies		30.00
Travel		5.35
Vehicles		11.99
	TOTAL	$ 88.34

U - 365 GANARASKA RIVER NEAR OSACA

An artificial sheet steel control was constructed to stabalize the stream bed and increase the accuracy of the stage-discharge relationship at low flows.

COST

Salaries (1.4 M.W.)	$ 513.29
Building Material and Supplies	448.66
Travel	255.90
Vehicle	113.95
TOTAL	$ 1331.80

U - 366 NORTH WEST GANARASKA RIVER NEAR OSACA

An artificial sheet steel control was constructed to stabalize the stream bed and increase the accuracy of the stage-discharge relationship at low flows.

COST

Salaries (1.6 M.W.)	$ 575.06
Building Material and Supplies	513.34
Travel	274.60
Vehicle	85.30
TOTAL	$ 1448.30

U - 321 THAMES RIVER AT INGERSOLL

The well and concrete block shelter, including the steel plate door, was insulated from the water level to the ceiling with foamed-in-place urethane insulation. The shelter was panelled, a new floor and instrument shelf constructed and the electrical system renovated.

COST

Salaries (1.6 M.W.)	$ 588.00
Building Material and Supplies	590.34
Travel	239.50
Vehicle	26.67
TOTAL	$ 1444.51

U - 364 BEAR CREEK NEAR PETROLIA

Erected a 5'4" X 5'4" X 8'0" insulated steel "Armco" walk-in shelter complete with a 60 ampere electrical service, on a 6' X 6' X 2' poured-in-place concrete pad around the existing well replacing the Guelph shelter.

COST

Salaries (3.8 M.W.)	$ 1168.00
Building Material and Supplies	1283.34
Travel	466.40
Vehicles	374.49
TOTAL	$ 3292.23

U - 341 PIC RIVER NEAR MARATHON

Erected a 5'4" X 5'4" X 8'0" steel "Armco" walk-in-shelter on a supported preserved wood base. Installed bubbler tube from shelter to river.

COST

Salaries (1.1 M.W.)	$ 377.82
Building Material and Supplies	770.53
Travel	239.40
Vehicles	200.98
TOTAL	$ 1588.73

U - 322 NORTH MAGNETAWAN RIVER ABOVE PICKEREL LAKE

A sediment sampler shelter and sampling apparatus were installed on the bridge railing.

COST

Salary (0.2 M.W.)	$ 82.00
Building Material and Supplies	264.65
Travel	25.70
Vehicle	56.07
TOTAL	$ 428.42

U - 367 SEVERN RIVER AT LIMESTONE RAPIDS

A "Bally" insulated walk-in instrument shelter was erected and bubble tube installed to the river.

COST

Salaries (6.2 M.W.)	$ 2379.09
Building Material and Supplies	4492.21
Travel	940.95
Vehicles	661.64
TOTAL	$ 8473.89

U - 329 MAGPIE RIVER NEAR MICHIPICOTEN

Wet cell batteries, charger and timer were installed to replace dry cell battery operation. The telephone cable that was severed by vandals was repaired.

COST

Salaries (0.2 M.W.)	$ 53.50
Building Material and Supplies	100.00
Travel	7.00
Vehicle	-
TOTAL	$ 160.50

U - 321 EAST HUMBER RIVER NEAR PINE GROVE

Installed a Stevens telemark instrument and an additional 110 Volt convenience outlet.

COST

Salaries (0.2 M.W.)	$ 82.00
Building Material and Supplies	110.00
Travel	3.50
Vehicle	30.03
TOTAL	$ 225.53

U - 321 BLACK CREEK AT SCARLETT ROAD

A telemark instrument was installed along with a 110 Volt outlet and new floor planks.

COST

Salaries (0.2 M.W.)	$ 82.00
Building Material and Supplies	110.00
Travel	3.50
Vehicles	26.88
TOTAL	$ 222.38

U - 364 BEAR CREEK NEAR PETROLIA

The walk-in shelter was enlarged by 4.4 square feet to accommodate monitoring equipment for sewage treatment plant records. A Stevens telemark instrument was also installed.

COST

Salaries (1.6 M.W.)	$ 485.00
Building Materials and Supplies	342.24
Travel	254.65
Vehicles	168.94
TOTAL	$ 1250.83

U - 374 CLYDE RIVER NEAR LANARK

Erected a 5'4" X 5'4" X 8'0" insulated steel "Armco" walk-in shelter, complete with a 60 ampere electrical service on a 6' X 6' X 2' poured-in-place concrete pad around the existing stilling well, replacing the Guelph shelter for telemark installation.

COST

Salaries (2.0 M.W.)	$ 837.13
Building Material and Supplies	1263.92
Travel	330.30
Vehicles	155.20
TOTAL	$ 2586.55

U - 321 MIMICO CREEK AT ISLINGTON

Installed a Stevens telemark instrument and a 110 Volt convenience outlet.

COST

Salaries (0.2 M.W.)	$ 82.00
Building Materials and Supplies	110.00
Travel	3.50
Vehicle	26.67
TOTAL	$ 222.17

U - 326 MUSWABIK RIVER AT OUTLET OF LORENZ LAKE

A "Bally" insulated walk-in instrument shelter was erected and a bubble tube installed to the river.

COST

Salaries (1.7 M.W.)	$ 730.40
Building Material and Supplies	3043.97
Travel	283.50
Vehicle	615.77
TOTAL	$ 4673.64

U - 344 CURRENT RIVER NEAR STEPSTONE

Installed a 30" diameter galvanized steel "Hel-Cor" stilling well and intakes. Erected a 5'4" X 5'4" X 8'0" insulated steel "Armco" walk-in shelter, complete with a 60 ampere electrical service, on a 6' X 6' X 2' concrete pad.

COST

Salaries (3.2 M.W.)	$ 1278.87
Building Material and Supplies	2346.72
Travel	645.49
Vehicles	749.17
TOTAL	$ 5020.25

U - 358 CREDIT RIVER AT ERINDALE

Erected cableway complete with anchors, towers, platform and cable car.

COST

Salaries (1.8 M.W.)	$ 653.00
Building Material and Supplies	1835.06
Travel	32.10
Vehicles	108.64
TOTAL	$ 2628.80

U - 347 LITTLE WHITE RIVER NEAR BELLINGHAM

Installed a 30" diameter galvanized steel "Hel-Cor" stilling well, intake pipes and Guelph shelter complete with 30 ampere electrical service.

COST

Salaries (2.6 M. W.)	$ 931.22
Building Materials and Supplies	2148.13
Travel	385.55
Vehicles	500.54
TOTAL	$ 3965.44

U - 375 BIG OTTER CREEK AT TILLSONBURG

Erected a 5'4" X 5'4" X 8'0" insulated steel "Armco" walk-in shelter , complete with a 60 ampere electrical service on a 6' X 6' X 2' poured-in-place concrete pad around the existing well, replacing the Guelph shelter for telemark installation.

COST

Salaries (1.4 M.W.)	$ 523.00
Building Material and Supplies	1276.20
Travel	199.55
Vehicles	71.60
TOTAL	$ 2070.35

U - 421 LAKE ONTARIO AT KINGSTON

The electrical system was upgraded to include a 208 Volt 750 Watt baseboard heater with thermostat, two 110 Volt duplex convenience outlets, a thermostatically controlled 110 Volt outlet for the well heater and the restoration of power to the originally installed 208 Volt 750 Watt baseboard heater.

COST

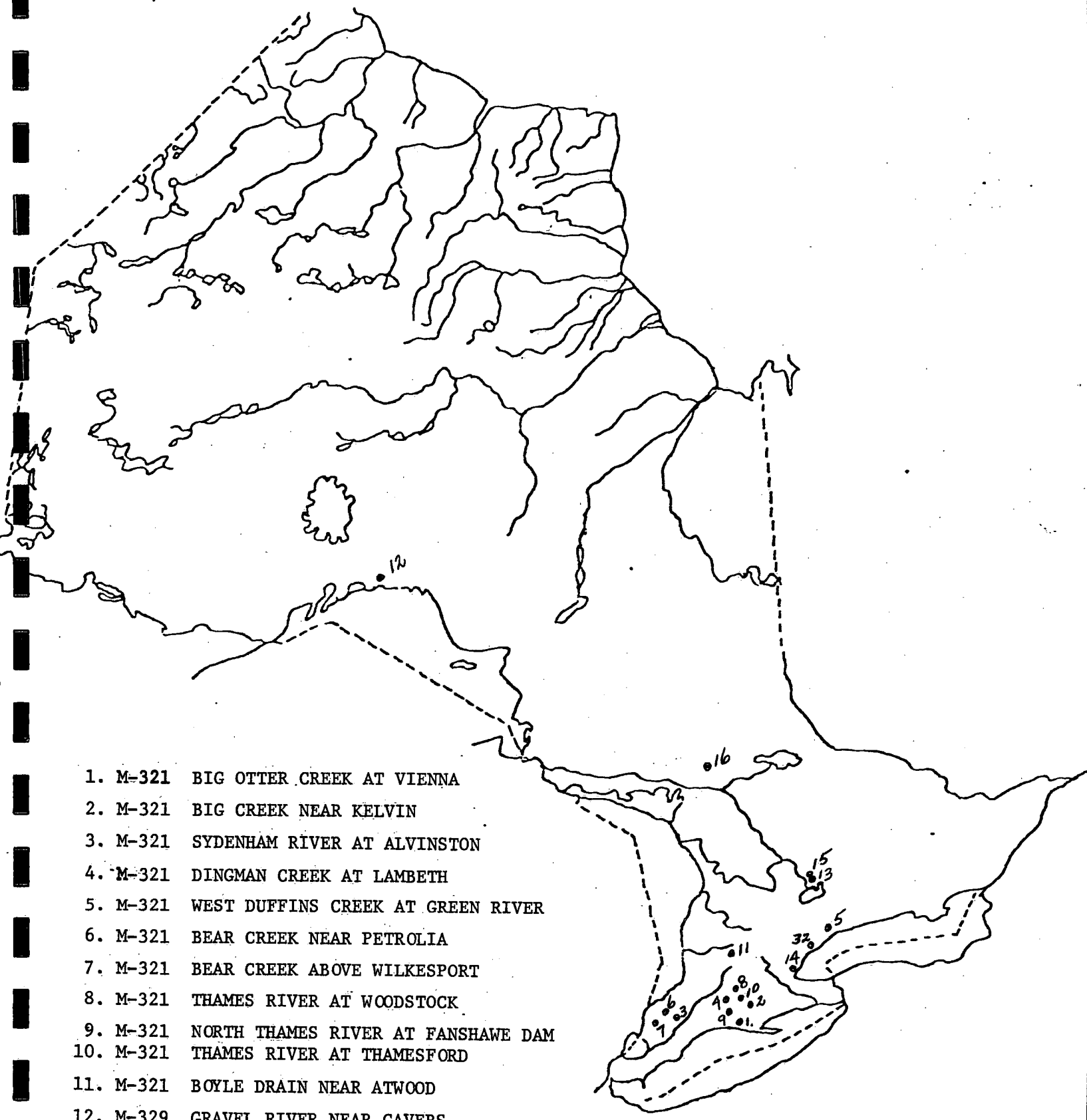
Salaries (0.5 M.W.)	$ 217.50
Building Material and Supplies	45.25
Travel	90.25
Vehicles	93.80
TOTAL	$ 446.80

U - 321 HIGHLAND CREEK NEAR WEST HILL

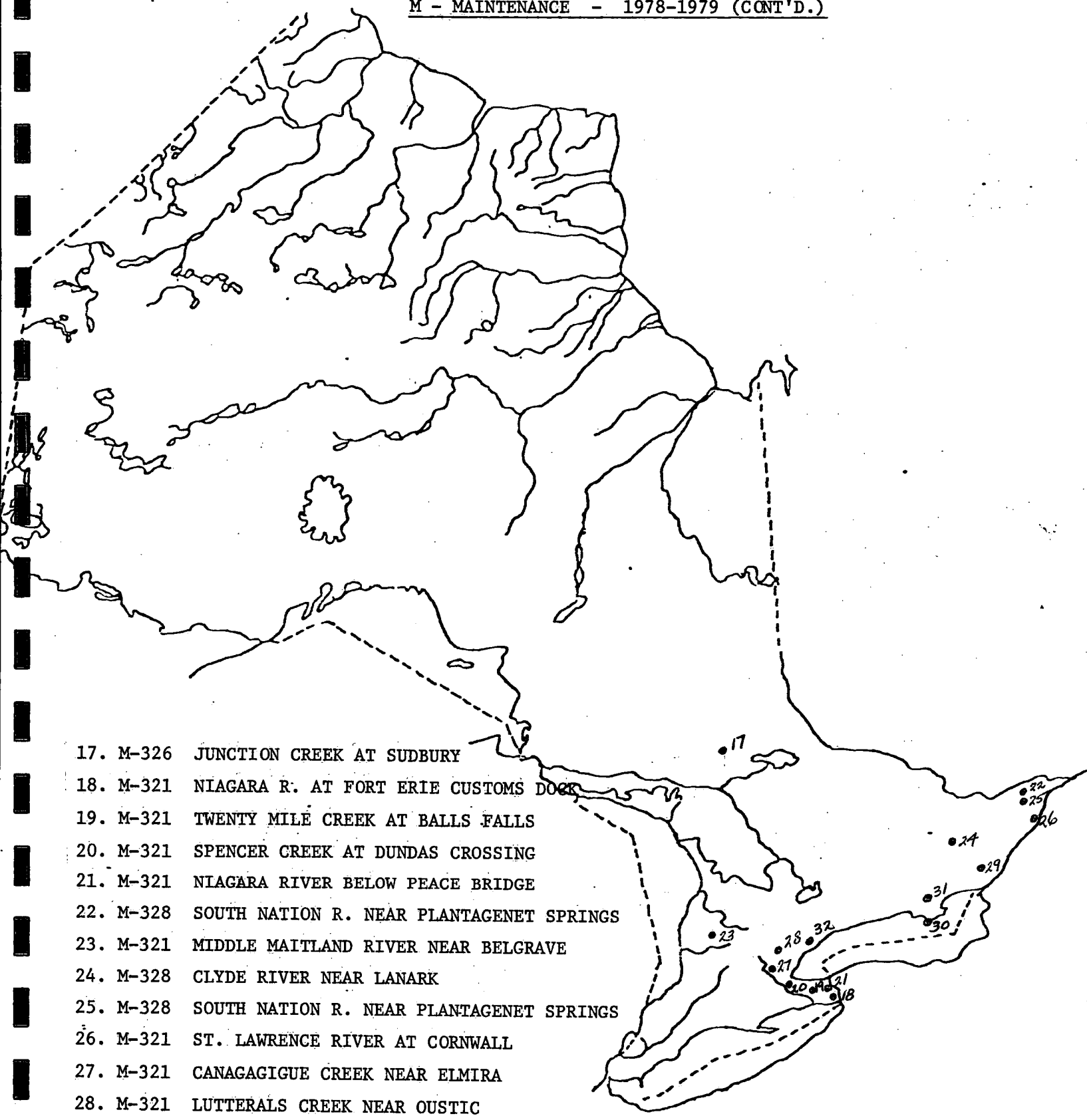
Electric supplies were delivered to the project engineer for installation by the contractor. An inspection was made of the job site at the same time.

COST

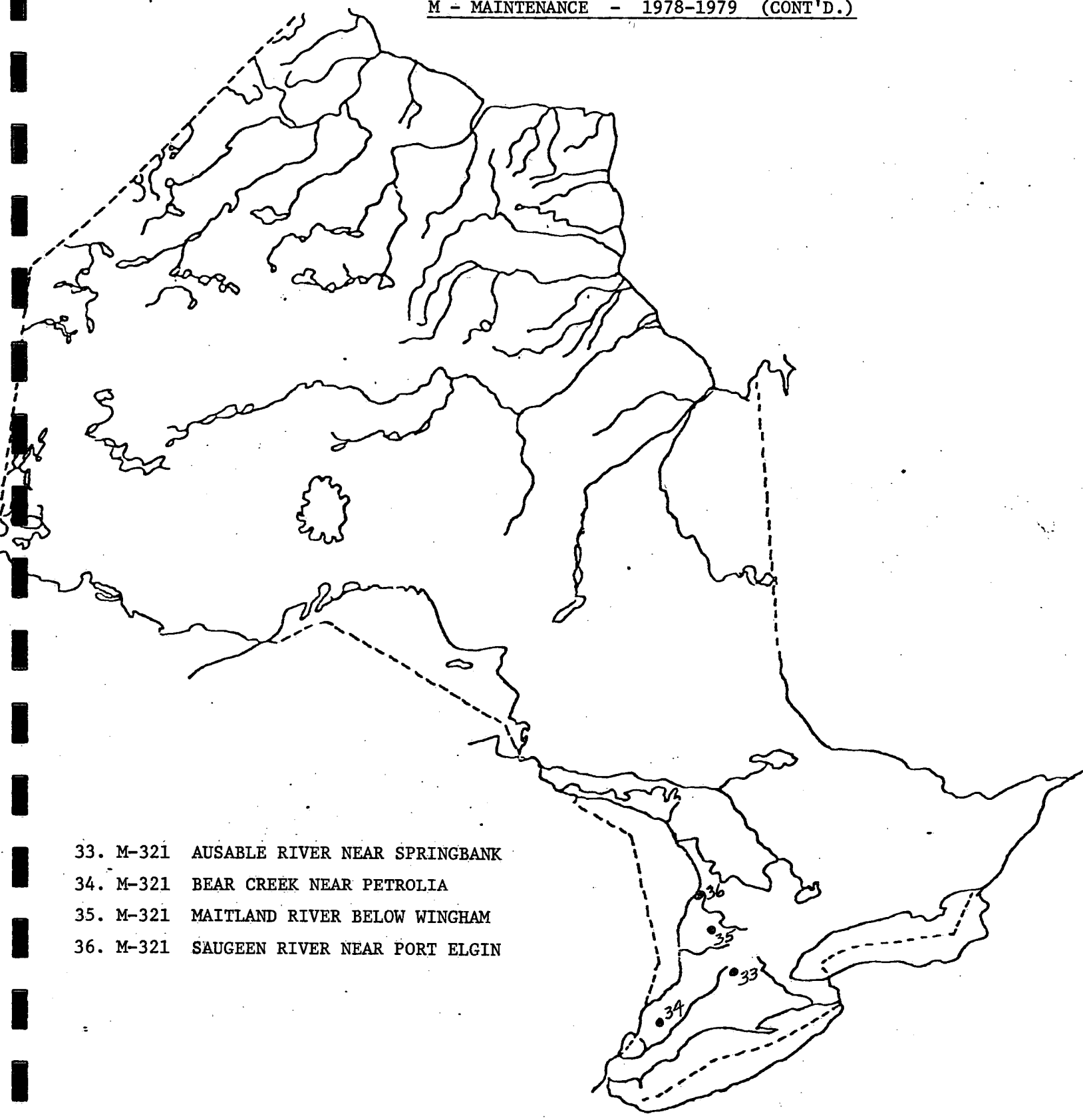
Salaries (0.2 M.W.)	$ 76.00
Building Material and Supplies	215.68
Travel	7.20
Vehicle	31.20
TOTAL	$ 330.08



1. M-321 BIG OTTER CREEK AT VIENNA
2. M-321 BIG CREEK NEAR KELVIN
3. M-321 SYDENHAM RIVER AT ALVINSTON
4. M-321 DINGMAN CREEK AT LAMBETH
5. M-321 WEST DUFFINS CREEK AT GREEN RIVER
6. M-321 BEAR CREEK NEAR PETROLIA
7. M-321 BEAR CREEK ABOVE WILKESPORT
8. M-321 THAMES RIVER AT WOODSTOCK
9. M-321 NORTH THAMES RIVER AT FANSHAWE DAM
10. M-321 THAMES RIVER AT THAMESFORD
11. M-321 BOYLE DRAIN NEAR ATWOOD
12. M-329 GRAVEL RIVER NEAR CAVERS
13. M-321 SEVERN RIVER ABOVE WASDELL FALLS
14. M-321 GRINDSTONE CREEK NEAR ALDERSHOT
15. M-321 SEVERN RIVER ABOVE WASDELL FALLS
16. M-326 NOLIN CREEK AT SUDBURY



17. M-326 JUNCTION CREEK AT SUDBURY
18. M-321 NIAGARA R. AT FORT ERIE CUSTOMS DOCK
19. M-321 TWENTY MILE CREEK AT BALLS FALLS
20. M-321 SPENCER CREEK AT DUNDAS CROSSING
21. M-321 NIAGARA RIVER BELOW PEACE BRIDGE
22. M-328 SOUTH NATION R. NEAR PLANTAGENET SPRINGS
23. M-321 MIDDLE MAITLAND RIVER NEAR BELGRAVE
24. M-328 CLYDE RIVER NEAR LANARK
25. M-328 SOUTH NATION R. NEAR PLANTAGENET SPRINGS
26. M-321 ST. LAWRENCE RIVER AT CORNWALL
27. M-321 CANAGAGIGUE CREEK NEAR ELMIRA
28. M-321 LUTTERALS CREEK NEAR OUSTIC
29. M-321 LYNDHURST CREEK AT LYNDHURST
30. M-321 LAKE ONTARIO AT POINT PETRE
31. M-321 BLESSINGTON CREEK NEAR BELLVILLE
32. M-321 ETOBICOKE CREEK BELOW Q.E.W.



33. M-321 AUSABLE RIVER NEAR SPRINGBANK
34. M-321 BEAR CREEK NEAR PETROLIA
35. M-321 MAITLAND RIVER BELOW WINGHAM
36. M-321 SAUGEEN RIVER NEAR PORT ELGIN

M - 321 BIG OTTER CREEK AT VIENNA

The instrument shelter, stand-pipe, valve handle extension and hydro pole were removed. The well was cut off and backfilled at this discontinued gauging station.

COST

Salaries (0.4 M.W.)	$ 147.00
Building Material and Supplies	44.00
Travel	62.50
Vehicles	31.24
TOTAL	$ 284.74

M - 321 BIG CREEK NEAR KELVIN

The instrument shelter, stand-pipe and valve handle extension were removed. The well was cut off and backfilled at this discontinued gauging station.

COST

Salaries (0.4 M.W.)	$ 147.00
Building Material and Supplies	15.00
Travel	21.40
Vehicles	33.63
TOTAL	$ 217.03

M - 321 SYDENHAM RIVER AT ALVINSTON

The instrument shelter, stand-pipe, valve handle extension and hydro pole were removed and the well was cut off and backfilled at this discontinued gauging station site.

COST

Salaries (0.44 M.W.)	$	123.24
Building Material and Supplies		-
Travel		84.48
Vehicle		39.34
TOTAL	$	247.06

M - 321 DINGMAN CREEK AT LAMBETH

The stand-pipe, valve handle extension and hydro pole were removed and the well cut off and backfilled at this discontinued gauging station site.

COST

Salaries (0.44 M.W.)	$	123.24
Building Material and Supplies		50.00
Travel		29.08
Vehicle		25.36
TOTAL	$	227.68

M - 321 WEST DUFFINS CREEK AT GREEN RIVER

The sheet steel control was removed, silt was cleaned from the streambed and the intake was repaired.

COST

Salaries (0.8 M.W.)	$	213.68
Building Material and Supplies		231.00
Travel		89.90
Vehicle		40.60
TOTAL	$	575.18

M - 321 BEAR CREEK NEAR PETROLIA

Repairs were made to the intake pipe that was broken during bridge construction. Repairs were also made to both ends of the sheet steel control.

COST

Salaries (1.0 M.W.)	$	267.50
Building Material and Supplies		476.00
Travel		261.30
Vehicle		87.88
TOTAL	$	1092.68

M - 321 BEAR CREEK ABOVE WILKESPORT

Repairs were made to the sheet steel control.

COST

Salaries	(0.8 M.W.)	$ 213.68
Building Material and Supplies		77.25
Travel		179.30
Vehicle		80.52
	TOTAL	$ 550.75

M - 321 THAMES RIVER AT WOODSTOCK

The doors were replaced complete with hinges, latches etc. The roof boards were replaced and the roof reshingled on one side.

COST

Salaries	(0.4 M.W.)	$ 124.00
Building Material and Supplies		9.25
Travel		7.00
Vehicle		23.94
	TOTAL	$ 164.19

M - 321 NORTH THAMES RIVER AT FANSHAWE DAM

An English scale electric telemark was installed to indicate the Fanshawe lake level.

COST

Salaries	(0.1 M.W.)	$ 41.00
Travel		8.13
Vehicle		15.23
	TOTAL	$ 64.36

M - 321 THAMES RIVER AT THAMESFORD

A metric telemark was installed complete with wet-cell batteries, charger and timer.

COST

Salaries	(0.1 M.W.)	$ 41.00
Material and Supplies		91.60
Travel		8.12
Vehicle		15.22
	TOTAL	$ 155.94

M - 321 BOYLE DRAIN NEAR ATWOOD

The instrument shelter, stilling well, intake pipes and hydro pole were removed for new bridge construction.

COST

Salaries (0.4 M.W.)		$ 124.00
Travel		76.40
Vehicle		52.92
	TOTAL	$ 253.32

M - 329 GRAVEL RIVER NEAR CAVERS

The 2" intake pipe broken by an ice run was repaired.

COST

Salaries (0.6 M.W.)		$ 160.50
Building Material and Supplies		-
Travel		74.80
Vehicle		38.48
	TOTAL	$ 273.78

M - 321 SEVERN RIVER ABOVE WASDELL FALLS

A padlock and protector box was installed to replace the lock set destroyed by vandals.

COST

Salaries	(0.2 M.W.)	$ 82.00
Building Material and Supplies		34.65
Travel		16.25
Vehicle		44.31
	TOTAL	$ 177.21

M - 321 GRINDSTONE CREEK NEAR ALDERSHOT

The decayed roof boards were replaced and shingles added.

COST

Salaries	(0.2 M.W.)	$ 73.50
Building Material and Supplies		15.00
Travel		7.00
Vehicles		24.57
	TOTAL	$ 120.07

M - 321 SEVERN RIVER ABOVE WASDELL FALLS

Installed a lightning surge protector in the electrical system.

COST

Salaries (0.2 M.W.)	$	73.50
Building Material and Supplies		20.00
Travel		7.00
Vehicle		26.25
TOTAL	$	126.75

M - 326 NOLIN CREEK AT SUDBURY

Installed a heating cable in the intake pipe with a controlling thermostat and repaired the end of the sheet steel control with concrete.

COST

Salaries (0.2 M.W.)	$	73.50
Building Material and Supplies		98.05
Travel		41.40
Vehicles		19.42
TOTAL	$	232.37

M - 326 JUNCTION CREEK AT SUDBURY

Installed a heating cable in the intake pipe with a controlling thermostat.

COST

Salaries (0.2 M.W.)	$	73.50
Building Material and Supplies		89.80
Travel		41.40
Vehicles		19.43
TOTAL	$	224.13

M - 321 NIAGARA RIVER AT FORT ERIE CUSTOMS DOCK

A lightning surge protector was installed in the electrical system.

COST

Salaries (0.07 M.W.)	$	27.33
Building Material and Supplies		20.00
Travel		8.50
Vehicle		9.17
TOTAL	$	65.00

M - 321 TWENTY MILE CREEK AT BALLS FALLS

The decayed roof boards were replaced and new shingles added. A thermostat was installed to control the heating cable outlet.

COST

Salaries (0.173 M.W.)	$	71.70
Building Material and Supplies		42.00
Travel		12.75
Vehicle		26.67
TOTAL	$	153.12

M - 321 SPENCER CREEK AT DUNDAS CROSSING

Replaced the lockset destroyed by vandals.

COST

Salaries (0.027 M.W.)	$	10.30
Building Material and Supplies		30.50
Travel		3.50
Vehicle		4.20
TOTAL	$	48.50

M - 321 NIAGARA RIVER BELOW THE PEACE BRIDGE

A thermostat was installed to control the heating cable outlet.

COST

Salaries	(0.07 M.W.)	$ 27.33
Building Material and Supplies		32.00
Travel		8.15
Vehicle		9.17
	TOTAL	$ 76.65

M - 328 SOUTH NATION RIVER NEAR PLANTAGENET SPRINGS

The instrument shelter and stand pipe were removed and the stilling well filled with gravel at this discontinued gauging station site.

COST

Salaries	(0.2 M.W.)	$ 73.50
Building Material and Supplies		20.00
Travel		16.95
Vehicles		26.70
	TOTAL	$ 137.15

M - 321 MIDDLE MAITLAND RIVER NEAR BELGRAVE

The electrical system damaged by vandals was repaired. A thermostat was also installed to control the heating cable.

COST

Salaries (0.2 M.W.)	$	82.00
Building Material and Supplies		40.00
Travel		3.60
Vehicle		32.60
TOTAL	$	158.20

M - 328 CLYDE RIVER NEAR LANARK

An inspection was made to locate a malfunction in the electrical service.

COST NO CHARGE

M - 328 SOUTH NATION RIVER NEAR PLANTAGENET SPRINGS

The sag was taken up on the main cable and on the aircraft warning marker cable. The decayed cable car seat was replaced.

COST

Salaries (0.2 M.W.)	$	73.50
Building Material and Supplies		-
Travel		50.70
Vehicles		20.00
TOTAL	$	144.20

M - 321 ST. LAWRENCE RIVER AT CORNWALL

The lockset and striker plate were repaired.

COST NO CHARGE

M - 321 CANAGAGIGUE CREEK NEAR ELMIRA

A thermostat was installed to control the heating cable outlet.

COST

Salaries (0.1 M.W.)	$	41.00
Building Material and Supplies		40.00
Travel		3.60
Vehicle		13.00
TOTAL	$	97.60

M - 321 LUTTERALS CREEK NEAR OUSTIC

Repairs were made to the 220 Volt well heating cable.

COST

Salaries (0.05 M.W.)	$	20.50
Building Material and Supplies		-
Travel		3.60
Vehicles		8.20
TOTAL	$	32.30

M - 321 LYNDHURST CREEK AT LYNDHURST

The instrument shelter, stilling well and hydro pole were removed, backfilled and landscaped at this discontinued gauging station.

COST

Salaries	(0.8 M.W.)	$ 294.00
Building Material and Supplies		25.76
Travel		132.64
Vehicles		112.80
	TOTAL	$ 565.20

M - 321 LAKE ONTARIO AT POINT PETRE

The 110/220 Volt 60 Ampere electric service was disconnected at this discontinued tides and water level gauge.

COST

Salaries	(0.2 M.W.)	$ 73.50
Travel		33.90
Vehicle		-
	TOTAL	$ 107.40

M - 321 BLESSINGTON CREEK NEAR BELLVILLE

The instrument shelter and stilling well were removed and backfilled at this discontinued gauging station.

COST

Salaries (0.2 M.W.)	$	73.50
Travel		15.70
Vehicle		-
TOTAL	$	89.20

M - 321 ETOBICOKE CREEK BELOW QUEEN ELIZABETH HIGHWAY

A 220 Volt baseboard heater complete with thermostat and a thermostat to control the well heating cable were installed.

COST

Salaries (0.1 M.W.)	$	41.00
Building Material and Supplies		45.96
Travel		3.60
Vehicle		18.40
TOTAL	$	108.96

M - 321 AUSABLE RIVER NEAR SPRINGBANK

A new door, padlock protector and electric meter protector were installed to repair damage done by vandals.

COST

Salaries (0.4 M.W.)	$	152.00
Building Material and Supplies		133.15
Travel		33.90
Vehicles		35.40
TOTAL	$	354.45

M - 321 BEAR CREEK NEAR PETROLIA

Installed a lightning surge protector in the 110/220 Volt 60 Ampere electric system.

COST

Salaries	$	-
Building Material and Supplies		20.00
Travel		-
Vehicle		-
TOTAL	$	20.00

M - 321 MAITLAND RIVER BELOW WINGHAM

The electric supply was restored to the heating cable outlet.

COST

Salaries (0.2 M.W.)	$	76.00
Building Material and Supplies		-
Travel		15.70
Vehicle		-
TOTAL	$	91.70

M - 321 SAUGEEN RIVER NEAR PORT ELGIN

The Sediment sampling shelter on the bridge was repaired.

COST

Salaries (0.6 M. W.)	$	228.00
Building Material and Supplies		-
Travel		68.40
Vehicle		53.20
TOTAL	$	349.60

CONSTRUCTION COSTS FOR 1978 - 1979

FIELD INVESTIGATIONS		COST
1. F-343	ST. LAWRENCE RIVER AT BROCKVILLE	$ 165.70
2. F-321	NORTH MAGNETAWAN RIVER ABOVE PICKEREL LAKE	148.71
3. F-321	NOTTAWASAGA RIVER NEAR BAXTER	264.16
4. F-321	DEDRICH CREEK NEAR PORT ROWAN	87.13
5. F-351	THAMES RIVER AT INNERKIP	150.16
6. F-321	WEST DUFFINS CREEK AT GREEN RIVER	51.71
7. F-357	OSHAWA CREEK AT OSHAWA	44.71
8. F-321	BEAR CREEK NEAR WILKESPORT	28.54
9. F-355	WYE CREEK NEAR THORNDALE	28.54
10. F-366	NORTH WEST GANARASKA RIVER NEAR OSACA	44.71
11. F-365	GANARASKA RIVER NEAR OSACA	44.71
12. F-321	BLACK CREEK AT SCARLETT ROAD	90.24
13. F-364	BEAR CREEK NEAR PETROLIA	28.54
14. F-321	SAUGEEN RIVER NEAR PORT ELGIN	115.37
15. F-321	MIMICO CREEK AT ISLINGTON	90.23
16. F-340	OAKVILLE CREEK AT MILTON	163.03
17. F-328	LYNDHURST CREEK AT LYNDHURST	155.18
18. F-360	SCOTCH RIVER IN SOUTH PLANTAGENET TWP.	84.98
19. F-362	EAST CASTOR RIVER IN RUSSELL TWP.	84.98
20. F-361	SOUTH CASTOR RIVER AT KENMORE	84.98
21. F-342	RIDEAU RIVER AT CHAFFEY'S LOCK	281.54
22. F-364	BEAR CREEK NEAR PETROLIA	157.17
23. F-321	HIGHLAND CREEK NEAR WEST HILL	212.85
24. F-347	LITTLE WHITE RIVER NEAR BELLINGHAM	583.11
25. F-321	NIAGARA RIVER BELOW I.B.M. NO. 35	45.55
26. F-321	SAUGEEN RIVER ABOVE HANOVER	76.84
27. F-328	BLOOMFIELD CREEK AT BLOOMFIELD	117.15
28. F-375	BIG OTTER CREEK AT TILLSONBURG	75.40
29. F-325	ST. CLAIR RIVER AT POINT EDWARD	125.00
30. F-321	LUCKNOW RIVER AT LUCKNOW	236.00
	TOTAL	$ 3866.92

NEW CONSTRUCTION			COST
1.	C-351	THAMES RIVER AT INNERKIP	$ 4100.50
2.	C-340	OAKVILLE CREEK AT MILTON	4996.93
3.	C-361	SOUTH CASTOR RIVER AT KENMORE	1415.54
4.	C-359	SOUTH INDIAN CREEK NEAR LIMOGES	1832.95
5.	C-362	EAST CASTOR RIVER IN RUSSELL TWP.	2694.45
6.	C-342	RIDEAU RIVER AT CHAFFEY'S LOCK	897.64
7.	C-360	SCOTCH RIVER IN PLANTAGENET TWP.	4220.06
		TOTAL	$20,158.07

UPGRADING			
1.	U-321	SHELTER VALLEY BROOK NEAR GRAFTON	92.12
2.	U-321	WILMOT CREEK NEAR NEWCASTLE	89.52
3.	U-321	SCHOMBERG RIVER NEAR SCHOMBERG	59.35
4.	U-321	LUTTERAL CREEK NEAR OUSTIC	59.35
5.	U-349	AVON RIVER BELOW STRATFORD	2433.78
6.	U-350	MEDWAY RIVER AT LONDON	2297.92
7.	U-348	CATFISH CREEK NEAR SPARTA	2096.63
8.	U-321	SYDENHAM RIVER AT STRATHROY	102.08
9.	U-321	SCHNEIDERS CREEK AT KITCHENER	102.07
10.	U-321	DEDRICH CREEK NEAR PORT ROWAN	493.23
11.	U-321	THAMES RIVER AT WOODSTOCK	88.36
12.	U-321	WAUBUNO CREEK NEAR DORCHESTER	88.34
13.	U-365	GANARASKA RIVER NEAR OSACA	1331.80
14.	U-366	NORTH WEST GANARASKA RIVER NEAR OSACA	1448.30
15.	U-321	THAMES RIVER AT INGERSOLL	1444.51
16.	U-364	BEAR CREEK NEAR PETROLIA	3292.23
17.	U-341	PIC RIVER NEAR MARATHON	1588.73
18.	U-322	NORTH MAGNETAWAN RIVER ABOVE PICKEREL LAKE	428.42
19.	U-367	SEVERN RIVER AT LIMESTONE RAPIDS	8473.89
20.	U-329	MAGPIE RIVER NEAR MICHIPICOTEN	160.50
21.	U-321	EAST HUMBER RIVER NEAR PINE GROVE	225.53

UPGRADING (CONT'D.)			COST
22.	U-321	BLACK CREEK AT SCARLETT ROAD	$ 222.38
23.	U-364	BEAR CREEK NEAR PETROLIA	1250.83
24.	U-374	CLYDE RIVER NEAR LANARK	2586.55
25.	U-321	MIMICO CREEK AT ISLINGTON	222.17
26.	U-326	MUSWABIK RIVER AT OUTLET OF LORENZ LAKE	4673.64
27.	U-344	CURRENT RIVER NEAR STEPSTONE	5020.25
28.	U-358	CREDIT RIVER AT ERINDALE	2628.80
29.	U-347	LITTLE WHITE RIVER NEAR BELLINGHAM	3965.44
30.	U-375	BIG OTTER CREEK AT TILLSONBURG	2070.35
31.	U-421	LAKE ONTARIO AT KINGSTON	446.80
32.	U-321	HIGHLAND CREEK NEAR WEST HILL	330.08
		TOTAL	$49,813.95

MAINTENANCE			
1.	M-321	BIG OTTER CREEK AT VIENNA	$ 284.74
2.	M-321	BIG CREEK NEAR KELVIN	217.03
3.	M-321	SYDENHAM RIVER AT ALVINSTON	247.06
4.	M-321	DINGMAN CREEK AT LAMBETH	227.68
5.	M-321	WEST DUFFINS CREEK AT GREEN RIVER	575.18
6.	M-321	BEAR CREEK NEAR PETROLIA	1092.68
7.	M-321	BEAR CREEK ABOVE WILKESPORT	550.75
8.	M-321	THAMES RIVER AT WOODSTOCK	164.19
9.	M-321	NORTH THAMES RIVER AT FANSHAWE DAM	64.36
10.	M-321	THAMES RIVER AT THAMESFORD	155.94
11.	M-321	BOYLE DRAIN NEAR ATWOOD	253.32
12.	M-329	GRAVEL RIVER NEAR CAVERS	273.78
13.	M-321	SEVERN RIVER ABOVE WASDELL GALLS	177.21
14.	M-321	GRINDSTONE CREEK NEAR ALDERSHOT	120.07
15.	M-321	SEVERN RIVER ABOVE WASDELL FALLS	126.75
16.	M-326	NOLIN CREEK AT SUDBURY	232.37
17.	M-326	JUNCTION CREEK AT SUDBURY	224.13
18.	M-321	NIAGARA RIVER AT FORT ERIE CUSTOMS DOCK	65.00

MAINTENANCE (CONT'D.)		COST
19. M-321	TWENTY MILE CREEK AT BALLS FALLS	$ 153.12
20. M-321	SPENCER CREEK AT DUNDAS CROSSING	48.50
21. M-321	NIAGARA RIVER BELOW THE PEACE BRIDGE	76.65
22. M-328	SOUTH INDIAN RIVER NEAR PLANTAGENET SPRINGS	137.15
23. M-321	MIDDLE MAITLAND RIVER NEAR BELGRAVE	158.20
24. M-328	CLYDE RIVER NEAR LANARK	0.00
25. M-328	SOUTH NATION RIVER NEAR PLANTAGENET SPRINGS	144.20
26. M-321	ST. LAWRENCE RIVER AT CORNWALL	0.00
27. M-321	CANAGAGIGUE CREEK NEAR ELMIRA	97.60
28. M-321	LUTTERAL CREEK NEAR OUSTIC	32.30
29. M-321	LYNDHURST CREEK NEAR LYNDHURST	565.20
30. M-321	LAKE ONTARIO AT POINT PETRE	107.40
31. M-321	BLESSINGTON CREEK NEAR BELLVILLE	89.20
32. M-321	ETOBICOKE CREEK BELOW Q.E.W.	108.96
33. M-321	AUSABLE RIVER NEAR SPRINGBANK	354.45
34. M-321	BEAR CREEK NEAR PETROLIA	20.00
35. M-321	MAITLAND RIVER BELOW WINGHAM	91.70
36. M-321	SAUGEEN RIVER NEAR PORT ELGIN	349.60
	TOTAL	$ 7,586.47

SUMMARY OF CONSTRUCTION COSTS

FIELD INVESTIGATIONS	$ 3,866.92
NEW CONSTRUCTION	20,158.07
UPGRADING	49,813.95
MAINTENANCE	7,586.47
GRAND TOTAL	$81,425.41

PHOTOGRAPHS

1. View of concrete anchor block showing take-up turnbuckle on main cable and cable tower back-stay. (Credit River at Erindale)
2. View of cableway and gauge house. (Credit River at Erindale)
3. View of new gauging station. (Current River near Stepstone)
4. View of gauging station after upgrading from look-in to walk-in shelter. (Big Otter Creek at Tillsonburg)

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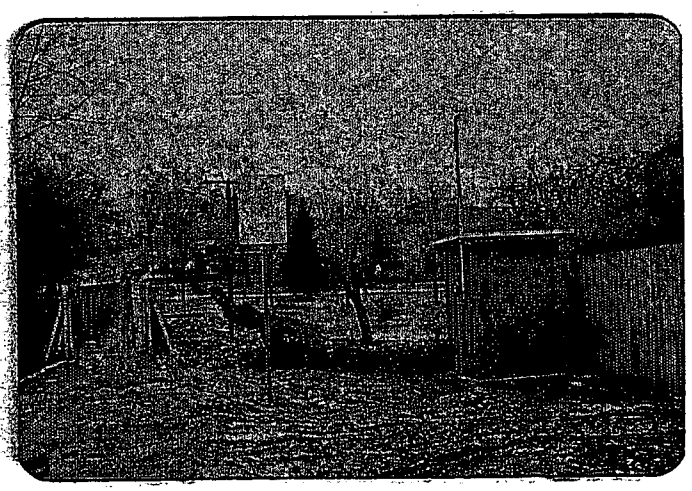

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Date Due
