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WM Project 10

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Distribution:

WESTBROOK

WRIGHT

(Return to WM, 623-SS)

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Dr. Kristin Westbrook, Project Manager  
Geology/Geophysics Section  
Division of Waste Management  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Kristin:

Thanks for the material on thrust faulting potential at the RRL. I share your concerns and agree that USDOE/Rockwell have to update and backstop their regional tectonic concepts. So much work has been done at Hanford, first for nuclear power plant siting and then in the early BWIP, that there is naturally a sense that "we've been through all this".

But they are still saying in 1984 that the microearthquake swarms, other than on the Saddle Mountains trend, cannot be related to structure. I think that means only that we don't know where the structures are and don't understand their role in regional tectonics, not that the earthquakes occur off-structure.

In this regard, this Office is on the trail of interesting new information on regional faulting. Using overlays (1:500,000) of Landsat photolineaments and mapped faults, we are working on a compilation covering Washington, southern B.C. and most of Idaho and Oregon. Preliminary delineation of only "old" structure puts the RAW as a segment of a much more extensive linear feature which extends seaward to the Explorer Ridge 250 miles out. In Idaho it forms the bounding fault zone of the Cretaceous Idaho Batholith and probably will be found as a zone or trend in Utah (see sketch). Cutting across the northern half of the Columbia Plateau is another related trend, which I think now is far more extensive than shown here. It includes the Osborne Fault and the Lewis and Clark line, and in Idaho it appears as a preferred orientation for dikes of preCambrian age.

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Dr. Kristin Westbrook  
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There is no evidence that these "old" zones are active, but there is a powerful suggestion that portions of them have been zones of crustal weakness at least through the origin of the Cascade volcanoes. Thus it is important that we pin them down.

Not shown is the overlay of younger faults, both mapped and identified on imagery. Most are northerly-trending and the larger ones both have names and are implicated in contemporary seismic activity in the region NW of the RRL. I have all the data I need to complete the overlay, but for once there is too much information! A degreed summer intern will spend the next few weeks putting the essential data on mylar.

In parallel, Steve Malone of the University of Washington Geophysics Program--they operate a seismometer network for BWIP--will set up his computer to plot at least epicenters on my 1:500,000 scale fault/lineament map. This will be an interesting exercise and by the end of this summer we will have all UW data through 1983. Some fault plane solutions will probably be available as well, although data are sparse in the Plateau.

Thus it is a good idea, I think, that we stay in touch as work progresses. When our compiled, regional map is finished I would like to ask you and your staff to serve as reviewers before presenting it to Rockwell. I will also obtain a detailed review from Shannon and Wilson, one of our subcontractors, with consultation from academia. I would appreciate any suggestion you have for a third reviewer.

Thanks again for the copies.

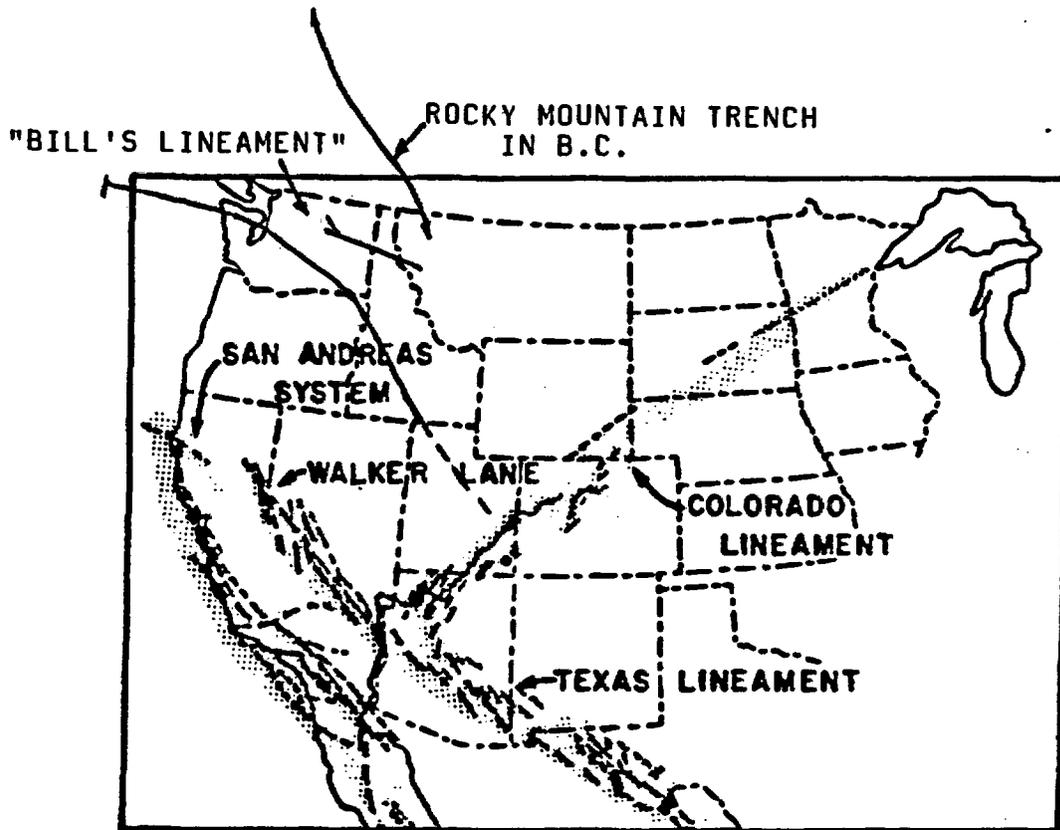
Sincerely,



Bill Brewer  
Engineering Geologist  
Office of High-Level  
Nuclear Waste Management

BB:hlt

Attachment: sketch map



SOURCE: WARNER, 1978

**COLORADO LINEAMENT**

SEISMOLOGY TOPICAL REPORT

LOG 1349  
REV.0-2/9/83

Project No. 17000  
Woodward-Clyde Consultants

Figure 3-11