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Department of Energy
Oak Ridge Operations
Weldon Spring Site
Remedial Action Project Office
7295 Highway 94 South
St. Charles, Missouri 63304

November 18, 1991

The Honorable Geri Rothman-Serot
The Honorable James E. O'Mara
St. Louis County Council
41 South Central Avenue
Clayton, MO 63105

Dear Council Members:

QUARRY WATER TREATMENT PLANT

Reference: Letter from Geri Rothman-Serot/James E. O'Mara to Stephen McCracken, dated October 29, 1991, subject: Contaminated Water Treatment

We too, regret that your tour of the Weldon Spring Site Remedial Action Project was canceled due to inclement weather. Hopefully, we will be able to reschedule the tour at a later date. We agree with your comment that the treatment and disposal of contaminated water is a critical issue. We have studied this problem extensively and are confident that we can reliably treat and test the quarry water before it is released. Hopefully, our answers to the questions raised in your joint letter of October 29, 1991, will add to your understanding of the water treatment program that will begin soon at the quarry.

1. <u>Do you know which contaminants are in the water?</u>

Your question refers to statements by the DOE in our June 1990 Five-Year Plan regarding the difficulty of characterizing and treating groundwater. Even though the Quarry Water Treatment Plant will, due to inflow, treat a certain amount of groundwater, the purpose of the plant is to dewater the quarry. The quarry water is surface water which has been sampled extensively. Proven methods have been used to reliably and accurately test the water to determine what contaminants are present and at what concentrations.

The water has been tested for the Environmental Protection Agency's (EPA) Hazardous Substance List, nitroaromatic compounds, radionuclides and other potential contaminants. We feel the characterization of the quarry pond water is complete.

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The water quality data, which was used to design the quarry water treatment plant, has been verified and validated. As a result of these processes, the accuracy and precision of the data are known.

2. Current groundwater treatment - is it effective?

The contaminants present in groundwater adjacent to the quarry originated from the bulk wastes and are the same as those present in the surface water. After initial quarry pond de-watering, groundwater is expected to flow into the quarry at approximately five gallons per minute. The treatment plant is designed to effectively treat this in-flowing water. The effectiveness of the treatment plant on the quarry pond water has been verified by performance bench-scale testing using actual quarry pond water. Again, the purpose of this plant is not to achieve final treatment of groundwater. This is an issue that will be addressed following removal of wastes from the quarry.

3. Contamination caused by backwash

We are familiar with problems caused by starting and stopping water treatment processes when remediating groundwater. An example of where this can occur includes certain situations where injection and pumping wells are being used to remediate groundwater contamination. However, this is not the situation at quarry because pumping will occur directly from the quarry pond (the source of contamination). The quarry pond will be maintained below its natural level; therefore, when the plant is operating groundwater will flow towards the pond rather than into uncontaminated areas. If treatment operations are interrupted for an extended period, conditions would return to those that existed prior to pond dewatering. We cannot foresee a worse condition than currently exists.

For conservatism, however we will increase the monitoring frequency for groundwater near the quarry to detect changes in contaminant distributions and/or concentrations.

4. Is the Weldon Spring Quarry a guinea pig?

Not at all. The water treatment plant is a process that has been proven effective in many situations as well as in bench tests using quarry water. Furthermore, as part of the design for the water treatment plant for the chemical plant site, quarry pond water was again successfully bench-scale treated by a different contractor using the same processes that the quarry water treatment plant will employ.

In any case, we will hold the treated water in lined ponds until we are certain it meets the requirements of our National Pollutant Discharge Elimination System (NPDES) permit. (Reference #6 below for related information).

5. Are you ready for full-scale implementation?

Thorough bench-scale tests were conducted to confirm process capabilities and to develop process parameters. The process equipment being utilized in the quarry water treatment plant has been used extensively around the world for many years and the design parameters have been well documented. Therefore, it was concluded that the benefits to be derived from pilot-scale testing would be minimal. Often times pilot scale testing is used to optimize the design in order to minimize equipment cost. In our case, however, it was decided to design the equipment to handle "worst case" conditions. All of these considerations have allowed us to proceed with design and construction of full-scale equipment with a very high level of confidence. Further, given the batch discharge aspect of the design, if, in the unlikely event that the system did not work either initially or due to equipment failure, improperly treated water will not be discharged to the river.

6. Are you sure that the water released into the river will be free of contaminants?

We are confident that the water released into the river will comply with the effluent limitations in the NPDES permit set by the State. Standard and accepted analytical methods exist to detect the contaminants present in the quarry water. These standard methods produce results of documentable precision and accuracy. We will sample and analyze the treated water to satisfy the requirements of the effluent limits and informational monitoring as specified by the NPDES permit. The quarry pond water has been analyzed for the EPA's Hazardous Substance List, nitroaromatic and inorganic compounds, and radionuclides. This list of parameters includes the compounds known, suspected, or potentially present in the quarry, as well as compounds considered by the EPA to be a known or potential threats to human health or the environment. All tests were performed using standard analytical methods.

7. Is there a plant facility being built?

A full, heated and lighted building enclosure is being built to house the system. This will include a segregated

maintenance and laboratory area for the operators who will be present at all times during system operation.

The building enclosure, as well as the equalization basin and effluent ponds, are located in a lighted and fenced area that is patrolled by a guard around the clock.

We appreciate your interest in what we are doing at the Weldon Spring site and repeat our hope that both of you will be able to schedule a "rain check" visit soon.

Sincerely,

Stephen H. McCracken
Project Manager
Weldon Spring Site
Remedial Action Project