



State of Utah

DEPARTMENT OF NATURAL RESOURCES
UTAH GEOLOGICAL SURVEY

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June 6, 1997

Clyde Naylor
Utah County Engineer-Surveyor
2855 South State Street
Provo, Utah 84606

Dear Mr. Naylor:

On May 6, 1997, a large landslide occurred in Spanish Fork Canyon about a mile north of Thistle Junction. Initial landslide movement damaged Utah Power & Light power lines in the middle portion of the mountain slope but, during the first inspection of the site by UGS geologists shortly after the landslide, we found no evidence of landslide activity in the lower portion of the slope near the Spanish Fork River. However, during subsequent site inspections on May 30 and June 2 we found evidence for continued downslope landslide movement, including involvement of the lower slope. Evidence for continued movement includes new ground cracks, warping and overthrusting of the ground surface, and additional tilting of power poles. With this continued movement, the landslide now extends almost to the old railroad embankment on the flood plain of the Spanish Fork River. We believe that this landslide may continue to move and, because of its proximity to the Spanish Fork River, possibly affect the river by diverting flow, increasing sediment levels, and, as a worst case, temporarily blocking flow with resultant downstream flooding.

Continued or accelerated movement in the lower slope area is by no means certain but, given the extent of movement of the nearby Thistle landslide in 1983 and the similar geologic materials in the two landslides, we should closely monitor the situation. Don Nay indicated in previous phone conversations that you have established survey lines across the landslide, and we appreciate your participation. Don indicated that your staff is surveying two lines, one near the power lines and the other near the base of the slope. If possible, I recommend another line about midway between the two other lines. This will ensure that any upslope movement in the original slide mass will be detected early, before it has a chance to propagate downslope into material closer to the river. I have placed stakes (marked with flags and the labels "UT. CO. 1" and "UT. CO. 2") to mark this recommended alignment. We also need to be sure that we have control points at stable locations off the landslide. I can help you with these locations if you wish. Many of the landslide features in lower slopes are subtle and hard to recognize.

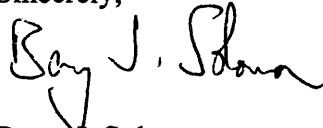


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I believe it is important that surveys be conducted at least once a week, if possible, during the spring and early summer rainy season through June and mid-July. Rain from torrential thunderstorms may cause landslide movement, quickly infiltrating open fractures, raising the pore pressure within the landslide, and contributing to landslide instability. If surveys are conducted less frequently, we may not have enough indication of continued small movements to anticipate a large-scale slope failure. If no significant movement occurs during the rainy season, surveys can then be reduced to monthly until the winter. The unusually large snowpack of the past winter, and infiltration of the resultant snowmelt into unstable material, was the likely cause of this landslide. Even if next winter's snowfall is significantly less, infiltration into the landslide will continue at an increased rate because of the fracturing. We believe this landslide will pose a threat for years to come, and will need to be monitored to some extent each spring.

Once again, we sincerely appreciate your efforts in monitoring a potentially dangerous situation. With modifications of survey activities as noted above, and transmittal of data and results to us after each survey, the potential for anticipating movement and increasing the level of safety will be significantly increased. I recognize that you have prior commitments and that this places an additional burden upon your staff, as it does on ours, but believe that the current situation warrants our close attention and cooperation. If you have any questions, please feel free to contact me at 537-3388.

Sincerely,



Barry J. Solomon
Senior Geologist, Applied Geology

cc: Dave Bennett, Utah Co. Sheriff
Fred May, CEM
Don Nay, Utah Co. Engineer's Office
Frank Ashland, UGS