Doc. No.: CLET-00084-3.01-02/22/90

O'BRIEN & GERE

22 February 1990

Commander
Atlantic Division
Naval Facilities Engineering
Command
Gilbert Street
Building N26, Room 389
Norfolk, Virginia 23511

ATTENTION: Ms. Susan Clarke

Re: Drill Cuttings
MCB Camp LeJeune, Hadnot Point

File: 3543.009

Dear Susan:

In accordance with our contract, during the installation of the wells at Hadnot Point Fuel Farm, all drill cuttings were drummed, composite samples were collected from the drums and analyzed for hazardous waste characteristics. Results of the analyses indicate that cuttings are not a hazardous waste. To have the drums removed from the site by a hazardous waste carrier would cost $800 per barrel. With approximately 10 to 12 barrels currently at the fuel farm, that poses a significant cost which may not be necessary. The attached Navy policy for management of drill cuttings suggests that the cuttings be placed on the ground surface adjacent to the well. The drums could then be recycled. I would like your thoughts on this matter before we proceed with contracting for off-site disposal.

If you have any questions, please contact me at (804) 431-2966.

Very Truly Yours,

O'BRIEN & GERE ENGINEERS, INC.

Frank D. Hale, P.E.
Managing Engineer

FDH:JDC:bh
Attachment

cc: John Kresky
Stephany DelRe'
John Conway

O'Brien & Gere Engineers, Inc., an O'Brien & Gere Limited Company
440 Viking Drive / Suite 250 / Virginia Beach, VA 23452 / (804) 431-2966 / FAX (804) 431-9006
Blue Bell, PA / Boston, MA / Corvallis, OR / Edison, NJ / Johnson City, NY / Landover, MD / New York, NY
Pittsburgh, PA / Pittsfield, MA / St. Louis, MO / Syracuse, NY / Watertown, NY

DOC NO: CLEJ-00084-3.01-2/22/90

LUST MONITORING WELL CONSTRUCTION AND FIELD OPERATIONS

All LUST monitoring wells will be drilled. The borings are estimated to have a maximum of 50 ft drilled depths, since this may vary depending on site geology, a unit price for additional linear feet shall be developed.

Well construction details are shown in Figures A-1 and A-2. A drill mounted on an All-Terrain-Vehicle (ATV) may be required for access to remote areas. Each rig will use necessary tools, supplies and equipment supplied by the contractor to drill each site. Drill crews should consist of an experienced driller and a driller assistant for work on each rig. A geologist, experienced in hazardous waste site investigations, shall be on site to monitor the drillers efforts and for air monitoring/safety control. Additional contractor personnel may be needed to transport water to the rigs, clean tools, assist in the installation of the security and marker pipes, construct the concrete aprons/collars and develop the wells. A potable water source on base will be designated by the Government.

Supplies and equipment will be transported to the lay-down area designated on the station by the Government. Any office space, trailers, etc., required for drilling, subsequent sampling and shipping shall be arranged and provided by the contractor.

The test borings/well holes will be drilled using a hollow stem auger. If it is the opinion of the contractor that air or mud rotary drill methods are necessary, approval must be obtained from the EIC. Presentation of justification for a boring method change shall be presented in the preliminary report presented prior to drilling. Standard penetration tests will be performed in accordance with ASTM D-1586. Standard penetration tests will be performed at the following depths: 0.0-foot to 1.5-foot; 1.5-foot to 3.0-foot; 3.0-foot to 4.5-foot; and 5-foot centers thereafter. A boring log of the soil type, stratification, consistency and groundwater level will be prepared.

The soil removed from the borehole will be piled beneath the drill rig while drilling. The drill equipment and tools will be cleaned at each well site using a portable decontamination system/operation supplied by the contractor. Wash water at the sites will not be contained, unless otherwise directed by the government, and may seep into the ground locally.

All monitoring wells will be installed in accordance with Navy LUST monitoring well specifications. The wells will be constructed of either 2-inch or 4-inch I.D. flush joint threaded PVC well screen and riser casing depending on conditions encountered during borehole completion.

During the drilling program, boreholes will be advanced using conventional hollow stem auger drilling methods, and soil samples of the subsurface materials will be collected every five feet or change in formation throughout the borehole in accordance with ASTM Method D-1586 for split barrel sampling. Each soil sample will be screened in the field using an HNU photoionizer organic vapor detector or similar type direct readout instrument to identify the presence of petroleum product within the soils. This field screening will provide a preliminary indication of the vertical and horizontal extent of petroleum contamination in order to select the optimum locations of other monitoring wells during the drilling program. Based on the field screening, 2-inch or 4-inch diameter monitoring wells will be installed at the locations where the most significant accumulation of fuel is encountered. The 4-inch wells will serve as potential product recovery wells for future recovery operations. All wells will be installed and constructed in accordance with LANTNAVFACENGCOM specifications and guidelines.

All wells will be developed following their installation to remove fine ground materials that may have entered the well during construction. This will be accomplished by either bailing or continuous low yield pumping. Equipment used for well installation, that may have come in contact with potentially contaminated material will be decontaminated with a high pressure steam clean wash followed by a potable supply water rinse. For the purpose of this scope of work, it is assumed that all fluid generated from well development and equipment decontamination can be disposed of on the ground at each respective well site.

Pump tests will be 8 hours in duration unless otherwise specified by the Engineer in Charge. Pump tests will be performed according to specifications set forth in EPA Doc 570/9-75-001, "Manual of Water Well Construction Practices".

After completion of the soil sampling and drilling to the specified depth, 2-inch and/or 4-inch (as required by the EIC) I.D. flush-threaded Schedule 40 PVC (Schedule 80 in traffic areas) monitoring wells with slotted screens and well casings will be installed in the borehole. A sand pack will be placed around the slotted well screen extending to 2 feet above the top of the screden. A 15 to 20-foot section of 0.01 inch slotted PVC well screen should be used in each well. A bentonite seal (minimum thickness - 1 ft.) will be placed on top of the sand pack using a tremie pipe. Finally, a ground mixture of two parts sand and one part cement, thoroughly mixed with the specified amount of potable water, will be placed in the borehole and rodded to insure a proper seal. A 4-inch diameter security pipe with a hinged locking cap will be installed on the well casing top having an embedment depth of 2.5 feet into the grout. Except in traffic areas (and non-traffic areas where required), a "flush" manhole type cover shall be built into a concrete pad as shown in figure A-2.

The security pipes will extend a minimum 2.5 feet and maximum 4.0 feet above the ground surface. A concrete apron measuring 5-foot by 5-foot by 0.5 foot will be constructed around each well. This apron/collar will be constructed of 3,000 psi ready-mixed concrete. The concrete will be crowned to provide and to meet the finished grade of surrounding pavement as required. The concrete pads can be constructed within five days after all of the wells have been installed.

Each well will be marked with three Schedule 40 steel pipes, 3-inch I.D., imbedded in a minimum of 2.5-foot of 3,000 psi concrete. (The concrete used to secure the three pipes will be poured at the same time and be an integral part of the 5-foot by 5-foot by 0.5-foot concrete apron described above.) The steel marker pipes will be properly labeled by metal stamping on the exterior of the security pipe locking cap and by labeling vertically on the exterior of the security pipe or manhole cover as appropriate. The labeling shall consist of the letters LGW (LUST Groundwater) (to describe the medium and the reason for the well) and a number specific to each well.

A sign reading "NOT FOR POTABLE USE OR DISPOSAL" SHALL BE FIRMLY ATTACHED TO EACH WELL.

Well permits required by state agencies are the responsibility of the contractor.

*The contractor or project team may supplement these requirements, but may not modify or delete them, in total or in part, without prior approval of the EIC.