



PROJECT MEMORANDUM

Date: August 13, 2015 SA Project No: 15-151

From: David B. Simon

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

Subject: Scoping Meeting – August 12, 2015
Lot 23 Big Sky Estates Phase I
2292 Panorama Circle
Liberty, Utah

On August 12, 2015, a scoping meeting was held at the Weber County municipal building to discuss:

1. Development of Lot 23, Big Sky Estates Phase I Subdivision, and;
2. Eathtech Engineering, Inc. (EEI) proposed geotechnical engineering and engineering geologic scope of work.

The meeting attendance roster is attached. Present at the meeting were:

1. Dana Shuler, Weber County Engineering Division.
2. Ben Hatfield, Weber County Planning Division.
3. Alan Taylor (TG), Weber County Geotechnical Consultant.
4. David Simon (SA), Weber County Geologic Consultant.
5. Carl Lundin, Lundin Homes (builder).
6. Shawn Steward, EEI, (Applicant's geotechnical/geologic Consultant).

Messieurs Stewart and Taylor attended the meeting via a telephone conference. The following Simon Associates, LLC (SA), project memorandum, provided background geologic information for the parcel:

Evaluation of Geologically Sensitive Areas, Lot 23 Big Sky Estates Phase I, 2292 Panorama Circle, Eden, Utah (22-041-0004) and Lot 26 Big Sky Estates Phase I, 2230 Panorama Circle, Eden, Utah (22-041-0007), dated July 1, 2015 (SA Project No. 15-151).

The following geotechnical investigation was performed for the property by Eathtech Engineering, Inc. (EEI):

Geotechnical Study, Lot 23 Big Sky Estates No.1, 2292 North Panorama Circle, Weber County, Utah (Project No. 155082g), dated May 5, 2015: prepared for Lundin Homes, 2485 Grant Avenue, Suite 212, Ogden, UT 84401.

Discussions

1. Mr. Simon:
 - a. Asked if Mr. Stuart was a professional engineer (P.E.). Mr. Stuart responded that he is an engineering technician.
 - b. Explained that investigation of the subject site will require both a geotechnical engineer and an engineering geologist.
 - c. Asked which EEI engineering geologist would be working on the project; Mr. Stuart indicated Sterling Howell.
 - d. Asked if Mr. Howell was a licensed professional geologist (PG) with engineering geology experience. Mr. Stuart did not know if Mr. Howell was a PG and was not apparently familiar with the term "engineering geologist."
 - e. Explained the role of an engineering geologist and noted that the term "engineering geologist" and general Weber County requirements for performing geologic/geotechnical studies are stated in Chapter 27 of the Weber County Hillside Development Review Procedures and Standards. The

definitions of "engineering geologist" and "engineering geology" are quoted herein for clarity (from Chapter 27 of the Weber County Hillside Development Review Procedures and Standards) :

"Engineering geologist means a geologist who, through education, training and experience, is able to assure that geologic factors affecting engineering works are recognized, adequately interpreted and presented for use in engineering practice and for the protection of the public. This person shall have at least a four-year degree in geology, engineering geology, or a related field from an accredited university and at least three full years of experience in a responsible position in the field of engineering geology."

"Engineering geology means the application of geological data and principles to engineering problems dealing with naturally occurring rock and soil for the purposes of assuring that geological factors are recognized and adequately interpreted in engineering practice."

- f. Explained that a scoping meeting is a preliminary activity to allow Weber County the opportunity to evaluate the engineering geologist's/geotechnical engineer's investigative approach. At the meeting, the consultant generally provides a work plan that includes locations of anticipated geologic hazards and locations of proposed exploratory excavations, such as test pits, trenches, borings, CPT soundings, etc.
- g. Suggested that once EEI decides on a PG and PE, the PE and PG submit a site plan to Weber County indicating the locations anticipated geologic hazards and locations of proposed exploratory excavations.
- h. Explained the Scoping Meeting process promotes consensus between the project engineering firm and the County on the proposed scope of work.
- i. Discussed the geologic conditions at the property; based on published mapping (see attached geologic map), the south two-thirds of the property is located within a mapped landslide. The geologic investigation should focus on identifying/confirming landslide deposits at the property, particularly in relation to the location of the proposed residential dwelling.

- j. Discussed the symbol indicating the orientation (strike) and inclination (dip) of the Norwood Formation and noted that in constructing the geologic cross section, the apparent dip along the line of cross section should be considered.
2. Mr. Lundin indicated the location of the proposed dwelling is adjacent to Panorama Circle, on Norwood Formation sediments, immediately adjacent to the top of the landslide and that the residence will have a septic system. The proposed leach field is located downslope of the structure within the mapped landslide.
3. Mr. Taylor noted:
 - a. The site plan submitted with the proposed scope of work should delineate a proposed building envelope.
 - b. Geotechnical reports should contain calculations to substantiate recommended bearing capacity, settlement, at-rest earth pressure, active earth pressure, passive earth pressure, and foundation drainage.
 - c. The slope stability analyses provided in the May 5, 2015, EEL report are generalized and did not consider geologic conditions or a septic system.
 - d. An engineering geologist is necessary in performing slope stability analyses in order to define geologic conditions that should be incorporated into the stability analysis (i.e., bedding, jointing, and other geologic structures). Although not specifically mentioned at the meeting, we add, for clarity:

The investigation of the static and seismic stability of slopes is an interdisciplinary practice. To provide greater assurance that hazards are properly identified, assessed, and mitigated, involvement of both an engineering geologist and geotechnical engineer is required. Analyses should be performed only by or under the direct supervision of licensed professionals, qualified and competent in their respective area of practice. An engineering geologist should provide appropriate input to the geotechnical engineer with respect to the potential impact of the geology, stratigraphy, and hydrologic conditions on the stability of the slope. The shear strength and other

geotechnical earth material properties should be evaluated by the geotechnical engineer. Qualified engineering geologists, geological engineers and geotechnical engineers may assess and quantitatively evaluate slope stability. However, the geotechnical engineer should perform all design stability calculations. Ground motion parameters for use in seismic stability analysis may be provided by either the engineering geologist or geotechnical engineer.

- e. Results and input parameters should be provided with shear tests. Performance of the shear test is important in obtaining representative shear strength parameters.
- f. Reports should include input and output parameters for stability analyses.
- g. A saturation zone with water levels at the ground surface should be incorporated in the stability analyses associated with the proposed leach fields.
- h. Landslides and stability analyses are discussed in general terms in Section 104-27-2 items (2a) and (2b) of Chapter 27 of Weber County Weber County Hillside Development Review Procedures and Standards. Appendix C of the Draper City Geologic Hazards Ordinance, provides a detailed description for performing slope stability analyses.

Action Items

1. Prior to commencement of the field investigation, EEL to submit a site plan to Weber County Engineering Division indicating the locations of anticipated geologic hazards and locations of proposed exploratory excavations, such as test pits, trenches, borings, etc.
2. Site plan submitted with the proposed scope of work should delineate the proposed building envelope

Closure

Comments presented herein are provided to aid Weber County in reducing risks from geologic and geotechnical hazards and to protect public health, safety, and welfare. All services performed by SA for this project are 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 presented herein. This memorandum was reviewed and accepted by TG.

Should you have any questions, please feel free to contact the undersigned. The opportunity to be of service to Weber County is appreciated.

SA



David B. Simon, P.G.
Principal Geologist

Taylor Geotechnical



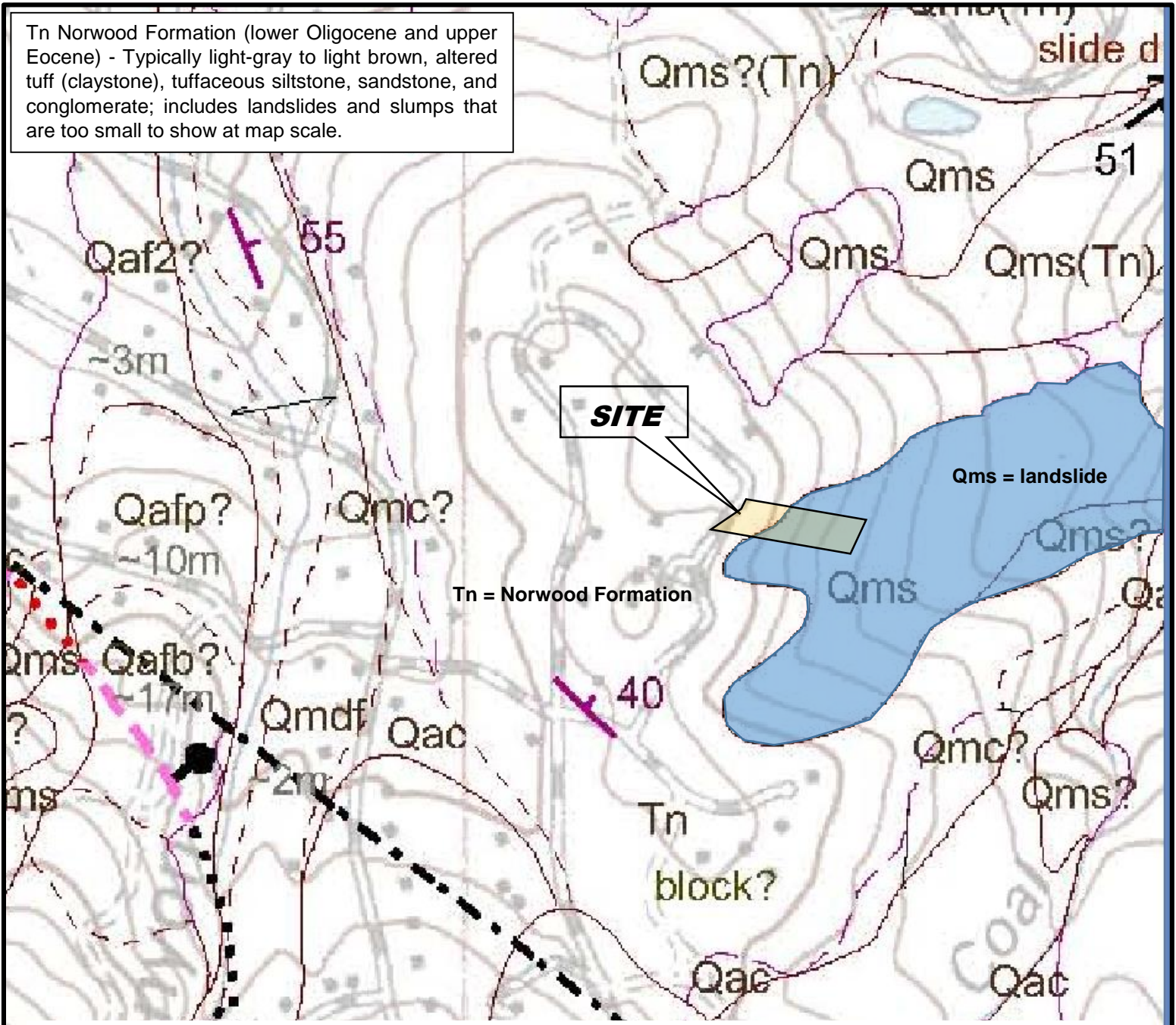
Alanson O. Taylor, P.E.
Principal

DBS/AOT

dist: 1/address
1/Karl Lundin
1/Ben Hatfield
1/Shawn Stuart

encl: attendance roster
geologic map

Tn Norwood Formation (lower Oligocene and upper Eocene) - Typically light-gray to light brown, altered tuff (claystone), tuffaceous siltstone, sandstone, and conglomerate; includes landslides and slumps that are too small to show at map scale.



King, J.K., Yonkee, W.A., and Coogan, J.C., 2008, Interim geologic map of the Snow Basin and part of the Huntsville quadrangle, Davis, Morgan, and Weber Counties, Utah: Utah Geological Survey Open-File Report 536, scale 1:24,000.

Qms, Landslide and slump deposits (Holocene and Pleistocene) - age uncertain (though likely Holocene and/or upper Pleistocene), where portions of slide/slump complexes have different ages but cannot be shown separately at map scale, or where boundaries between slides/slumps of different ages are not distinct.

Lot 23 Big Sky Estates Phase I
 2292 North Panorama Circle
 Huntsville, Utah

 location of site approximate

