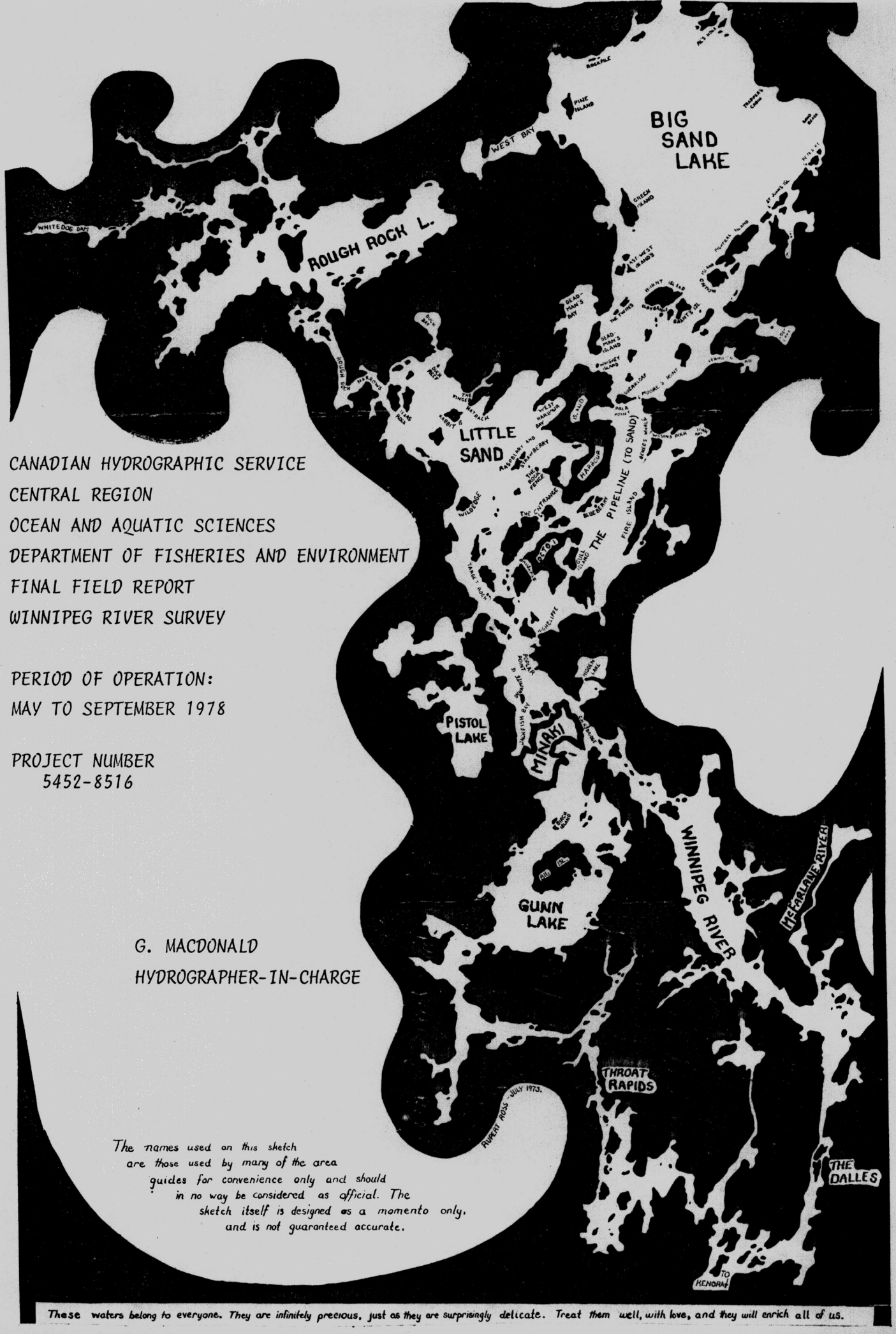
FINAL FIELD REPORT
WINNIPEG RIVER SURVEY
1978

PROJECT NUMBER 5452-8516

G. MACDONALD
HYDROGRAPHER-IN-CHARGE



CANADIAN HYDROGRAPHIC SERVICE
CENTRAL REGION
OCEAN AND AQUATIC SCIENCES
DEPARTMENT OF FISHERIES AND ENVIRONMENT

FINAL FIELD REPORT
WINNIPEG RIVER SURVEY

PERIOD OF OPERATION:
MAY TO SEPTEMBER 1978

PROJECT NUMBER
5452-8516

G. MACDONALD
HYDROGRAPHER-IN-CHARGE

The names used on this sketch are those used by many of the area guides for convenience only and should in no way be considered as official. The sketch itself is designed as a momento only, and is not guaranteed accurate.

These waters belong to everyone. They are infinitely precious, just as they are surprisingly delicate. Treat them well, with love, and they will enrich all of us.

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LIST OF PERSONNEL

NAME	TITLE	ARRIVE	DEPART
STAFF			
G. Macdonald	Hydrographer-in-Charge	May 1 May 23	May 14 September 21
B. Eidsforth	Senior Assistant	April 26 May 7 June 7 August 7	May 3 June 2 July 28 September 18
J. Medendorp	Hydrographer	May 3	September 18
J. Dixon	Hydrographer	May 3 September 4	August 25 September 21
R. Tutte	Student Assistant	May 3	August 15
P. Harrison	Student Assistant	May 16	August 20
CREW			
T. MacKenzie	Gas Engineer	April 26	September 21
M. Desjardins	Coxswain	May 3	September 19
T. Steel	Coxswain	May 3	September 18
D. McLeod	Coxswain	May 3	September 18
D. Wortman	Seaman	May 1	September 21
D. Robertson	Seaman	May 10	August 15
S. Galbraith	Seaman	May 1	September 21
W. Briggs	Seaman	May 1 July 24	July 7 September 18
D. Chase	Seaman	August 15	September 19
F. Millette	Seaman	August 15	September 15
OTHERS			
B. Tinney	Tidal Officer	May 10	May 19
R. Solvason	Tidal Officer	May 10	May 19
T. Dyas	Electronics Technician	May 11	May 13
R. Hill	U. S. Exchange	June 15	July 8

From left to right:
G. Macdonald
W. Briggs
D. McLeod
T. MacKenzie
D. Robertson
J. Dixon
P. Harrison
J. Medendorp
B. Eidsforth
R. Tutte
D. Wortman
S. Galbraith
T. Steel
M. Desjardins

LIST OF CRAFT AND MAJOR EQUIPMENT

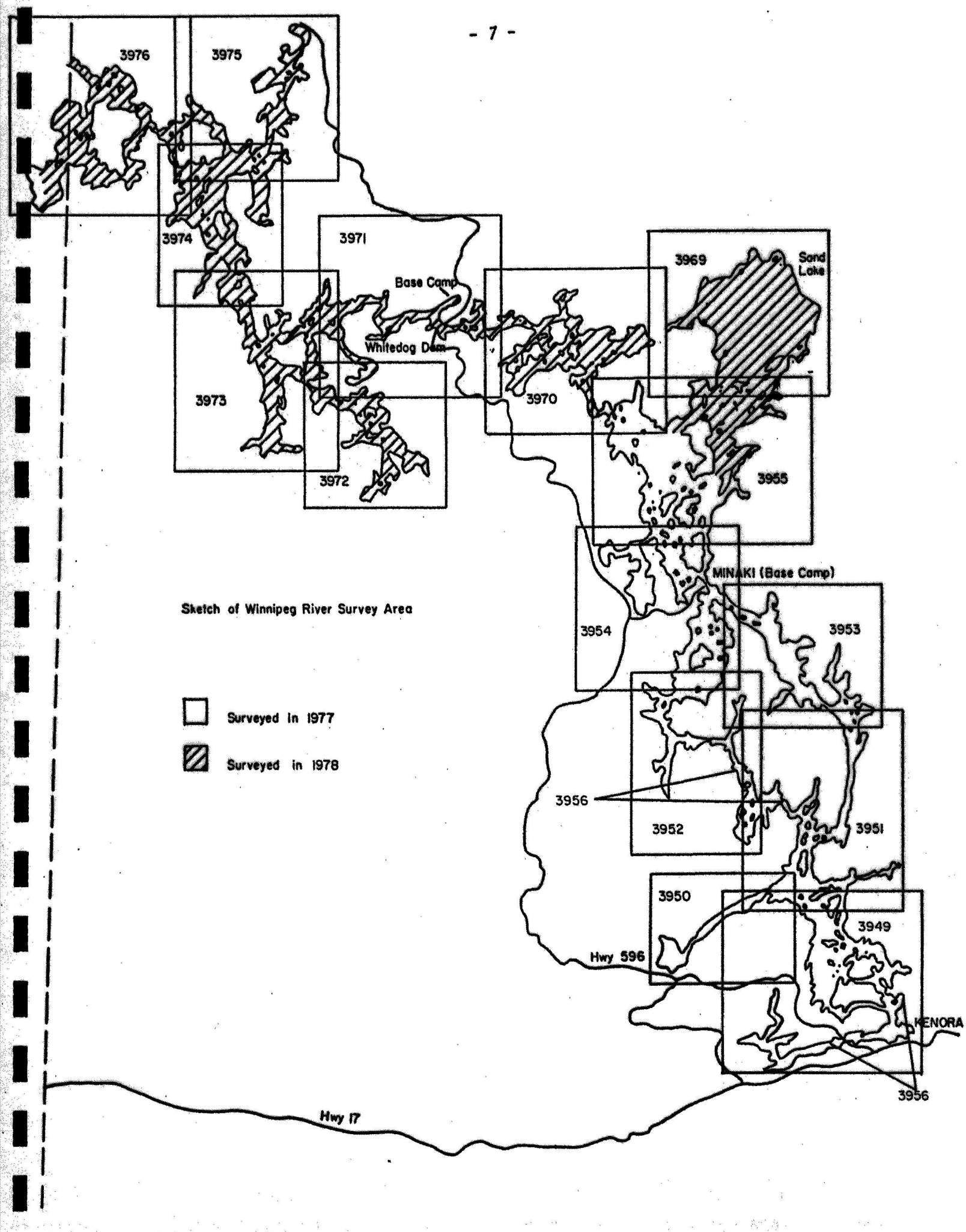
QUANTITY		
1	WOODCOCK	Utility boat 7.9 m Steel hull Twin OMC V6 inboard/outboard
1	PACER	Penn Yan tunnel drive 7.6 m Fiberglass hull Single Chrysler V8 inboard
2	HUNT/HUSTLE	Botved 6.4 m Fiberglass hull Twin Volvo Penta 130 4 cylinder inboard/outboard
1	BOSTON WHALER	5.5 m Fiberglass hull
4	55 hp Evinrude outboard motor	
1	10 hp Evinrude outboard motor	
1	Office Trailer	66-507
1	Workshop Trailer	69-501
4	Boat Trailers	
1	1966 International Travelall	
1	1976 Chevy Crewcab	
1	1977 Chrysler Station Wagon	
1	1978 Chevy Suburban	

QUANTITY	
6	Sounder EDO 9040 metric
2	Sounder Raytheon DE719 metric
5	Radio Marconi CH 25
2	Radio Motorola PT300
1	Mini Ranger III positioning system 1 receiver 1 R/T head 3 transponders
2	Current Meter Gurley-Price
2	Tide Gauge Ottboro
12	Sextant sounding
1	Theodolite T-2
1	Theodolite T-16
1	Level NA2
1	Tellurometer Set MRA3

CHRONOLOGY OF EVENTS

March 14, 15	Reconnaissance trip to Minaki
April 17	Gas engineer reports to Burlington
April 26	Gas engineer and B. Eidsforth arrive in Kenora
April 27	Survey equipment arrives in Minaki
May 1	G. Macdonald and 3 seamen arrive in Kenora
May 2	All equipment stored in Kenora moved to Minaki
May 3	Set up Base Camp in Minaki Medendorp, Dixon, 3 coxswains and 1 student assistant arrive in Kenora
May 4	Survey launches arrive in Kenora 50 cm of ice on Gun Lake
May 6	Steam survey vessels to Minaki
May 8	Rain all day - most ice melted All personnel move to Minaki
May 9	3 boats sounding
May 10	Last seaman arrives Tidal officers arrive to establish river datums
May 11	T. Dyas, electronics technician, arrives to adjust radios, repair sounders
May 13	T. Dyas departs for Burlington
May 16	Second student assistant arrives in Minaki
May 19	Tidal Officers depart for Burlington
June 7	Medendorp first-born delivered at Kenora General Hospital
June 8	Snow
June 15	Move WOODCOCK below the Whitedog Dam R. Hill, U. S. Exchange, arrives in Minaki
June 19	Eidsforth, Hill and 1 seaman to Selkirk to do range survey on Red River

June 20	Tornadoes
June 21	Move HUNT below Whitedog Dam Begin survey below the dam
June 22	Move base camp below the dam
June 23	Mover PACER below the dam
June 24	Eidsforth and company return from Selkirk
July 8	R. Hill, U. S. Exchange, departs for Halifax to join NARWHAL
July 21	Complete survey above the dam All vessels working below Whitedog dam
August 15	1 seaman departs, 1 student assistant returns to school 2 seamen join the survey
August 17	Extensive hail damage in the Minaki area
August 20	Last student assistant returns to school
August 25	1977 Chrysler station wagon damaged when it took the ditch to avoid an oncoming vehicle on the wrong side of the road
September 13	WOODCOCK moved to Minaki
September 14	HUSTLE moved to Minaki WOODCOCK working above the dam
September 15	HUSTLE steamed to Kenora HUNT PACER moved to Minaki One seaman departs for Burlington
September 16	HUNT PACER WOODCOCK steamed to Kenora Last day sounding (1977 field sheets)
September 18	Move office and workshop trailers to Kenora Eidsforth, Medendorp, 2 coxswains and 1 seaman depart for Burlington
September 19	1 Coxswain and 1 seaman depart for Burlington
September 20	Survey equipment loaded on truck Boats loaded on flatbed trailers
September 21	Macdonald, Dixon and remaining crew depart for Burlington



Sketch of Winnipeg River Survey Area

PLANNING AND PREPARATION

The 1978 Winnipeg River Survey was the continuation of a program initiated in 1977 to collect data for the production of three nautical charts between Kenora and the Ontario/Manitoba border.

A survey scale of 1:10,000 was necessary so that narrow channels and irregular bottom features could be adequately delineated. Shoreline plots at field sheet scale were supplied by Headquarters and copies of these were used as workboards. Field sheet base plots were drawn on the Gerber 22 flatbed plotter and shoreline was traced from shoreline plots before going into the field. Copies of field sheets were made for use as master boatboards.

In mid-March, a reconnaissance trip was made to Minaki to arrange for a base camp, launch docking and fueling facilities, and accommodation.

Tides and Water Levels Section in Burlington offered to provide field support to establish sounding datums and define reduction zones. A report on their activities has been submitted by the Section under separate cover.

The survey proposed to continue the use of the back-up system, with three launches sounding and one launch on stand-by. The normal complement of each launch would be one hydrographer, one coxswain and one seaman (or student assistant). Positions would be obtained by Mini-Ranger, sextant or shoreline identification. Since no electronics technician would be assigned to the survey, each launch would carry a spare EDO 9040 sounder.

Two Botveds (HUNT and HUSTLE) a tunnel drive (PACER) and a steel hull utility launch (WOODCOCK) were supplied to the survey from Burlington.

By early May the survey vessels and equipment had been shipped from Burlington, the equipment stored in Kenora at the end of the previous season had been moved to Minaki, and survey personnel were arriving in the Field.

Base camp was established in Minaki close to dock space

Ice still covered some portions of the river

Strong currents were experienced in constricted areas

OPERATIONS

Introduction

Base camp was established in Minaki close to dock space, fuel facilities and launching ramps.

Survey equipment arrived in Minaki on April 27.

Launches arrived in Kenora May 4 and were steamed to Minaki on May 6. Sounding began on May 8 with ice still covering some portions of the river. Tides and Water Levels personnel arrived May 10 to establish datum planes on the river between Minaki and the Ontario/Manitoba border. The river level was normal, and strong currents were experienced in constricted areas.

Sounding

The sounding program began on field sheet 3955 north of Minaki. The sheet had been partially completed in 1977, leaving numerous shoals to be examined and some sounding at the south end of Sand Lake to bring the sheet to completion.

By mid-June all of the river above the Whitedog Dam except Sand Lake had been surveyed. The base camp and three boats were moved below the dam to start the last leg of the survey. Work in Sand Lake was delayed waiting for Mini-Ranger replacement parts, but was completed by mid-July.

Work progressed downstream to the Ontario/Manitoba border, completing work on field sheets 3955 and 3969 through 3976.

The Whitedog Falls Dam

Base camp and three boats were moved below the dam

There were tornadoes on June 20

Weather

Weather throughout the survey period was unusually cold, wet and windy, but only five days field work were lost all season because of it.

Ice was prevalent until May 10, it snowed on June 8, there were tornadoes on June 20, and the stove in the office trailer was turned on in August.

Excessive rainfall and the spring thaw caused vehicles to get stuck on numerous occasions throughout the summer.

Positioning

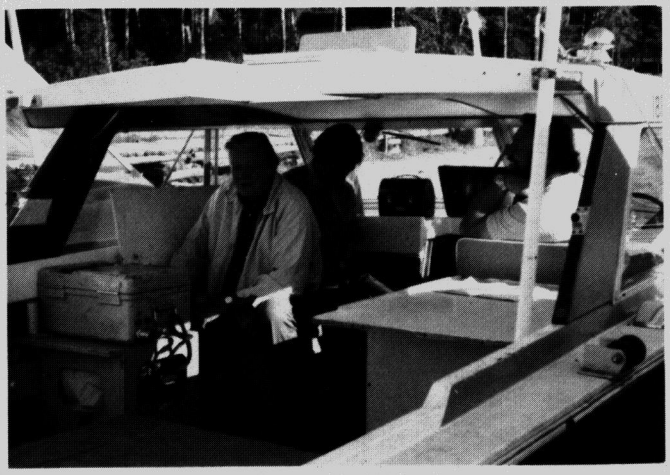
Most of the positions were obtained using sextants. Points of land and ends of islands served as natural stations; no artificial sounding marks were established. In narrow channels, fixing was done by shoreline identification. In Sand Lake, Mini-Ranger was used in the range-range mode (except for one day in the range-sextant mode). Shoal exams were positioned by sextant after the Mini-Ranger was shipped to Baker Lake.

Electronic Equipment

EDO 9040 sounders were used successfully throughout the summer. Each launch carried two sounders whenever possible to avoid time delays returning to base to repair or replace faulty equipment. Three transducers were replaced during the season (leaky diaphragms). Raytheon sounders were used on the Boston Whaler.

A Mini-Ranger chain was used from June 15 to July 18 in the widest portion of the river, Sand Lake. The first receiver used on the survey blew fuses when it was turned on and was immediately

Most positions were obtained using sextants



EDO Sounders were used successfully

replaced. One R/T head also quit working and had to be replaced. Eight days use of the system was lost waiting for replacements, but this caused no delay to the survey program on the whole.

Calibrations were conducted using a tellurometer MRA-3, at the start and finish of the Sand Lake Survey, indicating a range stability on all three transponders of ±4 metres.

Shop service throughout the summer was excellent though infrequent.

Survey Vessels

HUNT, HUSTLE, PACER and WOODCOCK provided dependable survey platforms throughout the season. There were no days lost due to mechanical failures, since three boats were working each day with one launch and the Boston Whaler held in reserve.

See Appendix C for a complete Launch Report.

Land Vehicles

A 1966 International Travelall, a 1976 Chevy Crewcab, a 1977 Chrysler station wagon and a 1978 Chevy Suburban were used to transport personnel and equipment, and for launching and moving survey vessels on trailers.

Rough, narrow, winding gravel roads kept the vehicles in the repair shop on and off during the survey. Suspension systems, exhaust systems and tires were particularly susceptible to damage.

On August 25, the station wagon was forced off the road by an oncoming vehicle that cut a corner too wide, and was still undergoing repairs in Kenora when the survey returned to Burlington.

HUNT

HUSTLE, PACER and
HUNT at base camp

PACER

WOODCOCK

Vehicles were used to transport personnel and equipment. Trailers provided ample work space

The station wagon was forced off the road

Three boat trailers were used to move about survey launches

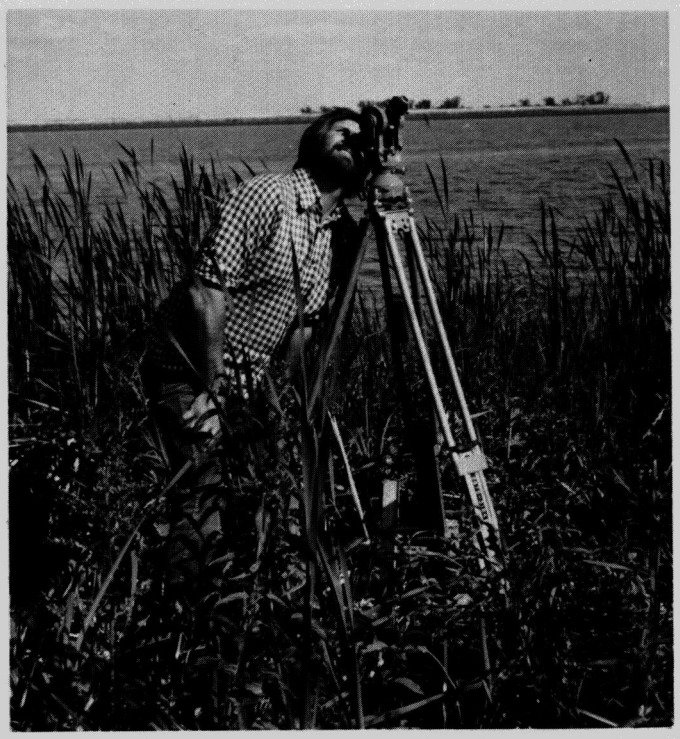
An office trailer (in conjunction with rented cabin space) provided ample office space, and a workshop trailer provided repair facilities.

Three boat trailers were used to move about survey launches; a fourth trailer was used for the Boston Whaler.

General

At the request of the Ministry of Transport (and in accordance with project instructions), a sub-party was sent to Selkirk, Manitoba to determine the azimuths of two sets of compass correction ranges, and to determine the distances between the three sets of ranges used on a measured mile on the Red River.

Mr. Robert Hill, the U. S. exchange, arrived in Minaki on June 15 and experienced all aspects of the survey including a week in Selkirk. His presence made it possible to complete the Red River range survey without laying up a survey launch on the Winnipeg River.



Sun observations to determine range azimuths in Selkirk

Tellurometer distances to determine the measured mile
on the Red River

CONCLUSIONS

The 1978 Winnipeg River Survey saw the completion of a project started in 1977; to survey the navigable portions of the Winnipeg River between Kenora and the Ontario/Manitoba border.

I would like to thank all the survey staff and crew who helped to bring the job to a successful conclusion.

I would also like to thank supporting agencies such as Accounts, Personnel, Ships Division, Stores, Tides and Water Levels Section and the Electronics Shop whose assistance helped make the season both enjoyable and productive.

The information collected over the past two summers will be used to produce three navigation charts of the area. Together with the two existing charts of the river, they make a significant contribution to the opening of the river system for navigation from Lake of the Woods to Lake Winnipeg.

Chart construction should begin as soon as possible and a hydrographer familiar with the area should be directly involved in the chart compilation.

Appendix A

SURVEY STATISTICS

WINNIPEG RIVER SURVEY, 1978

Number of Hydrographers	4
Student Assistants	2
Support Personnel	8
U. S. Exchange Personnel	1*
Tides and Water Levels Personnel	2*
Electronics Technicians	1*
Total Personnel	18
Number of Launches	4
Land Vehicles	4
Boat Trailers	4
Office/Workshop Trailers	2
Minor support Craft	1
Total Operational Days	143
Days Actual Field Work	102
Days Lost Weather	5
Equipment Failure (launch)	0
Equipment Failure (electronics)	0
In-transit/Packing/Unpacking	12
Sundays/Holidays	24

*Personnel assigned to the survey for short periods.
The usual survey complement was 14

Total Man Days (crew)		1142
Total Man Days Worked (crew)		929
Total Man Days (staff)		735**
Total Man Days Worked (staff)		602
Man Days Worked (staff)	Sounding	195
	Shoals	171
	Data Processing	198
	Administration	22
	Tides/Water Levels	16

Number of Kilometres Sounded	2746
Shoals Examined	1215
Bottom Samples	1502
Fixed Aids Positioned	6
Floating Aids Positioned	16
Navigational Hazards Positioned	1625***
Recording Gauges Established	1
Staff Gauges Established	6
Bench Marks Recovered	24
Bench Marks Established	16
Current Observations	15
Sun Observations	4
Stations Occupied (control)	9

** Staff includes hydrographers, student assistants, Tides and Water Levels personnel and U. S. Exchange

*** Navigational hazards are mostly shoals that are too shallow or too close to shore to be examined in the usual manner. Total hazards plus total shoals examined gives a total of 2840 shoals or an average of just over 1 shoal examined per kilometre of sounding

Appendix B

LIST OF FIELD SHEETS AND FILE NUMBERS

FIELD SHEET	TITLE	SCALE
3955	Roughrock Narrows to Octo Island	1:10,000
3969	Sand Lake	1:10,000
3970	Roughrock Lake to Roughrock Narrows	1:10,000
3971	Whitedog to Roughrock Lake	1:10,000
3972	Swan Lake	1:10,000
3973	Tetu Lake to Scot Bay	1:10,000
3974	Tetu Lake	1:10,000
3975	Tetu Lake to English River	1:10,000
3976	Eaglenest Lake to Tetu Lake	1:10,000

FIELD SHEET	SOUNDING NOTES	LEVELING NOTES	MISCELLANEOUS NOTES	MARINA INFORMATION
3955	70800	70803	70804	37793
3369	70858	70866	70867	38011
3970	70859	70866	70867	38011
3971	70860	70866	70867	38011
3972	70861	70866	70867	38011
3973	70862	70866	70867	38011
3974	70863	70866	70867	38011
3975	70864	70866	70867	38011
3976	70865	70866	70867	38011

Appendix C

LAUNCH REPORT

Launch Report - 1978 Field Season

Introduction

The four Winnipeg River survey launches were transported from Burlington to Kenora on flatbed trailers and arrived May 4.

On May 5, they were launched in Kenora and the following day were steamed to Minaki. The Boston Whaler was stored in Kenora over the winter and was trailered to Minaki on May 1. Sounding operations began on May 8.

As the survey neared completion above the Whitedog Dam, launches were transported by trailer below the dam to begin the last leg of the survey. Two launches and the Whaler were moved by June 21, a third launch on June 23 and the last on July 21.

Survey operations below the dam were completed September 14. Launches were moved above the dam and launched in Minaki by the 15th. Some work was done on 1977 field sheets. The launches were steamed to Kenora September 16 and loaded aboard flatbeds September 20 for the return trip to Burlington. The Whaler was towed to Burlington by government vehicle. Field operations were completed on September 21.

HUNT

No major problems were experienced with the HUNT. A broken steering cable, broken transom shield and a number of broken steering levers and steering yokes can be directly or indirectly attributed to striking rocks.

Other problem areas included the water pump, control cables, the bilge pump and the usual motor problems (points, coil, plugs, gas filter, alternator belt). These faults were easily and quickly repaired.

HUSTLE

The HUSTLE had major engine problems. On May 9, the port motor was replaced with the spare motor that was rebuilt in the field in 1977. Broken rings and worn cylinders resulted in low and uneven compression. This caused the engine to stall frequently usually at the end of line where power was essential for backing away from shore.

This motor was rebuilt and on June 6 replaced the starboard motor which was experiencing the same type of problems. This motor was also rebuilt.

On September 6, the starboard engine was once more replaced when stalling problems were experienced. This time faulty valves were the cause.

Other problems throughout the summer included a broken transom shield, a leaky exhaust elbow, a broken steering cable and a broken bilge pump. A loose transom shield caused some leaking.

PACER

Problems with the PACER were usually minor.

Rocks bent rudders and props on a number of occasions and in one instance the shaft and strut were damaged.

Problems were experienced with a leaky fuel line, a cracked cylinder head, blown head gaskets, broken trim tabs, broken control cables, the 12 volt alternator and a leak where the shaft entered the water.

On one occasion the motor overheated, backfired and sucked water into the back two cylinders.

Repairs in all cases were quickly affected.

WOODCOCK

Although no major repairs were required, parts such as ball gears wore out frequently and replacements were sometimes difficult to locate.

Other problems included the 12 volt and 24 volt alternators, broken steering cables, leaky exhaust elbows and a leaky hull.

On one occasion, the bolts joining the motor to the intermediate housing came loose allowing water to flow into the bilges.

Most of the down time was experienced waiting for parts.

BOSTON WHALER AND OUTBOARD MOTORS

The Whaler and 55 h.p. EVINRUDE outboard motor ran well all summer. The motor started the first time the key was turned and never gave a hint of a problem all season. A full complement of personnel and gear did not significantly reduce the speed of the Whaler. This was a pleasant surprise, since the 55 h.p. Chrysler motor that was used in 1977 had trouble putting the whaler up on the step with more than one person in it.

OUTDRIVES

Volvo outdrives used on the HUNT and HUSTLE offered no surprises. The usual problems with the universals, lock-down units and oil seals were encountered.

OMC lower units took an extraordinary amount of punishment from rocks before breaking down.

BOAT TRAILERS

Three launch trailers came from Burlington in the spring. The one which was towed to the field by government vehicle was in excellent shape.

The two that arrived with the launches on flatbeds had flat tires, no jacks and the lights did not work. Some of these deficiencies were still outstanding when the trailers were returned this fall.

A whaler trailer was stored in Kenora over the winter and was in good condition.

Conclusion

Three launches worked each day. The fourth launch was used as a back-up in the event of a breakdown. The Whaler was brought into service if more than one launch was incapacitated (this happened only rarely). This system resulted in a minimum of down time experienced due to mechanical breakdowns and along with excellent parts service from Burlington, contributed to a very successful survey season.

Aside from routine maintenance, some specific items should be attended to on each launch.

On the HUNT the steering cable has been welded and may eventually cause problems.

On the HUSTLE a leak has developed at one of the lower bolts holding the transom shield in place, and the bilge pump is not working.

On the PACER, the oil pressure read low all summer. The cause should be determined and the problem rectified.

The WOODCOCK should not see action in areas where rough weather may be encountered. The age and condition of the hull may prove to be a hazard. Both intermediate housings have been twisted and are causing excessive ball gear wear. Replacement parts may be hard to find.

The fuel tanks in all four launches need to be cleaned. Rust and water were a minor problem all season.

Outdrives will require the usual maintenance to universals, gear change mechanisms and lock-down units.

Trailers should be supplied with jacks, wiring should be checked to ensure that the lights are working, wheel bearings should be greased, and tires should be properly inflated. Each trailer should carry a spare tire.

Appendix D

TABLE OF LAUNCH DAYS WORKED

WINNIPEG RIVER SURVEY - 1978

SURVEY VESSEL	FIELD SHEET NUMBER										TOTAL DAYS WORKED
	3955	3969	3970	3971	3972	3973	3974	3975	3976	1977 F.S.	
HUNT	6	22	14	7	0	1	14	9	8	0	81
HUSTLE	0	13	15	7	2	5	4	4	10	1	61
PACER	13	10	10	8	2	16	10	18	3	0	90
WOODCOCK	5	0	13	16	5	2	2	5	20	2	70
WHALER	0	½	½	2½	1	0	0	½	1	5	11
	24	45½	52½	40½	10	24	30	36½	42	8	313

SURVEY VESSEL	DOWN TIME			OPERATIONAL NOT WORKING
	ELECTRONIC	MECHANICAL	WEATHER	
HUNT	2	12	6	9
HUSTLE	2	9	2	36
PACER	0	10	5	5
WOODCOCK	0	20	3	18
WHALER	0	0	0	99
	4	51	16	167

LAUNCH DAYS WORKED

SOUNDING	143
SHOALS	149
OTHER	21
	313