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United States Department of the Interior

GEOLOGICAL SURVEY

Water Resources Division
P.O. Box 2857
Raleigh, NC 27602

May 7, 1987

Colonel T. J. Dalzell
Assistant Chief of Staff, Facilities
United States Marine Corps
Marine Corps Base
Camp Lejeune, North Carolina 28542-5001

Dear Colonel Dalzell:

This letter is a summary of progress and the financial status of the Ground Water Resources Study that the U.S. Geological Survey (USGS) is conducting for the U.S. Marine Corps at Camp Lejeune, and a request for additional funds.

Phase I of the study, which covered the initial examination of available data, has been completed. A draft report summarizing the findings of Phase I has been forwarded to Mr. Bob Alexander. A final report will be provided following technical review within the USGS. A briefing giving a detailed summary of the Phase I results was presented April 16, 1987, to Camp Lejeune staff including Bob Alexander, Carl Baker, Al Austin, Mack Frazelle, and Lt. Col. Ken Kiriacopoulos.

The results of Phase I indicate that the water-supply aquifer is readily recharged by precipitation and is a very dependable source of water. However, the aquifer is not well protected from potential surface contamination because clay layers above the water-supply aquifer that might serve as a barrier to contamination are thin and discontinuous. Results also suggest that some relatively inexpensive modifications in the design and siting of future supply wells could significantly improve well yields and reduce costs. Preliminary findings indicate that drawdown in the water-supply aquifer is not great, and if the efficiency of each new well can be improved, each well could produce considerably more water than produced by existing wells. Also the aquifer is sufficiently productive to allow wells to be placed closer together than is the current practice, thereby effecting savings in pipeline construction and other costs.

Phase II of the study, scheduled to begin in May 1987, will involve drilling of new monitoring wells, collection of surface geophysical data, and further examination of available data. The purpose of the Phase II drilling is to fill in data gaps in our current understanding of the geology of the aquifer system, to explore potentially fruitful new areas for water-supply wells, to further test the potential of the aquifer system, and to examine specific causes of present and future saltwater contamination.

Coordination with the NACIP study group, Environmental Science and Engineering, Inc. (ESE) will continue. Coordination of the two studies, under Bob Alexander's adept guidance, has been fruitful in the first phase and will be potentially more important in the second phase. ESE has provided USGS with access to their shallow wells which aided in the water-level surveys, and USGS consulted with ESE about the design of the Hadnot Point pumping test. In the second phase, coordination of ESE well-drilling efforts with the USGS effort will provide better data for both studies.

Costs for manpower, drilling, and support services have generally increased over the past two years. Additional funding support will be required FY 87 and FY 88 to complete the Phase II study as originally proposed. An increase of about $75,000 each of the two years is needed. A revised cost estimate for Phase II is shown in attachment A. If the additional funds are not available, the scope of the Phase II work, which begins this month, must be reduced considerably.

In addition to cost of living adjustments, manpower costs have been increased to allow for part-time consulting of our staff specialist in surface geophysical techniques and the geophysical applications specialist from our Connecticut office. We plan to run a seismic profile of the sediments below the New River this June. Seismic profiles will help refine the overall delineation of clay and sand layers within the hydrologic system and evaluate the possible cause of saltwater contamination in the Marine Corps Air Station area. Some additional staff support is also needed for geophysical log analysis and for assistance in completing the flow model analysis.

Revised drilling costs provide for an experienced USGS driller having expertise in ground-water contamination studies and safety requirements; protection of the aquifer system during our test and evaluations is paramount in our priorities.

Finally, costs of support services, which were not included in the first cost estimates, are included in the current projection. Support services include: maintenance of the computer system and software, technical reviews and consulting support from our Regional Office and National Headquarters.

The completion of Phase II at the level originally proposed is essential to the understanding of Camp Lejeune's ground-water supply source and will result in analytical planning tools that will serve you for many

years. If you have any questions about our current status and progress or plans for Phase II, please don't hesitate to call me. I look forward to talking with Bob Alexander about your recommendations.

Sincerely,

Douglas Harned

Douglas A. Harned
Hydrologist

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Attachment A - Phase II Funding Revisions for USGS Ground Water Resources Study

MANPOWER:

Project Chief:	Hydrologist	GS-12/13	Full time
Project Staff:	Hydrologist	GS-13	Part time
	Hydrologist	GS-12	Part time
	Engineer	GS-11	Part time
	Hydrologic Technician	GS-7/9	Part time

COSTS:

	ORIGINAL PROJECTIONS	REVISED PROJECTIONS
Phase II (Fiscal Year 1987 and 1988)		
Construction and equipment		
Well drilling, construction, sampling and testing (4,600 feet at an estimated $25/foot)	$115,000	$177,000
Water sampling equipment	3,000	4,000
Geophysical logging	10,000	21,000
Laboratory services	20,000	25,000
Data collection, analysis, interpretation, and report preparation	80,000	95,000
Support services (computer, support personnel	_____	56,000
Fiscal Years 1987 and 88 Subtotal	$228,000	$378,000
(Fiscal Year 1987 Apr. 87-Apr. 88)	114,000	189,000
(Fiscal Year 1988 Apr. 88-Apr. 89)	114,000	189,000