

APPENDIX A

Mercer Island Stormwater Conveyance Inventory Exhibit with Project Tributary Area

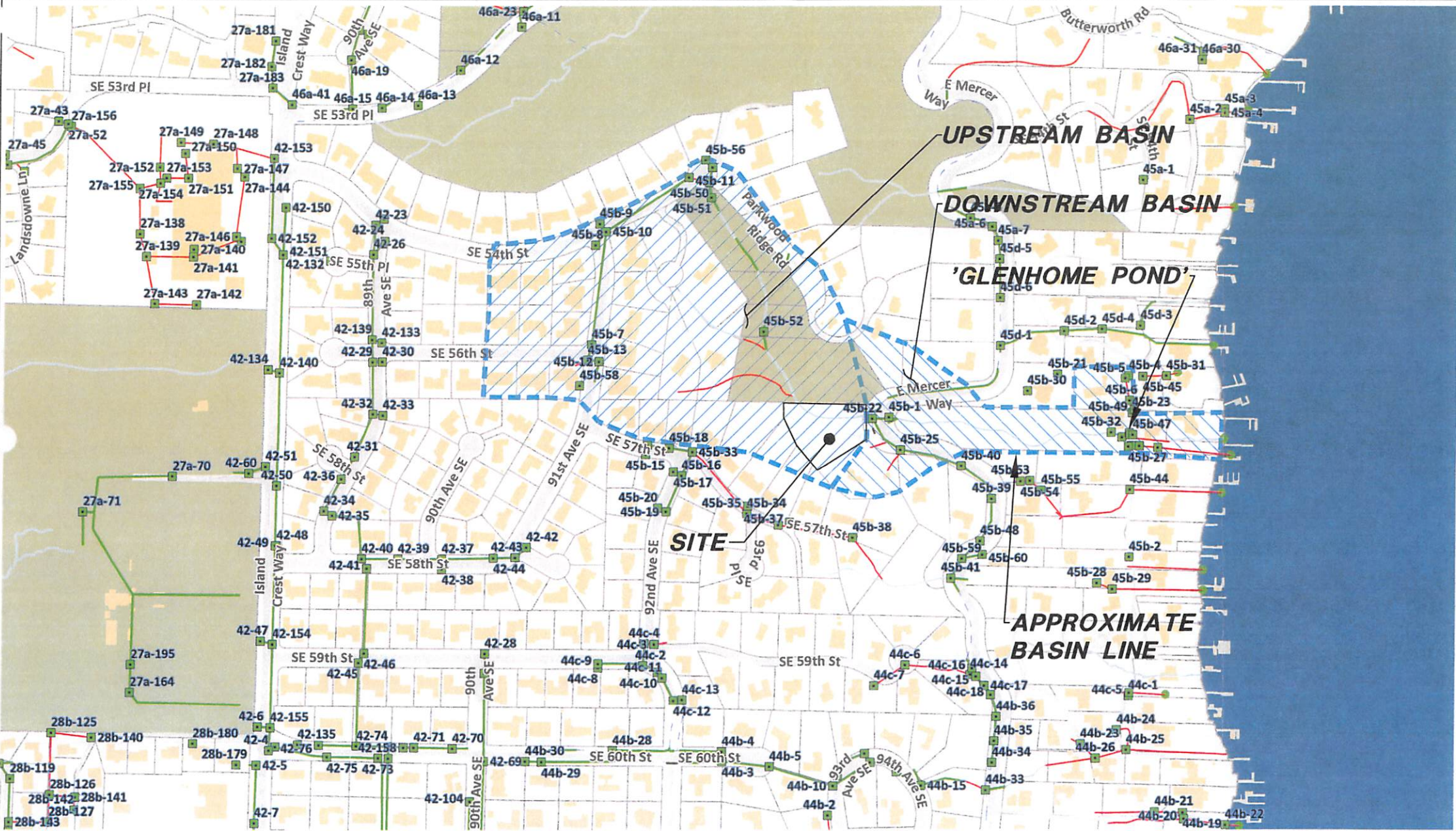
Downstream Flowpath and Glenhome Pond Photos

King County iMap Exhibit Showing Contours

Mercer Island Landslide Hazard Assessment Map

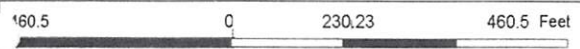
Mercer Island Erosion Hazard Assessment Map

Mercer Island Seismic Hazard Assessment Map



- Legend**
- Storm Catchbasin
 - Storm Main
 - Other
 - Culvert
 - Ditch
 - Pipe
 - Watercourse
 - Storm Main - Private
 - Storm Discharge Poir
 - Bridge
 - Paved Road
 - Streets
 - Building
 - Ownership Parcels
 - Docks
 - Parks
 - King_co_Streets
 - Water

1:3,612



BASIN AREA:
UPSTREAM: 8.0 ACRES
DOWNSTREAM: 2.8 ACRES
TOTAL: 10.8 ACRES

Disclaimer: These maps were developed by the City of Mercer Island and are intended to be a general purpose digital reference tool. These maps are not an accepted legal instrument for describing, establishing, recording or maintaining descriptions for property concerns or boundaries. The City makes no representation or warranty with respect to the accuracy or currency of these data sets, especially in regard to labeling of surveyed dimensions, or agreement with official sources such as records of survey, or marked locations of features.

Notes

Downstream Photos



From the MI Treehouse Site, to Lake Washington



The Shared Driveway to the Left
The Regional Trail to the Right



The Glenhome Sediment Pond



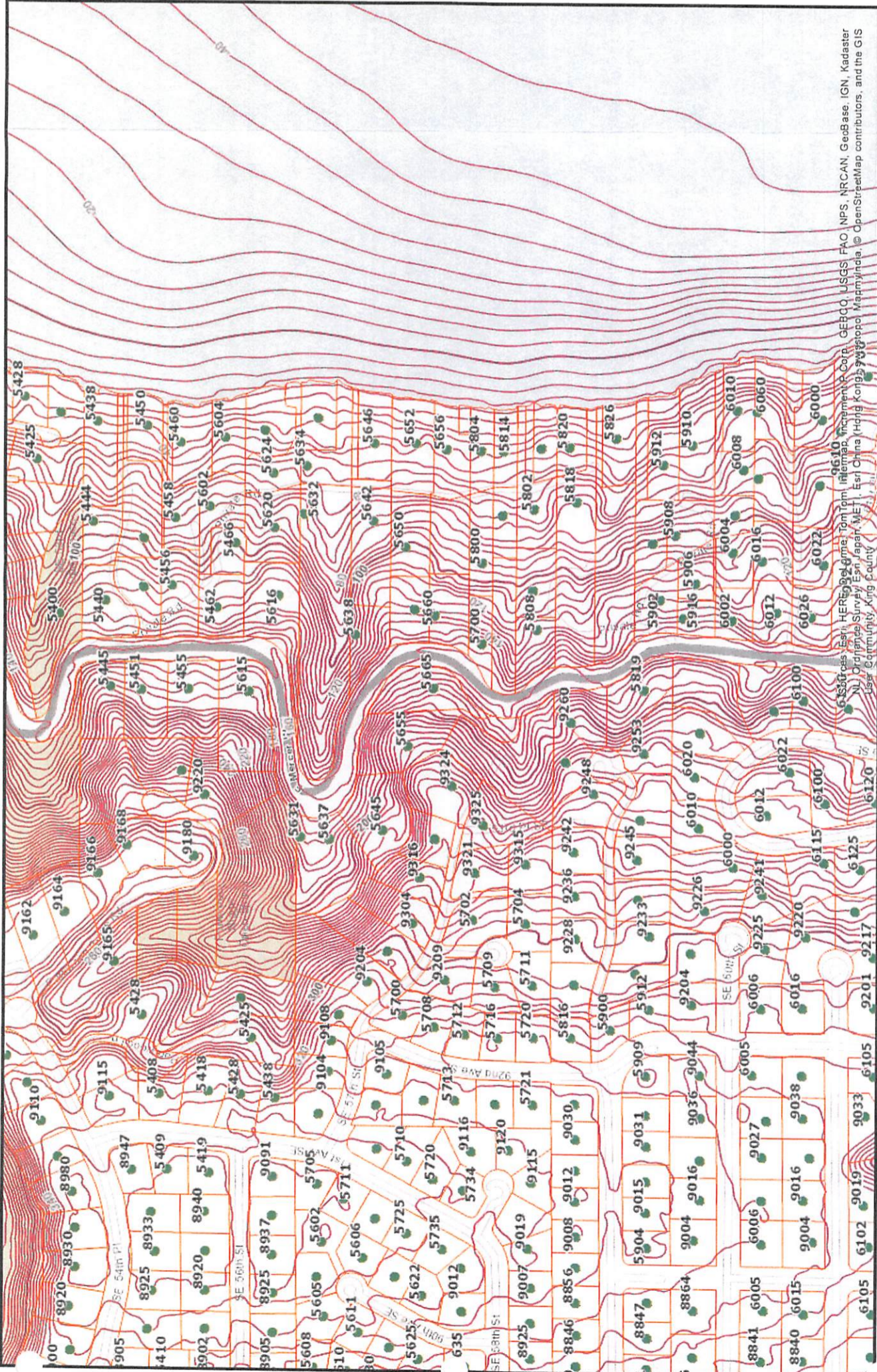
Downstream of the Glenhome Sediment Pond, to Lake Washington

(Images acquired from © Google and Google Street View)

King County iMap

Legend



Parcels



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Date: 6/22/2015

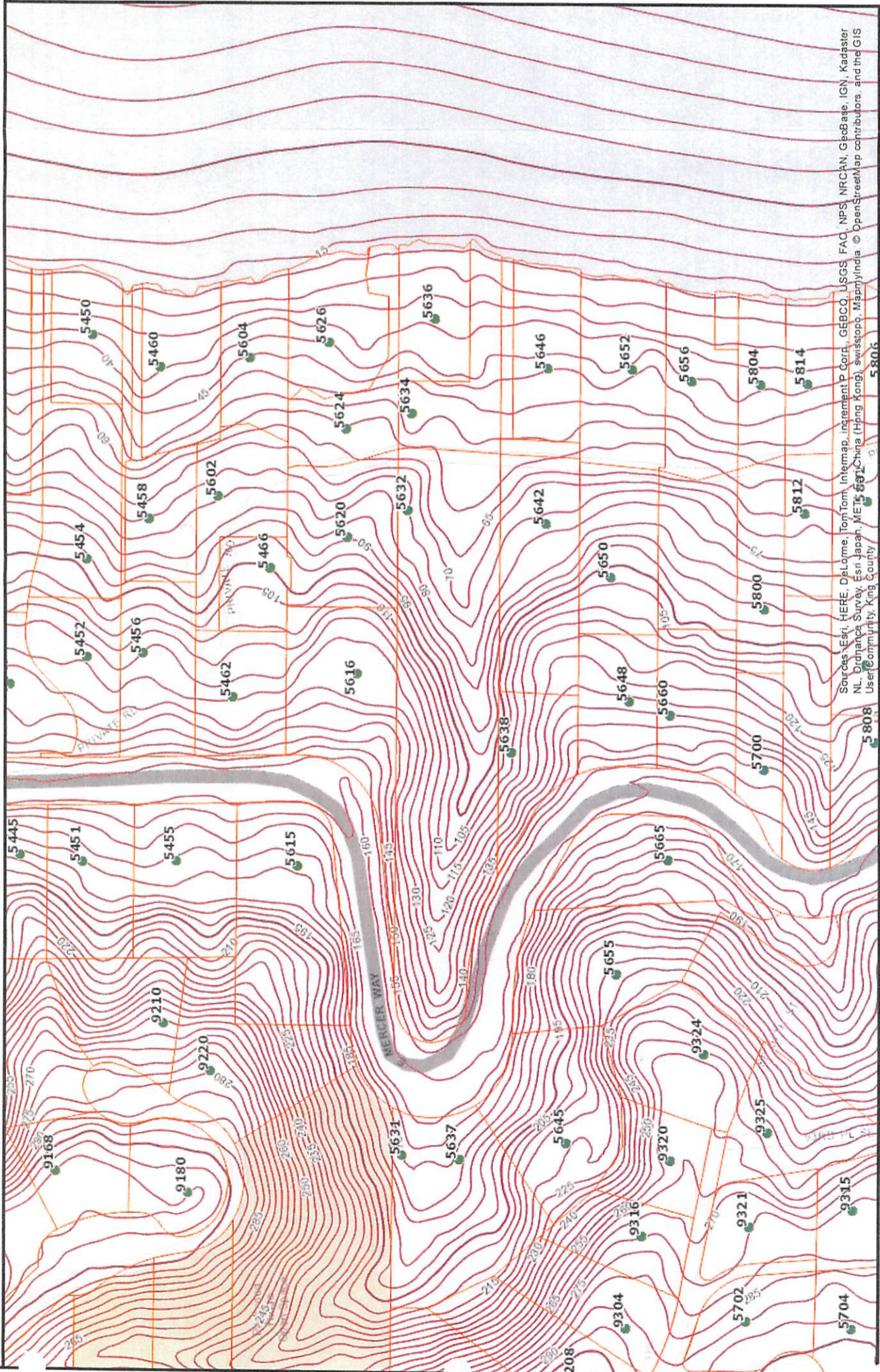
Notes: Mercer Island Treehouse Topography

6836000, East, HERC, Inc., Tom Tom, Informa, Inc., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri, Japan, METI, Esri China (Hong Kong), Swisstopo, Mapbox, User Community, King County GIS Center

King County iMap

Legend
Parcels



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeBCo, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Swisstopo, China (Hong Kong), Swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community, King County

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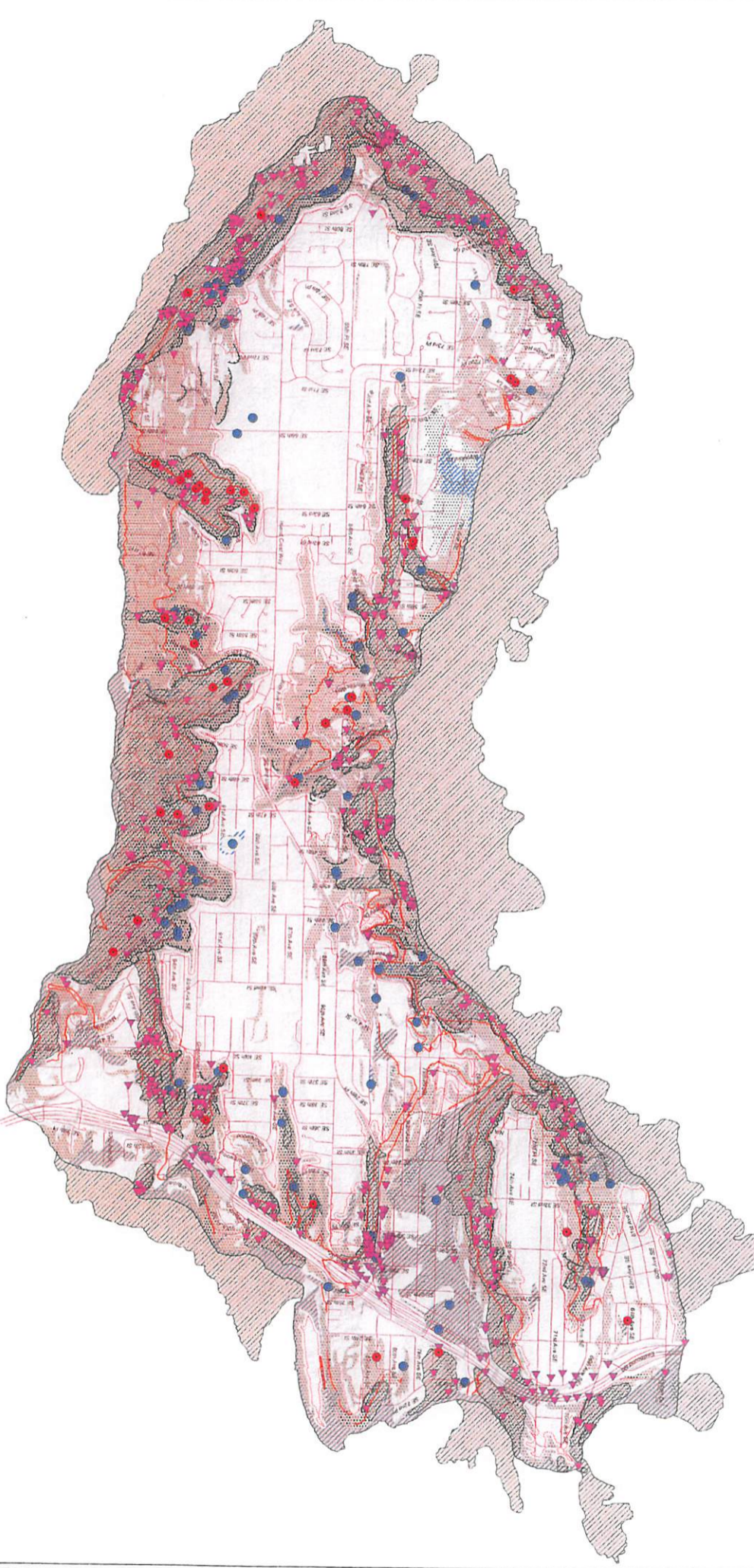
Date: 6/22/2015



Notes: Mercer Island Treehouse Topography

Mercer Island Landslide Hazard Assessment

By Kathy G. Troos & Aaron P. Wisner
April 2009



LANDSLIDE HAZARD AREAS (WAC 365-190-080 4d and MICC 19.16.010)

Landslide hazard areas include areas potentially subject to landslides based on a combination of geologic, topographic, and hydrologic factors. They include areas susceptible because of any combination of bedrock, soil, slope (gradient), slope aspect, structure, hydrology, or other factors.

Areas susceptible to landsliding on Mercer Island include

- I. Areas of historic failure or that have been documented on published maps. See mapped known landslides below.
- II. Slopes steeper than 15%, intersecting a geologic contact of relatively permeable deposits over relatively impermeable deposits, and with springs or groundwater seepage. See mapped potential slide areas below.
- III. Areas that have shown movement during the Holocene epoch (last 10,000 years) or which are covered by Holocene-age mass wasting deposits. See mapped known hazardous areas below.
- IV. Slopes parallel to or sub-parallel to planes of weaknesses (such as bedding planes, part systems, and fault planes) in substrate materials. None identified on map, but may be locally present.
- V. Slopes having gradients steeper than 80% subject to rockfall during seismic shaking. See slope classification below.
- VI. Areas potentially unstable as a result of rapid stream incision, stream bank erosion, and undercutting by wave action. See mapped erosion locations below.
- VII. Areas that show evidence of, or are at risk from snow avalanches. None identified on Mercer Island.
- VIII. Areas located in a canyon or on an active alluvial fan, presently or potentially subject to inundation by debris flows or catastrophic flooding. None identified on Mercer Island.
- IX. Any area with a slope of 40% or steeper and with a vertical relief of ten or more feet except where composed of consolidated rock. See slope classification below.

Landslide hazard areas include the following mapped areas:

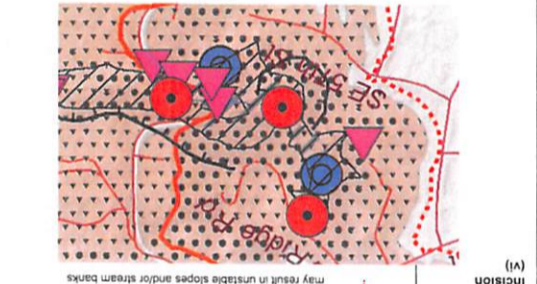
- Landslide Hazard**
 - Landslide Hazard Area (Known or Suspect)
 - Landslide Hazard Assessment Setback

- Supplemental Data**
 - Identified Landslide Location
 - Scarp
 - Landslide and Mass Wasting Deposits
 - Subsidence and Subaqueous

- Slope (ix)**
 - Slope 80% and higher
 - Slope 40-79%

- Potential Slide Area**
 - Geologic contact of coarse-grained deposits over fine-grained deposits where slope = 15%, and
 - Area where water less than 10 feet below ground surface based on limited data set (other areas of shallow water present), or
 - Spring locations, or
 - Spring lines

- Areas of Rapid Stream Incision**
 - Areas of moderate to rapid stream incision/erosion, may result in unstable slopes and/or stream banks



Enlargement of Site

GENERAL NOTES FOR GEOLOGICAL HAZARD MAPS

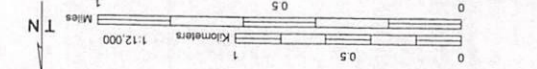
This map is one of a suite of revised Geological Hazard Maps for the City of Mercer Island. This suite includes maps showing Seismic Hazards, Landslide Hazards, and Erosion Hazards.

Other geologic and/or natural hazards may exist and geologic events may occur on Mercer Island that are not specifically identified on these maps. Examples of geologic hazards and hazardous events that are not specifically identified on these maps include, but are not limited to, tsunamis and seiches in Lake Washington.

These maps are for the use of the staff of the City of Mercer Island's Development Services Group (DSG) for the purpose of permit application evaluation. These maps provide DSG staff general assessment of known or suspected geologic hazard areas for which the City will require site and project-specific evaluation by a Washington State-licensed engineer, geologist or engineering geologist prior to issuing a permit for site development. All areas have not been specifically evaluated for geologic hazards and there may be locations that are not correctly represented on these maps. The responsibility of individual property owners and map users to evaluate the risk associated with their proposed development. No site-specific assessment of risk is implied or otherwise indicated by the City of Mercer Island by these maps.

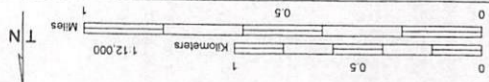
The City of Mercer Island is using guidance provided by the State of Washington regarding the definition of geologically hazardous areas in accordance with WAC 365-190-080 and the Growth Management Act. "Geologically hazardous areas" by State definition, include areas susceptible to erosion, sliding, earthquake, or other geologic events. They pose a threat to the health and safety of citizens when incompatible commercial, residential, or industrial development is sited in areas of significant hazard.

This new set of maps represents an update to the 2002 Geologic Hazard Map Series and is based on a new set of Best Available Science for the Seattle fault and related events, a new Geological Map of Mercer Island by Troos and Wisner (2008), and a geologic database of Mercer Island compiled by GeologicNW at the University of Washington. Information about data used for the maps, references, and data limitations are all described in an associated Read Me document. The digital version of these maps is accompanied by a meta data file containing pertinent information about map construction. These data and maps are all available on the City of Mercer Island website.



Mercer Island Erosion Hazard Assessment

By Kathy G Trost & Aaron P Washer
April 2009



EROSION HAZARD AREAS (MICC 19.16.010)

Erosion hazard areas include those areas greater than 15% slope and subject to a severe risk of erosion due to wind, rain, water, slope and other natural agents including those soil types and/or areas identified by the U.S. Department of Agriculture's Natural Resource Conservation Service as having a "severe" or "very severe" fill and inter-fill erosion hazard.

Another factor in evaluating erosion potential is infiltration potential. If sandy material is present at the ground surface, rain water can infiltrate and loosen material for removal by erosion. Therefore the areas of sandy material have also been added to this hazard map for consideration along with the slope and erodible soils subclasses.

Contributing factors not shown on the map include rainfall, areas of shallow groundwater, ground cover, wind, impervious surfaces, and changes to the ground surface. These factors and all the categories shown on the map should be used together to assess erosion potential. Individual areas less than 0.3 acres in size have been excluded.

Erosion Hazard Erosion Hazard Area (Known or Suspect)

For all other areas, hazard is unknown or unquantified

Supplemental Data

High - Coarse-grained deposits, e.g. gravel and clean sand.

Medium - Silty, sandy deposits.

Mixed - Interbedded or mixed fine and coarse-grained deposits.

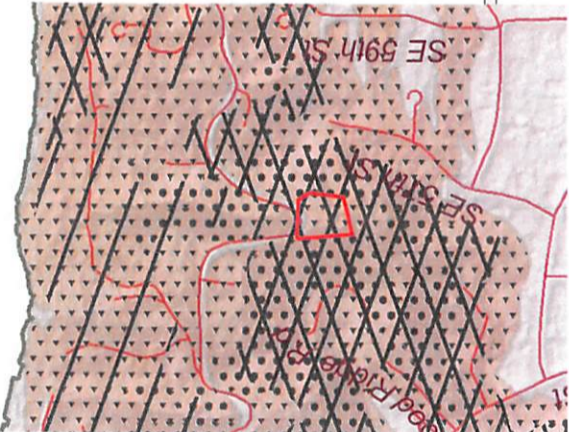
Slope Class

Slope 80+%

Slope 40-79%

Slope 15-39%

Blow up of site



Blow up of site

GENERAL NOTES FOR GEOLOGICAL HAZARDS MAPS

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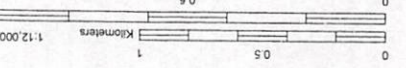
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The City of Mercer Island is using guidance provided by the State of Washington regarding the definition of geologically hazardous areas in accordance with WAC 365-190-080 and the Crown-Mercer Island by Trost and Washer (2009), and a geologic database of Mercer Island compiled by GeoMapNW at the University of Washington. Information about data used for the maps, references, and data limitations are all described in an associated "Read Me" document. The digital version of these maps is accompanied by a meta data file containing pertinent information about map construction. These data and maps are available on the City of Mercer Island website.



Mercer Island Seismic Hazard Assessment

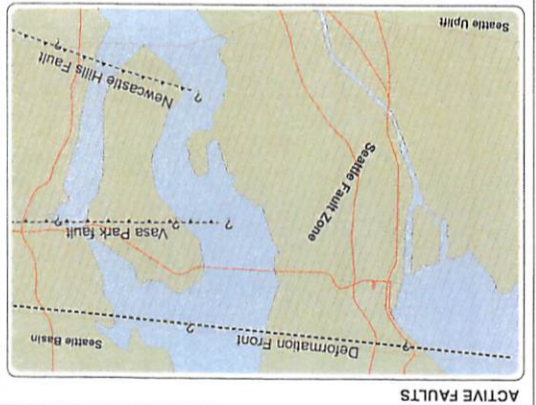
by Kathy G. Troost & Aaron P. Washer
April 2009



SEISMIC HAZARD AREAS (MICC 19.16.010)

Seismic Hazard areas are those areas subject to severe risk of damage as a result of earthquake-induced ground shaking, slope failure, settlement, soil liquefaction or surface faulting.

- Seismic Hazard**
 - Seismic Hazard Area (Known or Suspect)
- Supplemental Data**
 - Potential for seismically induced ground failures including settlement, cracking, lateral spreading, liquefaction due to ground shaking.
 - Seismically hazardous areas include the following:
 - High Potential for seismically induced ground failures
 - Foamy consolidated, see note below
 - Moderately Potential for seismically induced ground failures
 - (Moderately consolidated, see note below)
 - Scarp
 - Landslide and Mass Wastage Deposits (subaerial & subaqueous)
 - Modified land
- Seismically Hazardous Areas**
- Documented Earthquake**
 - Miscellaneous Ground Effects of the 2001 Nisqually Earthquake (Approx. Area)
 - Ground Settlement from the 1965 Earthquake (Approx. Area)
- Effects**
 - Miscellaneous Ground Effects of the 1949 Earthquake (Approx. Area)



ACTIVE FAULTS

Mercer Island falls within the Seattle fault zone and at least the strands of the Seattle fault cross the island. No direct evidence of surface fault rupture has yet been documented for Mercer Island (Troost and Washer, 2009).

The Seattle Fault Zone is the area where several parallel strands of the Seattle fault have either formed or are likely to form in the future. The Seattle Fault Zone is a complex system of faults that includes the Seattle Fault, the Vasa Park fault, and the Newcastle Hills fault. The Seattle Fault Zone is a major seismic hazard for the Puget Sound region. The Seattle Fault Zone is a major seismic hazard for the Puget Sound region. The Seattle Fault Zone is a major seismic hazard for the Puget Sound region.

Notes: Degree of consolidation

Geologic materials were assessed then classified as either strongly, moderately, or poorly consolidated. Degree of consolidation is a relative term and is not meant to imply that the materials are of a certain strength. The classification shown on the map does not account for the built environment and improves surface.

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GENERAL NOTES FOR GEOLOGICAL HAZARDS MAPS

