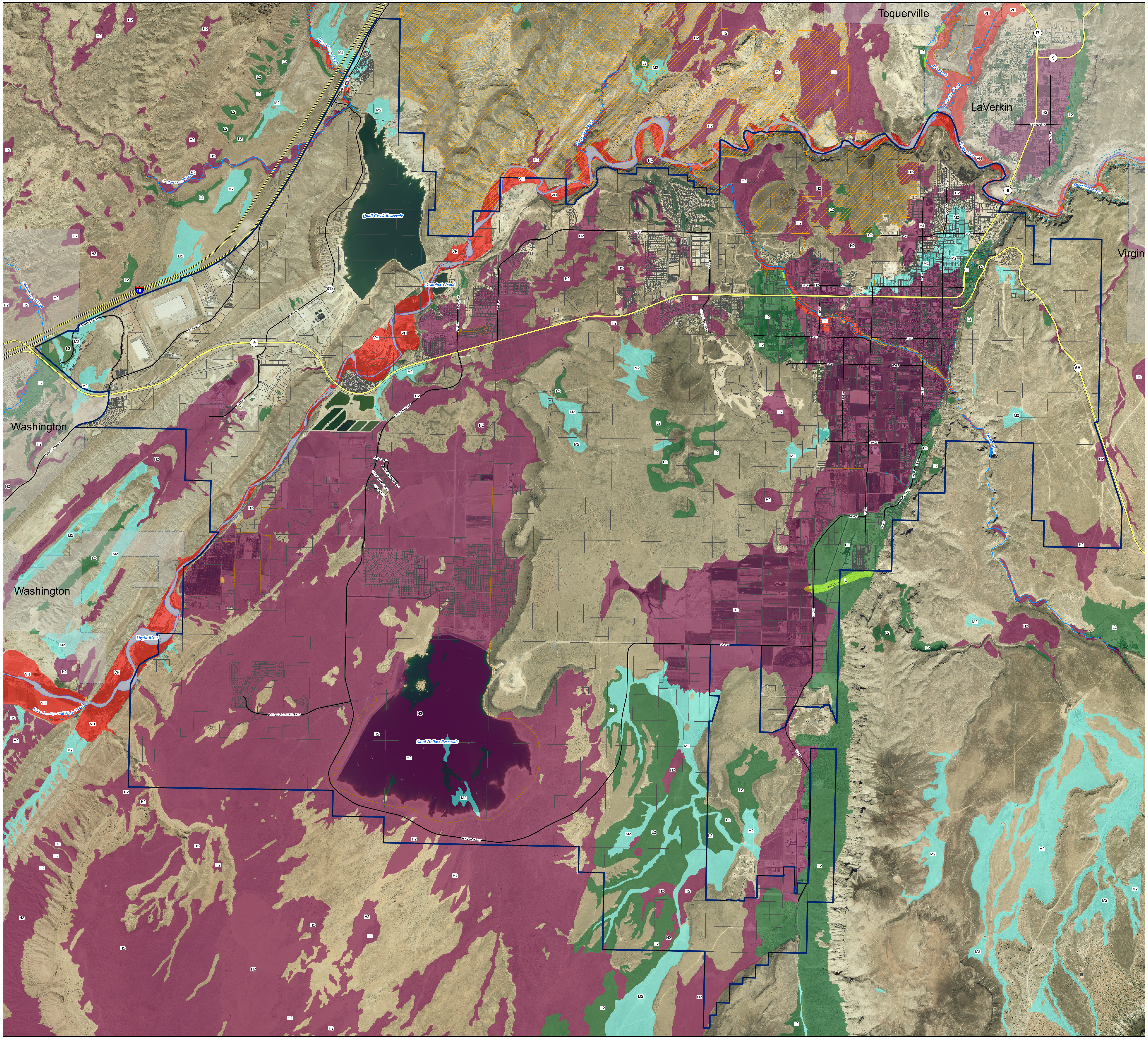

Geologic Hazard Liquefaction

Utah Geological Survey Special Study 127
Geologic Hazards and
Adverse Construction Conditions

St. George-Hurricane Metropolitan Area
Washington County, Utah, 2008

City of Hurricane GIS
147 N 870 W
Hurricane, UT 84737

N

1 inch = 2,000 feet

0 950 1,900 3,800 5,700 7,600 Feet

Projection/Datum: Utah State Plane Zone South (FIPS 4303) NAD83

Publication Date: May, 2009

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Description
Liquefaction and liquefaction-induced ground failures are major causes of earthquake damage (Keller and Blodgett, 2006). Upon liquefaction, a soil loses its strength and ability to support the weight of overlying structures or sediments. Liquefaction chiefly occurs in areas where ground water is ≤50 feet deep, when a water-saturated, cohesionless soil is subjected to strong ground shaking (Seed, 1979; Martin and Lew, 1999). Cohesionless soils have loose grains that do not readily stick together and are typically sandy, with little clay, although some silty and gravelly soils are also susceptible to liquefaction. In general, an earthquake of magnitude 5 or greater is necessary to induce liquefaction. Larger earthquakes are more likely to cause liquefaction, and may result in liquefaction at greater distances from the earthquake epicenter.

Using This Map
The Liquefaction-Hazard Map shows areas of known or suspected liquefaction hazard in the St. George–Hurricane metropolitan area. The map does not integrate earthquake ground motions with soil characteristics and depth to ground water, which is required to determine relative liquefaction potential (potential equals hazard plus opportunity) in susceptible soils. Consequently, this map does not differentiate ground-failure types or amounts, which are needed to fully assess the hazard and evaluate possible mitigation techniques.

This map is intended for general planning purposes to indicate where a liquefaction hazard may be present and to assist in liquefaction-hazard study design.

See section 3, "Liquefaction Hazard", in the full report for more detailed information.

Classification:
For a detailed explanation of the contents of this map, contact the Hurricane Planning Department for a copy of Special Study 127

- VH - Very High—Geologic units that liquefied during the 1992, ML 5.8 earthquake,
- H - High—Well-sorted sands, silty sands, and gravels where depth to ground water is ≤50 feet
- H2 - High2—Similar in texture to High category, no ground-water information
- M - Moderate—Moderately sorted sands, silty sands, and gravels, depth to ground water is ≤50 feet.
- M2 - Similar in texture to Moderate category, no ground-water information
- L - Low—Moderately to poorly sorted sands and gravels, no ground-water information
- L2 - Low2—Similar in textural characteristics to Low, no ground-water information

Legend

- Hurricane City Limits
- Creek
- Canal
- Major Streets
- Dirt St.
- State Highway
- I-15
- Ramp
- RCDR Babylon Section
- Parcels
- Virgin River

Map Sources:
Parcels, Hurricane GIS Dept. Modified from Washington County GIS data downloaded Feb., 2009.
Streets, Hurricane City GIS Dept. Modified from Washington County GIS data downloaded Feb., 2009.
Aerial, USDA, National Agriculture Imagery Program (NAIP) 2006. Distributed by the Utah AGRC and reprojected to Utah State Plane, South (FIPS 4303), NAD 83 (CONUS), Survey Feet from the original. SID source file.