



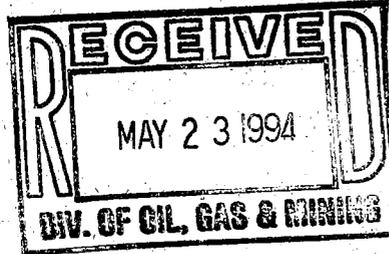
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ECKHOFF, WATSON and PREATOR ENGINEERING

Engineering • Environmental Science • Surveying • Construction Administration

May 20, 1994

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**Re: Response to Letter - Dated April 28, 1994
Review of Refuse and Slurry Acid and/or Toxic Forming Potential
Sampling Plans**

ACT/007/035 #2
Copy Pam

Dear Ms. Grubaugh-Littig:

This letter is in response to the State of Utah - DOGM's letter, dated April 28, 1994, regarding your review of the technical proposal titled Drilling, Sample Collection, and Monitor Well Installation - West Slurry Cell and Coarse Refuse at the Sunnyside Cogeneration Facility, Sunnyside, Utah. As stated in your letter, prior to the drilling plan being approved by DOGM, several issues and changes must first be adequately addressed. Listed below are statements made by DOGM regarding concerns with the drilling plan, and our response to each.

REFUSE SAMPLING PLAN

DOGM Statement:

"In Appendix 6-5, page 1, item #6, the statement should read, '...analyze soil samples collected from the precipitate layer for total and water soluble metals...'"

Response:

As agreed during the February 2, 1994 meeting between DOGM and EWP Engineering, ten percent of the soil samples collected from the precipitate layer will be analyzed for total arsenic, cadmium, chromium, and selenium, and possibly analyzed for TCLP analysis if warranted. The TCLP analyses are in addition to the agreed liquid portion extract analysis for the samples collected from the precipitate layer. A total metals analysis of the samples collected from the precipitate layer was not requested or discussed at the February 2, 1994 meeting, or in the outline of requests prepared by Mr. Henry Sauer of DOGM. As originally agreed, the samples collected from the precipitate layer will be mixed with water and the liquid extract will be analyzed for water soluble metals only.

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DOGM Statement:

"In appendix 6-5, page 3, the permittee states that an estimate of the depth (i.e. drill hole collar to the refuse precipitate interface) to the precipitate layer will be made '...where it outcrops...'. The permittee will be able to estimate the depth of the precipitate layer by reviewing the drill hole logs from the 1991 and 1992 John T. Boyd report".

Response:

The surveyed elevation of the precipitate layer where it *crops out*, along with any other published data inferred to be reliable, will be used to extrapolate and aid in determining the depth to the suspected precipitate layer below the borehole location.

DOGM Statement:

"In appendix 6-5, page 7, paragraph 2, item #3, the statement should read, '...mixing the ground sample to attain saturation...'"

Response:

The ground sample will be mixed with water to attain saturation

DOGM Statement:

"In addition, metal analyses should be accomplished utilizing Furnace Atomic Absorption."

Response:

Based on a conference call on May 17, 1994 between Henry Sauer of DOGM, Bruce Eloff of EWP Engineering, and Frank Polniak of ACZ Laboratories, Henry Sauer agreed that the samples collected from the precipitate layer will be analyzed using ICP analysis with a saturated paste extraction, and furnace atomic absorption analysis is not necessary.

DOGM Statement:

"To avoid confusion the reference for exchangeable acidity should be stated (i.e). ASA Mono. No. 9, Method 9-4-1, page 163)."

Response:

The reference for exchangeable acidity will be stated as (ASA Mono. No. 9, Method 9-4-1, page 163).

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MONITORING WELL INSTALLATION

DOGM Statement:

"The permittee must commit to completing, for water monitoring purposes, drill holes B-3, 4, 5, 10, and 11 as depicted on Appendix 6-5, Figure 2. The wells should be slotted through the precipitate layer (if encountered) and constructed as depicted on Appendix 6-5, Figure 4. The permittee must more precisely define the drainage channel at the base of the refuse pile. The well monitoring frequency should be increased to quarterly".

Response:

Based on our knowledge of hydrogeology, we believe that a water bearing zone existing within or on top of the precipitate layer, with sufficient thickness to construct a monitor well, does not exist. If a water bearing zone does exist beneath the west slurry cell and coarse refuse lifts, it probably is perched on top of the floor of the erosional valley (Mancos Shale). Also, in our opinion, the best prospective location to construct a useable monitor well is at the base of the coarse refuse lifts where groundwater flow and thickness is thought to be at its maximum.

The common practice in the environmental industry is to construct a monitor well in an **aquifer**, not in an area of soil with moisture conditions that are considered damp to moist, or very moist. According to the RCRA - Technical Enforcement Guidance Document (TEGD) for ground-water monitoring; to collect a sample that is considered representative of the water bearing zone, three casing volumes of groundwater should be evacuated from the well prior to sampling. For example, a 4-inch diameter well that has 3 feet of water contains approximately 2 gallons of water; three casing volumes would equal a total of 6 gallons. In areas of very slow groundwater recharge, the evacuation process may take several hours to accomplish, thereby making sampling impractical. A grab sample would then need to be collected and this is generally not representative of the subsurface conditions.

Additionally, based on estimated unit costs for this project, in order to construct 4 additional wells, sample each well quarterly - including costs for analytics and associated labor, the project total will increase by \$15,000 to \$20,000. This is an additional expense that is not warranted because there is a good chance that the requested monitor wells will not contain sufficient water for sampling purposes since the east slurry cell, a suspected water source, is no longer used. An alternative to the DOGM request is to install one monitor well in boring B-11, as originally proposed, and if this well does not provide adequate and reliable data, then at some future date, the need for additional wells will be considered.

Additionally, coal that is stockpiled in parts of the west slurry cell is scheduled to be excavated and used as fuel for electricity generation at the power plant. Based on interpretation of the proposed

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schedule for removing the coal, three of the additional monitor wells that DOGM requested to be installed, (B-3, B-4, B-5), will be impacted and most likely destroyed in the next eighteen months while the coal is being excavated. To expend an extra \$15,000 for the installation of monitor wells that will most likely be destroyed is unreasonable.

As discussed during the February 2, 1994 meeting between DOGM and EWP Engineering, it was agreed that only one monitor well was required to be installed. Therefore, we will continue with our original agreement, and install one monitor well in boring B-11 if a sufficient waterbearing zone is encountered while drilling. If a monitor well is installed in boring B-11, the sampling frequency will be on a quarterly basis, rather than semi-annual as originally proposed.

DOGGM Statement:

"There is a high potential for caving in the refuse and Mancos Material."

Response:

While drilling, the borehole will be lined continuously with casing; therefore, caving and/or sloughing of the borehole is not expected. The monitor well is constructed while the borehole is cased, and the casing is pulled as construction progresses.

DOGGM Statement:

"Clogging of the filter packing and the slotted portion of the completed wells by dissolved constituents in the water flowing at the base of the refuse is likely."

Response:

The clogging of the filter pack by **dissolved** constituents in groundwater so the well is not useable is very unlikely. The reason for constructing a filter pack is to maximize the porosity immediately surrounding the slotted portion of the well casing, while helping inhibit sand and/or fines from entering the well.

DOGGM Statement:

"There is a low probability of encountering a piezometric surface within the zone (at least 50 feet in width) identified as the likely location of the drainage channel. One drill hole at a particular location is not likely to encounter the piezometric surface. Every effort should be made to encounter and characterize the piezometric surface."

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Response:

The objective of this proposed drilling is to characterize the west slurry cell and coarse refuse for potential acid and/or toxic forming data using a minimum number of borings, while maximizing data collection, at reasonable costs. Every effort will be made while drilling the 11 proposed borings to encounter a water table surface.

DOGM Statement:

"Seasonal variations in the quantity and quality of water underneath the refuse pile must be characterized."

Response:

Seasonal variations in the quantity and quality of groundwater beneath the refuse pile will be measured as part of data collection for quarterly groundwater monitoring.

Your timely review of our response is appreciated so the project can continue as scheduled. If you have questions, please call me or Alane E. Boyd at (801) 261-0090.

Respectfully submitted by

ECKHOFF, WATSON AND PREATOR ENGINEERING



Bruce C. Eloff
Project Geologist



Alane E. Boyd, P.E.
Project Manager

cc: David Pearce - SCA
Brian W. Burnett - Callister, Duncan, and Nebeker
Fred Finlinson - Callister, Duncan, and Nebeker
Randy Harden - DOGM