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Department of Energy

Richland Operations Office
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LPDR
WM-10 (2)
87-GTB-23

MAR 17 1987

Mr. John J. Linehan, Acting Chief
Operations Branch
Division of High-Level Waste
Management
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

WM Record File
101.2

WM Project 10

Docket No. _____

PDR ☒

LPDR ☒

Distribution:

Linehan

Hildenbrand

(Return to WM, 623-SS)

Dear Mr. Linehan:

NRC GEOLOGY INFORMATION NEEDS

In a telephone conversation with Mr. D. Marjanemi of my staff on December 31, 1986, Mr. H. Lefevre and Mr. P. Hildenbrand identified ten areas of geology in which the NRC needed additional information on the Hanford Area. It was understood that, while some of these "information needs" might be appropriate to a geology data review, others would possibly be satisfied by the SCP and related study plans.

The ten possible subject areas are listed in Column 1 of the enclosure. Relevant sections of Chapter 1 of the Site Characterization Plan (SCP) and selected Study Plans are identified in Column 2.

We are recommending for a geology data review the general subject of BWIP Stratigraphic Studies. This will include Item 10 of the enclosure and there will also be some overlap with the other candidate subjects. A detailed agenda and proposed date for the data review will be provided under separate cover.

Sincerely,

J. J. Keating

J. J. Keating, Director
Basalt Waste Isolation Division

BWI:DKM

Enclosure

cc: J. P. Knight, DOE-HQ
R. Stein, DOE-HQ
T. Husseman, State of Washington
D. Provost, State of Washington
R. Jim, Yakima Indian Nation
W. Burke, CTUIR
R. Halfmoon, Nez Perce Tribe
F. R. Cook, NRC
A. Alkezweeny, On-Site
Tribal Representative
D. C. Gibbs, Rockwell

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Earthquake Seismology

Deformation

NRC INFORMATION NEEDED	RELEVANT SITE CHARACTERIZATION PLAN (SCP) CHAPTER 1 (REV. 0) SECTION/RELEVANT GEOLOGY STUDY PLAN
<p>1.5. <u>Tectonic Models*</u></p> <p>Tectonic model definition, including significance of tectonic breccias, geophysical anomalies and microseismicity within the Cold Creek syncline (and adjacent to the RRL) and the relationship to the repository performance.</p>	<p><u>SCP:</u></p> <p>Define tectonic model, including significance of tectonic breccias, geophysical anomalies, and microseismicity within the Cold Creek syncline -- tectonic breccias:</p> <p>1.3.2.2.2.6 Secondary structural features (Pasco Basin; Table 1.3-4) Geophysical anomalies:</p> <p>1.3.2.2.3 Subsurface structural features: synopsis of geophysical work 1.3.2.2.3.7 Geophysical anomalies at the site</p> <p>Microseismicity:</p> <p>1.4.1.1.4.2 Earthquake swarms and shallow seismicity 1.4.1.2 Relationship of seismicity to geologic characteristics of area 1.4.1.3 Determination of earthquake-generating potential of structures and zones within the candidate area</p> <p>Relationship to repository performance:</p> <p>1.5.2.4.3 Preliminary tectonic stability assessment of the Pasco Basin/site 1.5.2.5 Tectonic stability summary 1.5.2.6 Possible effects of tectonic/volcanic events</p> <p><u>STUDY PLAN:</u></p> <p>Tectonic Model Development</p>
<p>1.6. <u>Detachment faulting*</u></p> <p>Consideration of a detachment fault and effects, including attendant imbricate splays, on repository performance.</p>	<p><u>SCP:</u></p> <p>Effect of a detachment fault and splays on repository performance:</p> <p>1.5.2.4.1 Structural models of the Pasco Basin</p> <p><u>STUDY PLAN:</u></p> <p>Structural Geology</p>

NRC INFORMATION NEEDED	RELEVANT SITE CHARACTERIZATION PLAN (SCP) CHAPTER 1 (REV. 0) SECTION/RELEVANT GEOLOGY STUDY PLAN
<p>1.7. <u>Cold Creek Hydrologic Barrier</u></p> <p>Significance of northerly trending features such as the Cold Creek hydrologic barrier and the May Junction monocline and the relationship of such zones to active (late Pleistocene to early Holocene) tilting/shearing of deposits by northerly trending wrench faults identified by Anderson and Tolan (1986 GSA Abstract).</p> <p>1.8. <u>Volcanic activity</u></p> <p>Significance and impact of potential volcanic activity on repository performance, specifically the surface facilities. It is pointed out that airborne volcanic deposits have been a major concern with the reactors and there has been considerable involvement of time and activity to handle this concern.</p> <p>1.9. <u>Rattlesnake Hills well issues</u></p> <p>The age significance of coal and tectonic faulting suggested by an affected tribes consultant (Canard).</p>	<p><u>SCP:</u></p> <p>Characteristics:</p> <p>1.3.2.2.2 Structural features of the Pasco Basin and RRL 1.3.2.2.3.7 Geophysical anomalies at the candidate site</p> <p>Effect on repository performance: (not discussed)</p> <p><u>STUDY PLAN:</u></p> <p>Structural Geology Site Groundwater (Hydrology Study Plan)</p> <p><u>SCP:</u></p> <p>Significance and impact of future activity on repository performance:</p> <p>1.3.2.1 Volcanic history (of the candidate area) 1.5.3.1 Renewed flood basalt activity 1.5.3.2 Cascade Range volcanic activity 1.5.6 Status of disruptive scenario development</p> <p><u>STUDY PLAN:</u></p> <p>Deformation Tectonic Model Development</p> <p><u>SCP:</u></p> <p>Age significance of coal and tectonic faulting:</p> <p>1.3.2.2.2 Structural features of the Pasco Basin and RRL 1.5.2.4.1 Structural models for the Pasco Basin 1.7.2 Hydrocarbon resources</p> <p><u>STUDY PLAN:</u></p> <p>Structural Geology Mineral, Hydrocarbon, and Geothermal Resource Potential</p>

NRC INFORMATION NEEDED

1.10. Identification of Stratigraphic Units

Definition of stratigraphic units is a key item and this should have perhaps been item 1. Procedures used by the DOE in the identification of both basalts and suprabasalt units should be assembled. What do you look at data wise to say you are in the Wanapum, for example?

The asterix(*) items come out of NRC's comments on the final Environmental Assessment, transmitted to DOE/RL (letter from Browning to Kale) on December 22, 1986.

**RELEVANT SITE CHARACTERIZATION PLAN (SCP)
CHAPTER 1 (REV. 0) SECTION/RELEVANT GEOLOGY STUDY PLAN**

SCP:

Procedures used to identify basalts and suprabasalt units:

- 1.2.1 Stratigraphic framework of the candidate area
- 1.2.1 Stratigraphic framework of the site

STUDY PLAN:

Stratigraphy