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United States Department of the Interior

GEOLOGICAL SURVEY

Water Resources Division
3916 Sunset Ridge Road
Raleigh, North Carolina 27607

March 4, 1991

Laurie A. Boucher
Environmental Engineer
Atlantic Division,
Naval Facilities Engineering Command
Building A
Code 1822
Norfolk, Virginia 23511-6287

Dear Laurie,

As promised during our thursday February 28, 1991, meeting I have enclosed two copies of both the Phase I and Phase IIA U.S. Geological Survey (USGS) interpretative reports for your files. These reports are:

Phase I Report

Harned, D.A,, Lloyd, O.B., Jr., and Treece, M.W., Jr., 1989, Assessment of hydrologic and hydrogeologic data at Camp Lejeune Marine Corps base, North Carolina, U.S. Geological Survey Water-Resources Investigations Report 89-4096, 64p.

Phase IIA Report

Cardinell, A.P., Harned, D.A., and Berg, S.A., 1990, Continuous seismic reflection profiling of hydrogeologic features beneath New River, Camp Lejeune, North Carolina., U.S. Geological Survey Water-Resources Investigations Report 89-4195, 33p.

Note that figure 11 (pages 24 and 25) in the Cardinell and others (1990) report shows the buried river channel near Wallace Creek which we talked about during our thursday discussions. This channel is believed to extend to the northwest across the New River and onto land at the New River Air Station, and to the southeast onto land just north of the Hadnot Point Industrial Area. Another buried river channel was found in Stones Bay near the Rifle Range. Both these buried channels are in the Castle Hayne aquifer. If these buried channels contain more permeable material and if they are present beneath land areas of the Base, they may serve as conduits for ground-water flow, movement of contaminants or flow of saltwater from the New River estuary.

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Finally, in regards to the problem that we discussed at Camp Lejeune concerning turbid ground-water samples collected recently from the Hadnot Point Industrial Area monitoring wells, it is possible that these wells were not evacuated enough before resampling the ground water. The U.S. Geological Survey's ground-water sampling procedures require that ground-water samples collected for chemical analysis be as non-turbid as possible in order to collect a representative ground-water sample. This mean that if a well has been inactive for some time, the well must be evacuated enough times in order to collect an non-turbid ground-water sample as possible for chemical analysis. The alternative to time-consuming well evacuations is to filter the ground-water sample. The USGS does not recommend this approach, because many of the constituents being analyzed in the ground-water sample may be filtered instead. On the other hand, if the above Hadnot Point Industrial Area monitoring wells were not developed properly, the problems associated with turbid ground-water samples may have shown up on earlier sampling runs.

Please do not hesitate to call me at (919) 571-4021 if you have any questions regarding the above two reports, other USGS work at Camp Lejeune, or other ongoing environmentally-related work at the Base. Thank you.

Sincerely,

Alex P. Cardinell
Hydrologist

Enclosures: