



October 13, 2015

Dana Shuler, P.E.
Weber County Engineering Division
2380 Washington Blvd., Suite 240
Ogden, UT 84401

Subject: Geologic Review No. 2
Lot 39R Summit at Powder Mountain Phase I Subdivision
8365 East Summit Pass Road
Eden, Utah
SA Project No: 15-161

Report: Response to Review Comments – Geology, Geotechnical Investigation Report,
Lot 39R of Powder Mountain Resort, 8365 East Summit Pass, Weber County,
Utah (IGES Project No. 02132-002), dated September 23, 2015: prepared for
39 Summit LLC, c/o Ms. Andrea Milner, 314 Lytton Avenue, Suite 100, Palo
Alto, California 94301

Geologic Submittal Status: **INCOMPLETE SUBMITTAL**

Dear Ms. Shuler,

At your request, Simon Associates (SA) reviewed the above referenced September 23, 2015, IGES letter. The September 23, 2015, IGES letter was submitted in response to the following SA review letter:

Geologic Review, Lot 39R Summit at Powder Mountain Phase I Subdivision, 8365, East Summit Pass Road, Eden, Utah (SA Project No: 15-161), dated August 17, 2015; prepared for Dana Shuler, P.E., Weber County Engineering Division, 2380 Washington Blvd., Suite 240, Ogden, UT 84401.

The August 17, 2015, SA review letter was written in response to the following IGES report:

IGES Report - Geotechnical Investigation Report, Lot 39R of Powder Mountain Resort, 8365 East Summit Pass, Weber County, Utah (IGES Project No. 02052-001), dated June 3, 2015: prepared for Ms. Cassandra Beresini, 1 Letterman Drive, Bldg. D, Suite 500, San Francisco, California 94129.

The purpose of SA's review is to evaluate whether or not the IGES document adequately addresses geologic conditions at the site, consistent with concerns for public health, safety, and welfare; reasonable professional standards-of-care, and; the Weber County Hillside Development Review Procedures and Standards.

August 17, 2015, SA Letter Recommendations to Weber County

The August 17, 2015, SA letter recommended Weber County request IGES:

1. Perform a slope stability analysis as stipulated in the Geologic Hazard Study for the development (Western Geologic, 2012), since the slope on the lot is approximately 30 percent (i.e., greater than 20%), and;
2. Show the location of any potential geologic hazard with delineation of a recommended setback distance from the hazard and proposed location of the structure as stipulated in Chapter 27 of the Weber County Hillside Development Review Procedures and Standards. The report should include a detailed site map (scale: one inch equals 200 feet or larger). The evidence on which recommendations and conclusions are based should be clearly stated in the report and completed under the direction of an engineering geologist.

SA Recommendations

1. IGES' response to Item 1 of the August 17, 2015, SA letter: "Slope stability was addressed in a separate submittal for the design of a permanent soil nail wall for the new home (IGES, 2015b). The design of the wall included global stability of the shoring system, which included much of the slope above and below the proposed improvements, taking into account proposed grades and improvements. This

document is on file with the County; however, IGES can provide an electronic copy of this submittal to the reviewer upon request via email.”

It appears the slope stability analysis referenced by IGES was for the design of a permanent soil nail wall for the proposed residential dwelling, did not include slopes south of the building envelope, and was confined to the area of proposed construction. SA will defer to the Weber County Consulting Geotechnical Engineer regarding the adequacy of the IGES slope stability analysis in regards to meeting the slope stability analysis recommendations stipulated in the 2012 Western Geologic report.

IGES states on page 2 of the September 23, 2015, IGES letter: “The Lot 39R property overlies what has been previously mapped as undifferentiated Tertiary aged Wasatch and Evanston Formations (see Sorensen and Crittenden, Jr. (1979), Crittenden, Jr. (1972), and Western GeoLogic (2012).”

IGES states on pages 2 and 3 of the September 23, 2015, IGES letter: “In contrast to Crittenden, Jr. (1972) and Sorensen and Crittenden, Jr. (1979), Western GeoLogic (2012) mapped the area south and west of the property as ‘mixed slope colluvium, shallow landslides, and talus.’ The surficial material in this area was found to be indistinguishable from that seen north of the Lot 39R property, and is therefore mapped as being undivided Wasatch and Evanston Formations, though there are likely to be colluvial and slopewash sediments in some parts of this area.”

Based on geologic conditions presented in the Western GeoLogic (2012) report, the south part of Lot 39R is underlain by mixed slope colluvium, shallow landslides, and talus, see Figures 1 and 2 (attached). Since geologic conditions should be adequately characterized for inclusion into the slope stability analysis, SA recommends Weber County request IGES clarify the geologic conditions of the property, particularly the south part of the parcel mapped as mixed slope colluvium, shallow landslides, and talus by Western GeoLogic (2012).

2. IGES’ response to Item 2 of the August 17, 2015, SA letter: Based on Weber County Hillside Development Review Procedures and Standards, SA recommends Weber County not consider IGES’ response to Item 2 in the September 23, 2015, IGES

letter complete from a geologic perspective and recommends Weber County request IGES address the following:

- a. IGES states in the first paragraph on page 3: "No faults have been mapped on the property, with the nearest published mapped fault being located approximately 1.5 miles to the southwest of the property (Sorensen and Crittenden, Jr., 1979). Similarly, no faults were located on or around the site during the geologic investigation. It is therefore concluded that the surface fault rupture risk is low and is not expected to adversely impact the subject property."

SA recommends Weber County request IGES confirm their conclusion regarding faulting from a more recent publication such as the USGS Quaternary Fault and Fold Database of the United States (<http://earthquake.usgs.gov/hazards/qfaults>).

- b. IGES states in the third paragraph on page 3: "No landslide deposits have been mapped on or in the immediate vicinity of the property. However, Western GeoLogic (2012) mapped several Holocene to Late Pleistocene landslide deposits to the west and south of the subject property (see Figure 3 of Western GeoLogic, 2012, report)."

SA recommends Weber County request IGES provide Figure 3 of Western GeoLogic, 2012, report depicting the location of the subject site and noting "... the Holocene to Late Pleistocene landslide deposits to the west and south of the subject property."

- c. IGES states in the third and fourth paragraphs on page 3 and 4: "Conversely, two elongated northeast-southwest trending landslide deposits mapped to the south and southeast of the Lot 39R property were confirmed in the field by way of the presence of irregular, hummocky topography, and a drastic increase in the number and size of boulders in these areas. The westernmost of these landslide deposits was found to be approximately 100 feet south of the southern margin of the Lot 39R property. Both of these deposits were found to be relatively small, shallow

landslides with overgrown vegetation and no evident headscarps, suggesting a Late Pleistocene age. However, based on the observed topography between the two landslides, which features a moderate hummocky appearance, the two landslide forms may in fact be a single landslide feature; this interpretation is illustrated on Plate 1.”

“Given the proximity to older landslide deposits, the landslide risk (shallow, surficial landslides) associated with the property is considered moderate. However, the proposed building envelope is set at a lateral distance of approximately 450 feet upslope to the northeast of the landslide deposit, which is considered to be an acceptable setback from this feature.”

SA recommends Weber County request IGES :

- i. Clarify the significance of their possible late Pleistocene-age for the landslide; specifically, is IGES inferring a correlation between age of a landslide and stability of the landslide? Based on degree of erosion, it could equally be argued that the landslides are Holocene.
- ii. Provide the data/evidence which forms the basis for their conclusion that the 450 foot setback of the building envelope from the landslides is an “... acceptable setback ...”

Closure

Comments and recommendations in this review are based on data presented in the referenced Consultant’s report. SA accordingly provides no warranty that the data in the Consultant’s report or any other referenced reports are correct or accurate. SA has not performed an independent site evaluation. Comments and recommendations presented herein are provided to aid Weber County in reducing risks from geologic hazards and to protect public health, safety, and welfare. There is no other warranty, either express or implied.

All services performed by SA for this review were provided for the exclusive use and benefit of Weber County; no other person or entity may or is entitled to use or rely upon any of the information or reports generated by SA as a result of this review.

SA would be pleased to meet with Weber County and/or the Consultant, at a mutually convenient time, to discuss any of the issues presented herein. In the meantime, if you have any questions, please feel free to contact the undersigned. The opportunity to be of service to Weber County is appreciated.

Very truly yours,

SA

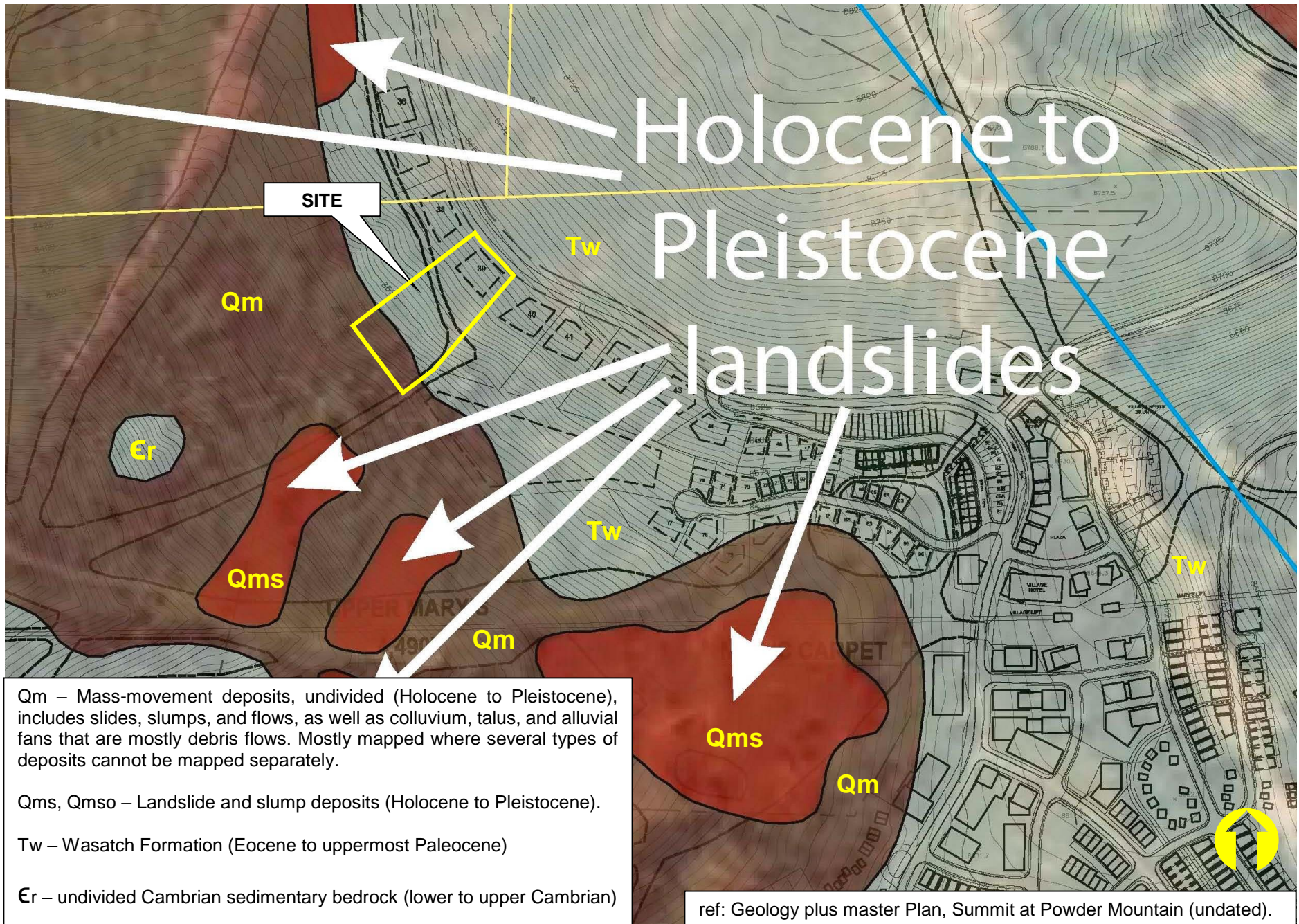


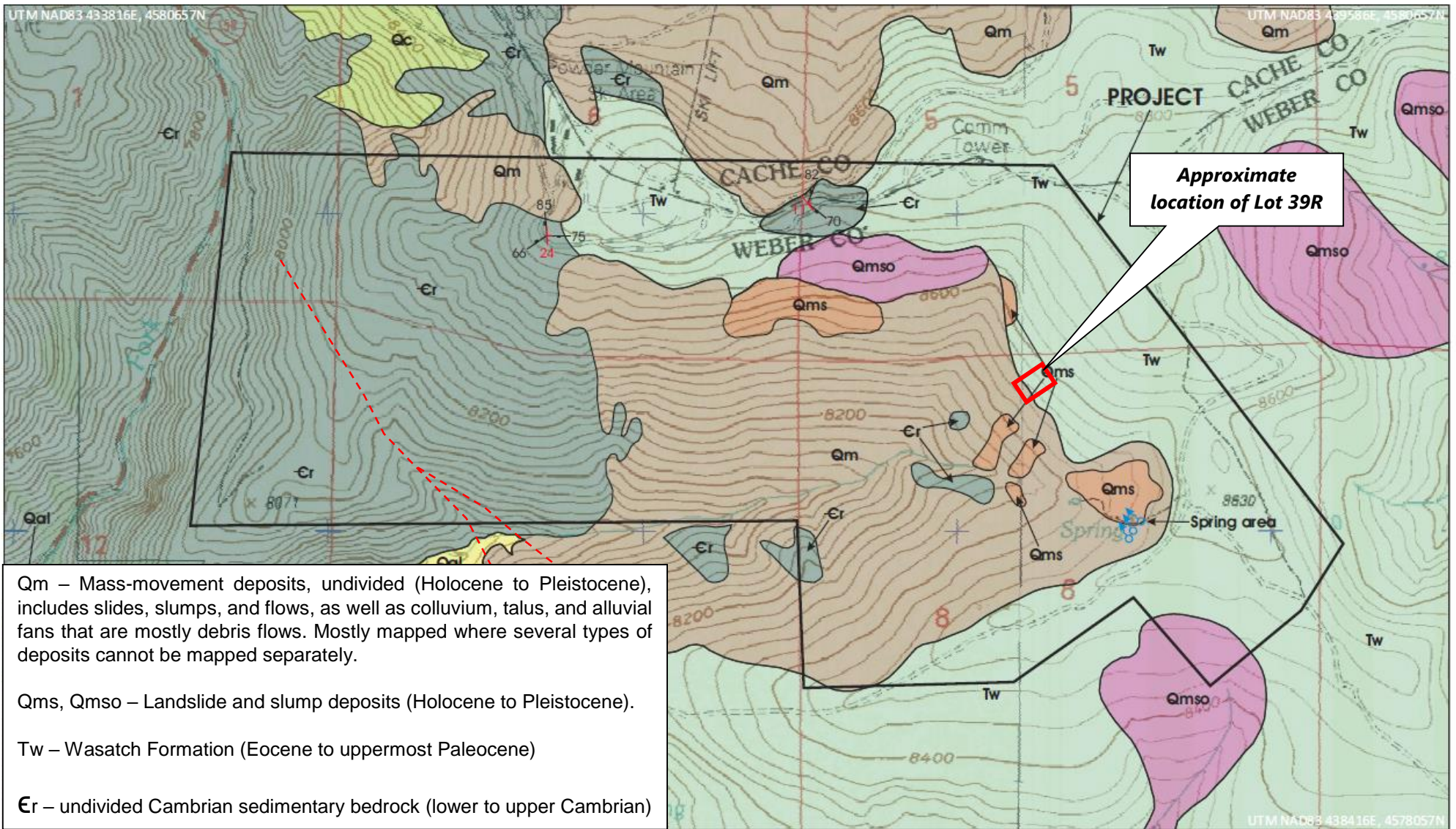
The image shows a handwritten signature in blue ink that reads "David B. Simon". The signature is written over a circular blue ink seal. The seal contains the text: "LICENSED PROFESSIONAL GEOLOGIST" around the top edge, "DAVID B. SIMON" in the center, "5234321-2250" below the name, "9-13-15" below the number, and "STATE OF UTAH" around the bottom edge.

David B. Simon, P.E.
Principal Geologist

DBS/AOT

Dist: 1/addressee





Approximate location of Lot 39R

Qm – Mass-movement deposits, undivided (Holocene to Pleistocene), includes slides, slumps, and flows, as well as colluvium, talus, and alluvial fans that are mostly debris flows. Mostly mapped where several types of deposits cannot be mapped separately.

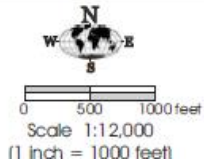
Qms, Qmso – Landslide and slump deposits (Holocene to Pleistocene).

Tw – Wasatch Formation (Eocene to uppermost Paleocene)

Cr – undivided Cambrian sedimentary bedrock (lower to upper Cambrian)



Western Geologic, 2012



Source: modified from Coogan and King (2001) based on air photo evidence and field observations. See text for explanation of geologic units.

GEOLOGIC MAP
GEOLOGIC HAZARDS RECONNAISSANCE
 Proposed Area 1 Mixed-Use Development
 Powder Mountain Resort
 Weber County, Utah
FIGURE 2

Figure 2