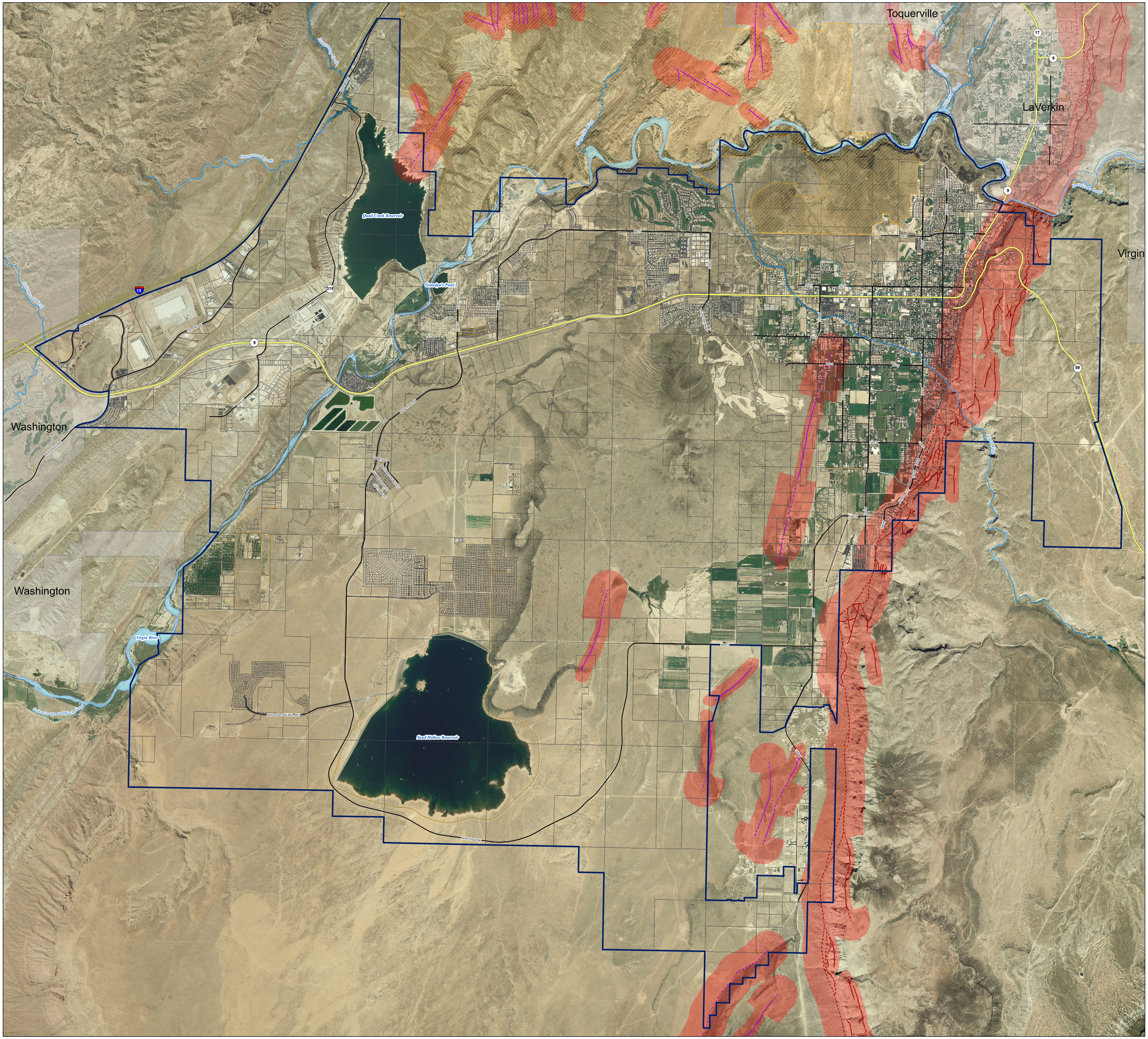

Geologic Hazard
Faults and Surface Faulting

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

Although this product represents the work of professional scientists, the Utah Department of Natural Resources, Utah Geological Survey and the City of Hurricane, makes no warranty, expressed or implied, regarding its suitability for a particular use. The Utah Department of Natural Resources, Utah Geological Survey and the City of Hurricane, shall not be liable under any circumstances for any direct, indirect, special, incidental, or consequential damages with respect to claims by users of this product.

Description
Fault-related surface rupture has not occurred in southwestern Utah historically, but the area does have a pronounced record of seismicity. At least 21 earthquakes greater than magnitude 4 have occurred in southwestern Utah in historical time (Christenson and Nava, 1992; University of Utah Seismograph Stations, 2006; figure 2); the largest events were the estimated magnitude 6 Pine Valley earthquake in 1902 (Williams and Tapper, 1953) and the magnitude 5.8 St. George earthquake in 1992 (Christenson, 1995). The Pine Valley earthquake is pre-instrumental and poorly located, and therefore, is not associated with a recognized fault. However, the epicenter is west of the surface trace of the west-dipping Hurricane fault, so the earthquake may have occurred on that structure. Pechmann and others (1995) have tentatively assigned the St. George earthquake to the Hurricane fault.

If development encroaches into areas with sandy soil and disturbs the natural vegetative cover, wind-blown sand may migrate across roads and bury structures (Mulvey, 1992; Hayden, 2004). Stabilized sand dunes and sand sheets may react in the same manner if disturbed by construction. High winds can move fines by suspension and produce sand and dust storms that reduce visibility to near zero and sandblast vehicles and structures.

Using This Map
The Surface-Fault-Rupture-Hazard Map (plate 1) shows potentially active faults along which surface faulting may occur. A special-study area is shown around each fault, within which the UGS recommends that a site-specific, surface-fault-rupture-hazard study be performed prior to construction. These studies can resolve uncertainties inherent in generalized hazard mapping and help ensure safety by identifying the need for fault setbacks.
Utah Geological Survey Guidelines for Evaluating Surface-Fault-Rupture Hazards in Utah (Christenson and others, 2003) include a detailed rationale for performing surface-fault-rupture-hazard studies, minimum technical requirements for conducting and reporting those studies, recommendations regarding when surface-fault-rupture-hazard studies should be conducted based on fault activity class and the type of facility proposed, and procedures for establishing safe setback distances from active faults. City and county officials, planners, and consultants should refer to the UGS guidelines regarding the details of conducting and reviewing surface-fault-rupture-hazard investigations.

See section 2, "Earthquake Hazards", 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

- Holocene, Well def
- Holocene, Approx/Bur
- lateQ, Well def
- lateQ, Approx/Bur
- Quat, Well def
- Quat, Approx/Bur
- Unknown, Well def
- Unknown, Approx/Bur

Surface Faulting
- Special Study Area

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.