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June 22, 2001
91P-15269

Mid-Mountain Construction, Inc.
P.O. Box 2909
Kirkland, Washington 98083-2909

Attention: Mr. Jeff Levere, P.E.

**Subject: Geotechnical Reconnaissance Report
Coson Residence
7709 West Mercer Way
Mercer Island, Washington**

Dear Jeff:

AMEC Earth & Environmental, Inc. (AMEC) is pleased to submit this report describing our geotechnical reconnaissance of the above-referenced project site. The purpose of our reconnaissance was to investigate the cause of landsliding that recently occurred at the site. As outlined in our proposal dated June 22, 2001, our scope of work was limited to surface observations, research and review of previous geotechnical reports and other pertinent information in the City files, and preparation of this letter; no subsurface explorations, laboratory tests, or engineering analyses were included. We received your written authorization for our study on June 22, 2001. This report has been prepared to address the concerns raised in the letter (undated, received by Mid-Mountain on June 18, 2001) entitled "Landslide Conditions at Louis Coson Residence" from Mr. Don Cole of the City of Mercer Island to Miguel and Helen Dy. Our letter has been prepared for specific application to this project, in accordance with generally accepted geotechnical engineering practice.

SITE AND PROJECT DESCRIPTION

The project site is an existing waterfront residence on the southwest end of Mercer Island, located at 7709 West Mercer Way. The residence is situated on an irregularly shaped parcel that measures about 200 feet by 90 feet overall. The site topography is steeply sloping down to the west, with maximum topographic relief between the driveway on the east and Lake Washington on the west of about 75 feet.

We understand that sometime during the spring of 2001, the water service to the subject residence broke, resulting in flow of muddy water down to Lake Washington. During the same time, a landslide occurred on the west side of the residence. At this time, the residence has

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been "red-tagged" as unsafe for entry, pending the outcome of our investigation. At the request of Jeff Levere of Mid-Mountain Construction, we visited the site on June 20, 2001 to observe the site conditions.

SITE CONDITIONS

During our reconnaissance of the project site on June 20, 2001, we observed that the break in the water line service had been located. An about 1-inch long split in the plastic pipe was observed. Workers with Mid-Mountain construction were repairing the break in the line at the time of our visit. We toured the site, and observed the path of mud below the water line break. The path of mud was down the driveway to the garage, then along the north side of the house, and in to the rear yard. A landslide feature was observed in the rear yard, below which it could be seen where the mud path entered Lake Washington.

The headscarp of the landslide was arcuate-shaped, located as close as 3 feet from the patio in the center of the west side of the house, and located about 10 feet west of both the northwest and southwest corners of the house. The slide mass below the headscarp was observed to have a downset of about 3 feet. We estimate the maximum plan dimension of the slide mass was about 60 feet wide (north-south), by about 55 feet (east-west). A short (4-foot high) timber wall bordered the western edge of the observed movement. About 50 feet of the wall had deformed by the slide mass, and a slight bulge was observed for about two feet in front of (west of) the wall. A level grass bench area (presumably the location of a 10-foot wide sanitary sewer easement) did not exhibit any obvious deformation. West of the level bench, the ground sloped down to a rock bulkhead along the waterfront. Horsetail vegetation was noted on the slope between the level bench and the bulkhead, suggesting the location of springs. No other areas of seepage were noted at the time of our reconnaissance.

We did not observe any damage or cracking of the residence that can be attributed to the landslide. We did note soil had pulled away by about 1 inch from the southern about 5 feet of the patio area, but no distress to the patio was observed. We probed with a long steel rod in this opening in the soil, and were able to probe about three feet to dense soils. A slight tension crack with about a 1/4-inch opening was noted in the soil at the south west corner of the house, but no distress to the house or supporting soils was noted. Finally, we observed the roof downspout at the northwest corner of the house may have deflected down by about 1 inch, probably due to the buried outlet pipe being pulled down as the slide mass moved.

LITERATURE REVIEW

We reviewed a *Preliminary Soil Investigation, Lots 3,4 and 5, 7600 Block West Mercer Way*, by Earth Consultants, Inc., dated August 26, 1977 (project number E-309). This report pertains to the general site vicinity, and generally described the underlying soils as glacial till. Numerous wet areas were noted in the lower lakeside portion of the site. We also reviewed another report on the project site by Earth Consultants, Inc. entitled *Geotechnical Investigation Report, Lewis Short Plat, Lots A, B, and C*, dated August 3, 1983, project number E-309-6. It appears that one test pit was made on the northeast corner of the residence, described as medium dense to dense SILT with sand to sandy SILT, no groundwater observed. The City of Mercer Island's sensitive area map shows this area as being underlain by the Lower clay formation., and in the general proximity of a point labeled "Location of known soil movement year unknown".

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We also reviewed a letter and attached drawing dated October 26, 1983, from George Lewis to City of Mercer Island, entitled *Landscaping Plan of Lewis Home*. This plan indicated the landscaping of the area to the west of the house was to consist of four terrace areas, separated by 1.5H:1V slopes. Hand-drawn grading contours suggest this area was filled by about 10 to 12 feet.

Utility drawings we reviewed indicate that the subject lot (Lot A) contains a 10 foot wide storm and sanitary easement along its north side, which contains a Type II catch basin with oil-water separator at the top of slope (at driveway -not observed) connected to 122 feet of 12-inch CMP terminating in a square box (outfall from box not shown, but shown on a drawing of the City storm drain system to outfall to the west). This easement on the north edge of the property also contains a PVC sanitary sewer (8-inch diameter). A separate drawing shows a 10-foot wide easement for storm and sanitary sewer on the south edge of the parcel, reportedly containing a 12-inch storm drain (CMP?) and outfall to the lake. A sanitary sewer (apparently 6-inch diameter with several cleanouts), is also located in this southern easement, connecting to the 10-foot wide easement along the western lower bench area of the lot, and apparently discharging to an offshore city sewer trunk line. Stubs for connecting stormwater and sanitary sewer for the subject residence are shown on the southern easement. However, side sewer plat maps show the connection was made at the north easement.

CONCLUSIONS

In our opinion, based on our surface observations and geotechnical research, the primary cause of the recent landslide was the infiltration of large quantities of water into the ground, stemming from the break in the water line above the residence. A contributing cause to the water line break may have been the February 28, 2001 earthquake. It appears that the soils involved in earth movement are the fill soils, which were emplaced atop the relatively dense native soils. The shape and direction of earth movement appears to be down the axis of the former swale area (see attached sketch from October 26, 1983 letter referenced above).

At this time, it is our opinion that the house is not in imminent danger of damage due to the landsliding. We are recommending test borings be performed to ascertain that the sliding is confined to the loose fill soils. These borings would be made using portable drilling equipment. We also recommend that the condition of the footing in the area of the patio be investigated, to confirm that this portion of the residence is founded on firm soils.

This further investigation would also form the basis of providing recommendations for remedial repairs to the slope, as required.

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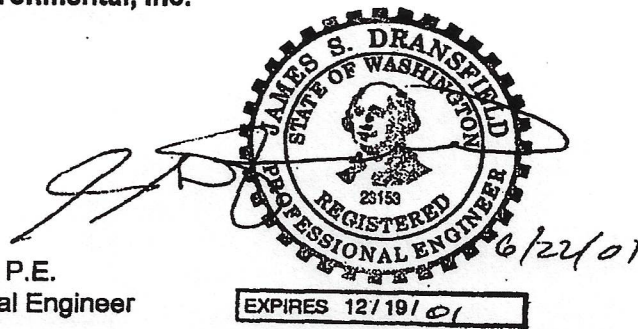
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The conclusions and recommendations presented in this report are based, in part, on our interpretations and assumptions regarding subsurface conditions; therefore, if variations in the subgrade conditions are observed at a later time, we may need to modify this report to reflect those changes. We appreciate the opportunity to be of service on this project. If you have any questions regarding this report or any aspects of the project, please feel free to contact our office.

Sincerely,

AMEC Earth & Environmental, Inc.



James S. Dransfield, P.E.
Principal Geotechnical Engineer

Enclosure: October 26, 1983 Topography and Grading Plan

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GEOTECHNICAL INVESTIGATION REPORT

LEWIS SHORT PLAT

LOTS A, ~~B~~, AND ~~C~~

MERCER ISLAND, WASHINGTON

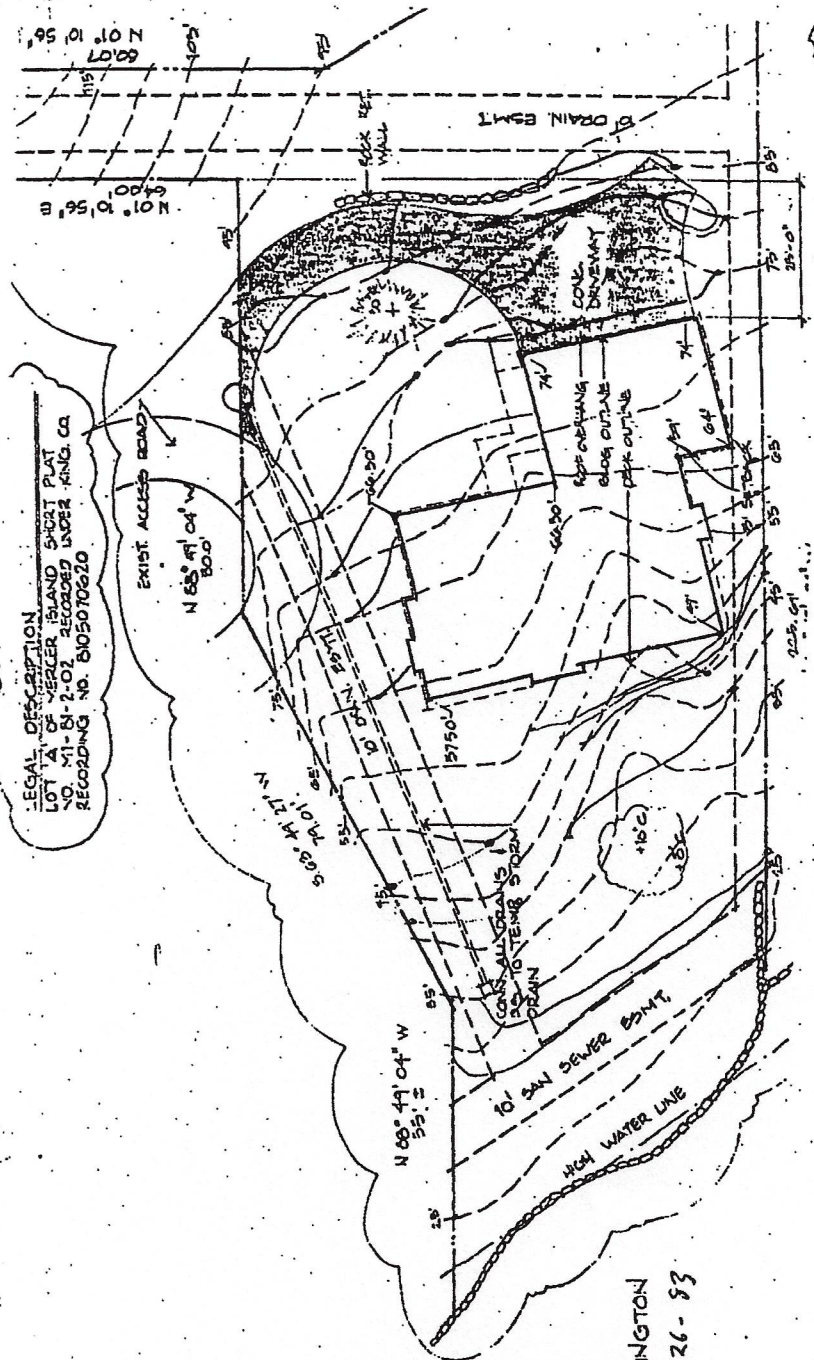
E-309-6

FOR

MR. GEORGE LEWIS

Robert P. Lewis Sub.

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LEGAL DESCRIPTION
 LOT 14 OF YERLER ISLAND SHORT PLAT
 NO. M-81-2-02 RECORDED UNDER KING, CA
 RECORDING NO. B025070620

LAKE
 WASHINGTON
 Oct 26-93

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