

R3/D2 # 91

February 12, 1998

70-36

MEMORANDUM TO: Michael F. Weber  
FCLB/FCSS/NMSS

FROM: N. King Stablein (Original Signed By)  
ENGB/DWM/NMSS

SUBJECT: REVIEW COMMENTS ON COMBUSTION ENGINEERING PROPOSED  
HYDROGEOLOGICAL INVESTIGATION FOR 10 CFR 20.304 BURIAL  
AREA

Reference: *Hydrogeologic Investigation and Groundwater/Surface Water Monitoring  
Work Plan for the Combustion Engineering, Hematite, Missouri Site,  
October 1997, Revision 0, Gateway Environmental Associates, Inc.*

As requested, Jeff Ciocco of the Geosciences/Hydrology Review Section, ENGB, has reviewed the above-referenced document. The attachment describes the specific comments. Our one general comment is as follows:

RESRAD is proposed in the work plan as the code that will be used to conduct a site-specific dose assessment. The document lacks a conceptual model discussion necessary to describe the pathway and exposure analysis to guide the selection of surface and subsurface data. Without this information, it is unclear how the licensee will fulfill the site-specific modeling requirements of RESRAD and, thus, comply with the unrestricted and restricted use per the new license termination rule.

Jeff Ciocco is available on (301) 415-6391 to discuss and resolve these comments with the interested parties.

Attachments:  
Technical Review Comments  
to Hydrogeologic Plan

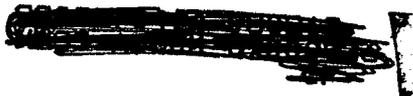
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CONTACT: J. Ciocco, ENGB  
415-6391

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MBell JHickey, LLDP SSoong, FCSS RNelson, LLDP  
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| OFC  | ENGB       | ENGB     | ENGB       |
| NAME | JCiocco:cj | DBrooks  | NKStablein |
| DATE | 02/12/98   | 02/12/98 | 02/17/98   |

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**NRC STAFF COMMENTS ON "HYDROGEOLOGIC INVESTIGATION AND GROUNDWATER/SURFACE WATER MONITORING WORK PLAN FOR THE COMBUSTION ENGINEERING, HEMATITE, MISSOURI SITE." OCTOBER - 1997, REVISION 0, GATEWAY ENVIRONMENTAL ASSOCIATES, INC."**

1. Recommend that the following subsections be added to Section 1.0.

- History of Activities at the Site - This subsection is needed to support logical placement of sampling locations. Summaries of the following items should be included: (1) NUREG/CR-3387 (Radiological Survey of the Combustion Engineering Burial Site, Hematite, Missouri. July 1983); (2) Regional and Local Geologic Summary at the Combustion Engineering, Hematite, Missouri Plant, May 30, 1997, Gateway Environmental Associates, Inc.; and (3) other prior surface and subsurface physical and analytical data.

Recommend that any data quality concerns be highlighted.

- Sources of Contamination - Recommend this subsection include the expected physical/chemical properties of the radioactive and hazardous materials involved (i.e., contaminants of concern) from the burial area, evaporation ponds, and former ring storage area.
- Regulatory Requirements of Site Characterization - Recommend this subsection describe the governing regulation(s) of this site characterization and dose assessment.
- Conceptual Model of the Site - Section 1.0, 2nd paragraph states the "...purpose of this Ground Water Monitoring Plan (GWMP) is to...obtain site specific data necessary for computer modeling of the site." Recommend that the model utilized be discussed and the site-specific input parameters required for the model be listed. This will provide the basis for data collection activities. The GWMP should describe why groundwater is the only exposure pathway of concern because the regulations require all credible pathways be evaluated.

2. Section 1.2, page 2, 2nd bullet: Recommend that shallow groundwater be sampled for radionuclides because prior Gateway, Inc., sampling in August of 1996 detected Technetium-99 in the shallow groundwater.

3. Section 3.0, page 5: Recommend that the results of the geophysical investigation be used to locate monitoring wells in positions near the burial sites to detect leachate immediately downgradient. Recommend the Site Characterization Report describe the limitations of geophysics, standard operating procedures employed, survey design, quality assurance, data reduction/interpretation, and presentation of results (e.g., traverse sections, fixed positions, labeled interpretations, surface landmarks, areas of poor data quality, etc.).

4. Section 4.0, page 6: Recommend adding a "background" subsection to discuss the statistical approach regarding the estimation of soil, groundwater, and surface water background radioactivity at the site. Background concentrations should be determined

from measurements in soil samples taken at several nearby off-site locations where contamination is not likely.

5. Section 4.1.1, page 6: Recommend that a summary table of concentrations of volatile organic compounds detected by Missouri Department of Natural Resources and radionuclides detected by others in the groundwater be presented to support monitoring location and sampling parameters.
6. Section 4.2, page 6: Recommend that a general hydrostratigraphic cross section (or sections) of the site be included from the existing subsurface data to support the proposed monitoring well locations.
7. Section 4.3, 1st paragraph: Recommend that all monitoring wells be geologically logged because of potential horizontal and vertical heterogeneities. Recommend the text include a description of the analysis to be performed on the Jefferson City Dolomite borehole and the core.
8. Table 1, Section 4.3, page 9: Recommend Figure 2 contain a north arrow, labeled site features, and estimated groundwater flow directions to reconcile the direction of each monitoring well relative to the burial area. Without such a figure, it is very difficult to understand the proposed monitoring well rationale. Based on Figure 12 (Regional and Local Geologic Summary, Gateway, May 30, 1997), WS-22 & WS-23 are not upgradient of the burial area.
9. Table 1, Section 4.3, page 9: Recommend that an operational history and construction summary of the "evaporation ponds" and "former ring storage area" be used to evaluate those areas as potential sources of surface and/or subsurface contamination because monitoring wells are proposed near these areas.
10. Section 4.4., page 11: Recommend discrete samples be collected from a short interval to provide a vertical contaminant profile to be used in RESRAD.
11. Section 4.4.4, page 11 and Section 7.1.1.: Recommend that if any radioactive screenings are elevated (i.e., above background), specific isotopic analysis be conducted on the sample(s). RESRAD requires, as input parameters, initial concentrations of principal radionuclides in order to have valid dose calculations.
12. Recommend adding a section that discusses how the "Source Term" will be calculated. RESRAD requires a source analysis to determine the rate at which residual radioactivity is released into the environment. The rate is determined by the geometry of the contaminated zone, the concentrations of the radionuclides present, the ingrowth and decay rates of the radionuclides, and the removal rate by erosion.