Date of Report: 21 May 1998
Date of Next Status Report: September 1998
Date of Work Program Approval:
Project Completion Date: June 30,1999

Final

LCMR Work Program Update Report

I. Project Title: Training and Research Vessel for Lake Superior

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Total Biennial Project Budget:

$LCMR:	$250,000	**$Match:**	$250,000*
- $LCMR Amount Spent:	$249,724.76	**-$ Match Amount Spent:**	$250,000
=$LCMR Balance:	$ 275.24	**=$Match Balance:**	0 *

A. Legal Citation: ML 1997, [Chap. _216__**]. Sec.[**__15__**]. Subd.**_14 (g)___.
Training and Research Vessel for Lake Superior

Appropriation Language:
$130,000 of this appropriation is from the trust fund and $120,000 of this appropriation is from the Great Lakes protection account to the University of Minnesota - Duluth to purchase a vessel for training and research on Lake Superior. This appropriation must be matched by at least $250,000 of nonstate money. This appropriation is available until June 30, 2000, at which time the project must be completed and final products delivered, unless an earlier date is specified in the work program.

B. Status of Match Requirement:

* The U. S. National Marine Fisheries Service has committed $700,000 to "buy out" the owner of the F/V FAIRTRY, an 86' steel trawler in Portland, Maine. The owner, Mr. Roger Woodman, Jr., is obligated to take the FAIRTRY permanently out of commercial fishing status, either by destroying the vessel and selling the scrap, or by selling the vessel at a nominal price to a research institution, to be used for research purposes only. While 75% of this amount has

already been transferred to Mr. Woodman, the remaining 25% will not be transferred to him until the vessel has been scrapped or transfer of title to a research institution has been completed. If this is not accomplished, Mr. Woodman is required to return the entire amount to the National Marine Fisheries Service. Thus, this entire "match" of $700,000 is consumated only upon sale of the FAIRTRY to the University of Minnesota. See the attached document from the National Marine Fisheries Service to Mr. Woodman, dated 27 March 1997.

II. Project Summary and Results:

The Large Lakes Observatory of the University of Minnesota (LLO) will acquire, modify and operate the F/V FAIRTRY for use in Lake Superior and the other Gt. Lakes. This boat will be modified to meet the special needs of education and research activities of the Large Lakes Observatory (university level education) and the Lake Superior Center (public outreach and primary and secondary school education). It will be capable of taking 20 students out for trips of one day duration, and capable of taking research groups of up to 6 scientists for periods of 10 days at a time. The F/V FAIRTRY was built in 1985 by Goudy and Stevens at East Boothbay, Maine. It is an exceptionally well built vessel, designed for operations in northern waters. Replacement value is approximately $ 1 million.

III. Progress Summary: The F/V FAIRTRY was purchased from Mr. Woodman on 21 July 1997. The vessel was re-named the R/V BLUE HERON and is now registered with ownership by the University of Minnesota. The BLUE HERON was sailed from Portland, Maine to Duluth via the St. Lawrence Seaway September 2-16, 1997. After being docked briefly at the U.S. Army Corps of Engineers yard in Duluth, she entered Fraser Shipyards in Superior, Wisconsin on 1 October 1997 for renovations. Work at the shipyard continued through the winter, and included sandblasting, painting, outfitting of interior lab space and installation of deck equipment. Total costs for renovations far exceeded what was budgeted in this LCMR grant. I received a grant of $214,736 from the National Science Foundation and an additional $40,000 match from the University. In addition, I borrowed $130,000 from the University to complete the most basic renovations required for meeting operational and safety needs of the vessel. The R/V BLUE HERON is now operating on Lake Superior. It is the largest and most capable University - owned research vessel in the Gt. Lakes. We have 64 operating days leased and funded on Lake Superior for summer/fall 1998, with users from the LLO, other faculty at UMD and the Twin Cities campus, as well as scientists from Michigan Tech, Woods Hole Oceanographic Institution, the University of Connecticut and the University of Washington. This marks a major increase in the level of scientific research being carried out on Lake Superior, and is a testament to the need for and capability of this new research and training vessel.

IV. Outline of Project Results:

The F/V Fairtry, an 86 ft steel trawler, will be purchased as soon as possible after funds are available on 1 July 1997, for a price of $125,000 from the University of Minnesota, which is in addition to $700,000 provided to the owner directly from the Federal Government in the National Fishing Capacity Reduction Initiative. It is necessary to purchase this vessel as soon as possible. The owner is under an obligation to tranfer title by July 31, 1997. John W. Gilbert and Associates, Inc., Naval Architects and Marine Engineers, Boston, MA, has agreed to design modifications to the F/V FAIRTRY to convert it to a research vessel. Gilbert and Associates is

uniquely qualified to carry out this design because of their role as original designer of the vessel in 1984, and many years of experience in the design and modification of oceanographic research vessels in the U.S.

This project is going to require $141,000 on July 1, 1997 to purchase the trawler immediately, to contract the naval architects to immediately draw up plans and bid package for refitting the vessel, and initial funds for travel to Maine to prepare the vessel for transit to a shipyard in the Gt. Lakes. An additional $24,000 will be required by August 1, 1997 to purchase fuel, food and to hire temporary crew to sail the vessel to the Gt. Lakes. The remaining $85,000 will be required by 1 January 1998 to cover shipyard expenses that may come due any time between then and 1 May 1998.

- Result 1. Purchase the F/V FAIRTRY from its owner, Roger F. Woodman, Jr. and Co. of Portland, Maine. (Budget: $125,000, Balance: $0, Match: $700,000, Balance: $0. Completion date: 31 July 1997. We took delivery of the vessel in July 1997

- Result 2. Obtain detailed plans and drawings of modifications of F/V FAIRTRY to convert to a research vessel for use on the Great Lakes. Plans will include a "Request for bids" to be submitted to shipyards on the Gt. Lakes for the contract to modify the vessel. (Budget: $16,000, Balance: $0, Match: $0, Balance: $0. Completion Date: 1 October 1997. Plans were developed and executed by Fraser Shipyards during Fall and Winter 1997-98.

- Result 3. Hire crew to sail the F/V FAIRTRY to Gt. Lakes shipyard, purchase fuel and supplies and prepare vessel for sailing. (Budget: $24,000, Balance: $0, Match: $0, Balance: $0. Completion date: 1 November 1997. The vessel was sailed from Portland, Maine to Duluth in September 1997.

- Result 4. Solicit bids for modifications of research vessel. (Budget: no cost to this project.) Completion date: 15 October 1997. We sole-source bid this job to the only shipyard in the Twin Ports area that had a drydock large enough to handle the BLUE HERON, Fraser Shipyards of Superior, Wisconsin. Fraser donated $32,920 in engineering and facilities fees towards the project.

- Result 5. Award contract based on bids and site visit(s) to shipyard(s) tentatively selected for the contract. (Budget: no cost to this project). Completion date: 1 November 1997. Fraser Shipyards was contracted to do the work, beginning 1 October 1997.

- Result 6. Take delivery of completely renovated vessel, at shipyard. (Budget: $85,000, Balance: $275.24, Match: $0, Balance: $0). Completion date: 1 May 1998. The vessel was sailed out of the shipyard back to its port at the Corps of Engineers docks in Duluth on 1 May 1998.

- Result 7. Shakedown cruise and delivery of vessel to Duluth. (Budget: no cost to this project). The R/V BLUE HERON sailed on her maiden voyage on 6 May 1998,

with succesful completion on 13 May 1998.

V. Dissemination:

Availability of research vessel at the Large Lakes Observatory for charter use on Lake Superior will be broadly advertised to potential user groups. Charter fee to state agencies and non-profit educational groups will be the same as for LLO (to cover operating expenses only). A representative from LLO will attend Gt. Lakes Research Vessel Coordination Workshops whenever they are scheduled to promote the availability of our research vessel to the Gt. Lakes research community.

VI. Context:

A. Significance:

The need for a training and research vessel based in Duluth has recently evolved.

- The Large Lakes Observatory (LLO) of the University of Minnesota has hired four faculty with expertise in large lakes research within the past year, and will hire three more faculty within the next three years.
- These faculty will offer courses at the University in large lakes sciences that will require taking students out on Lake Superior to demonstrate scientific techniques of instrumentation deployment, data acquisition and cruise planning.
- The faculty and staff will also generate funding from governmental and private sources for research and monitoring activities that will require an adequate research vessel.
- The Lake Superior Center already offers a program of instruction for teachers and students at the elementary and secondary education levels, that includes day trips on Lake Superior for education and demonstration.

Unfortunately no suitable training and research vessel is available in the Twin Ports for education and scientific research.

- The only training and research vessel currently owned by the University is the R/V Noodin, a 25 ft. aluminum work boat, capable of carrying 4 people on day trips only when waves are smaller than 3 ft.

- The University of Wisconsin at Superior operates the R/V Lloyd Smith. Built in the 1940's, this 58-ft vessel is slow, poorly designed for education and research (it was originally built to be a pleasure craft, but looks like a tug boat), and the availability of spare parts for its engine room dwindle each year. UW-S currently has no research activities on Lake Superior and no apparent plans for developing them. Their future as research vessel operators is probably limited.

- The EPA has an 82-ft research vessel, the R/V Lake Explorer, but its long-term accessibility by the University is not assured, its laboratory space is exceedingly small, and its operational limitations (12 hours per day) are not acceptable for our needs. The EPA's funding for Lake Superior continues to be in a great state

of flux, and the EPA could decide to move the Lake Explorer to another of the Great Lakes at any time.

The Director of LLO has experience operating oceanographic research vessels

- T. C. Johnson was Director of the Duke/University of North Carolina Oceanographic Consortium from 1983-1993, and was responsible for the management and operation of the R/V Cape Hatteras, 135 ft. long, with a crew of 10 professional sailors and capacity for 10 scientists to be at sea for 21 days at a time.
- Through this experience, he realizes the expenses and means by which research vessels are to operated and maintained.

B. Time: We fully expect to expend all funds provided by LCMR within the first year of the biennium. The ability of the research vessel to generate operating funds depends on it to be fully operational. Any delays will result in expenditure of university funds for salary and insurance, regardless of the state of the vessel's readiness.

C. Budget context:

	July 1995-June 1997	July 1997-June 1999	July 1999-June 2001
	Prior expenditures on this project	Proposed expenditures on this project	Anticipated Future expenditures on this project
1. LCMR	$0	$250,000	$0
2. Other State	$0	$0	$0
3. Non State Cash	$0	$700,000	$0
Total	$0	$950,000	$0

BUDGET:

Personnel	$ 3,000	(Temporary captain and crew to sail vessel from Maine)	
Equipment	$0		
Acquisition	$125,000		
Development	$0		
Other	$120,000	(initial cruise expenses	$21,000
		marine architect plans	$16,000
		shipyard modifications	$85,000
Total	$250,000		

VII. Cooperation: N/A

VIII. Location: L

IX. Reporting Requirements: Periodic work program progress reports will be submitted not later than one month after completion of Results 1, 3 and 6 listed in II. A final work program report and associated products will be will be submitted by June 30, 2000, or by the completion date as set in the appropriation.

X. Research Projects: N/A

Budget for LCMR Sec. 15 Subd. 14(g)
T. C. Johnson, Training and Research Vessel for Lake Superior

Item	Amount	Date funds needed
Purchase price of vessel	$125,000	1 July 1997
Naval Architect fees	16,000	1 July 1997
Salaries for Temporary Crew	3,000	1 August 1997
Captain - $2,000		
Cook - $1,000		
Initial Cruise expenses	21,000	1 August 1997
Fuel* - $16,700		
Lube oil - $300		
Food - $1,350		
St. Lawrence Seaway fees - $350		
Mooring fees en route - $2,300		
Shipyard modifications**	85,000	1 January 1998
Total Budget	$250,000	

*Fuel cost based on 2850 mi transit from Portland, ME to Duluth. At 10 kts this equals 285 hours of steaming. Fuel consumption is 45 gal/hr @ $1.30 per gallon, = $16,675, rounded to $17,000.

** Shipyard modification costs are a rough estimate at this time. We undoubtedly will expend the full $85,000 remaining in the LCMR budget, which will make the vessel operational for research in 1998. All of the renovations we ultimately have in mind for this vessel will probably cost an additional $100,000.