



October 14, 2020

Colorado Springs Utilities
456 West Fontanero Street, MC: 1260
Colorado Springs, Colorado 80907

Attn: Pono Umiamaka, AIA – Facilities Architect Supervisor
P: (719) 668-3703
E: pumiamaka@csu.org

RE: Geologic Hazard Exemption Request
CSU Drennan Annexation – Tax ID Numbers 5504101001 and 5504100001
Drennan Road and Foreign Trade Zone Boulevard
El Paso County, Colorado
Terracon Project No. 23205118

Terracon Consultants, Inc. (Terracon) has been requested to provide a Geologic Hazard Exemption Request for the above referenced site. This study has been performed based on the scope of work outlined in our proposal dated October 8, 2020.

PROJECT INFORMATION

Site Location

ITEM	DESCRIPTION
Location	The project site is approximately 160 acres located southwest of the intersection of Drennan Road and Foreign Trade Zone Boulevard in El Paso County, Colorado. Latitude: 38.7775° N, Longitude 104.6727° W (approximate)
Existing improvements	The site consists of relatively undeveloped land bordered to the north and east by Drennan Road and Foreign Trade Zone Boulevard, respectively, and to the south and west by undeveloped land similar in appearance to the subject site.

Project Description

ITEM	DESCRIPTION
Proposed development	We understand the project will include the annexation of approximately 160 acres of land from El Paso County to the City of Colorado Springs. Based on conversations our client has had with the City of Colorado Springs, a Geologic Hazard Waiver is being requested for review submittal in general accordance with the Geologic Hazard Ordinance 7.4.501.

It is our understanding that exemptions can be requested for development proposals which exhibit none of the following characteristics:

- Slopes exceeding thirty three percent (33%) or which are otherwise unstable or potentially unstable
 - Underground mining or subsidence activity
 - A history of landfill or uncontrolled or undocumented fill activity
-

GEOTECHNICAL CHARACTERIZATION

Site Specific Geology

Surficial geologic conditions at the site, as mapped by the Colorado Geological Survey (CGS) (Madole and Thorson), consist of middle alluvium of late Pleistocene, valley-side alluvium, undivided of Holocene and late Pleistocene, older eolian sand of late Pleistocene, and cone-in-cone zone of Lavington of the Pierre Shale of upper Cretaceous.

Middle alluvium is described as chiefly light-brownish gray, pale-brown, light-yellowish-brown, and grayish brown, poorly sorted sand and subordinate amounts of gravel.

Valley-side alluvium is described as chiefly brown to light-yellowish-brown, extremely poorly sorted sand, silty and clayey sand, and minor amounts of mostly pebble-size gravel.

Older eolian sand is described as similar to Younger eolian sand (Qes1), consisting of very pale-brown, pale-brown, and light-yellowish-brown sand, except the Older eolian sand contains more fine sediment (chiefly silt) and a thicker more complex soil profile.

The cone-in-cone zone of Lavington of the Pierre Shale is described as dark-gray, clayey or silty shale containing reddish-brown siderite ironstone concretions, gray iron-stained limestone concretions, thin bentonite beds, and concretions with cone-in-cone structure

Unstable or Potentially Unstable Slopes and Landslide Areas

Surficial geologic conditions at the site, as mapped by the Colorado Geological Survey (CGS) from the online Landslide Inventory Map Viewer provided by CGS indicates that evidence of unstable or potentially unstable slopes (slopes greater than 33 percent) and landslide susceptibility has not been observed within the site boundary. Gradients across the site appear to vary between 10:1

¹Madole, Richard F., and Thorson, Jon P., 2002, **Geologic Map of the Elsmere Quadrangle**, El Paso County, Colorado. Open-File Map 02-2

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to 30:1 (horizontal:vertical) based on estimations from a site topographic plan provided by Colorado Springs Utilities.

Based on the relative flatness of the site, it is our opinion that the risk for unstable, potentially unstable slopes, and landslide areas is considered low within the site.

Underground Mining or Subsidence Activity

The site of the proposed Drennan annexation is not located in an area previously mapped in the Colorado Geologic Survey Subsidence Investigation Report for the Colorado Springs area prepared by Dames and Moore, Inc. dated 1985.

Landfill, Uncontrolled, or Undocumented Fill Activity

Indications of landfill, uncontrolled, or undocumented fill were not mapped on the referenced Elsmere Quadrangle geologic map. Review of historical aerial imagery between 1999 and 2019 on Google Earth indicates that the site has remained in a similar, undeveloped condition. Evidence of mass grading or other earthwork operations was not observed on the historical aerial imagery.

Based on the site being undeveloped and appearing to remain in a similar undeveloped state since 1999 based on available aerial imagery, it is our opinion the risk for encountering landfill, uncontrolled, or undocumented fill activity at this site is low. Should evidence of uncontrolled fill be observed at the time of geotechnical exploration or during construction, it is our opinion that these fill soils can be remediated through conventional earthwork methods, such as removal of the fill soils to suitable native soils and replacement with structural fill.

CONCLUSIONS

Based on a review of the previously referenced information and geologic literature, it is our opinion that a Geologic Hazard Exemption Request is suitable for this site.

GENERAL COMMENTS

Our opinions are based upon our understanding of the project and the referenced literature review. Our services, correspondence, and collaboration are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to our services or correspondence is solely for

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information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

We appreciate the opportunity to be of service to you on this project. If you have any questions, or if we may be of further service, please call.

Sincerely,

Terracon Consultants, Inc.

Nathan D. Hukkanen, E.I.
Staff Engineer

Robert M. Hernandez, P.E.
Geotechnical Department Manager

Enclosure: Application Form for Geologic Hazard Waiver
 Site Location Plan
 Geologic Overlay Plan
 Landslide Susceptibility Plan



APPLICATION FORM FOR GEOLOGIC HAZARD WAIVER

Applicant: Colorado Springs Utilities Telephone 719-668-3703
Address: 456 West Fontanero Street, MC: 1260 Zip Code 80907 Email pumiamaka@csu.org
Premises Involved: 8655 Drennan Road
Tax Schedule Number: 5504101001 and 5504100001

In accordance with the Geologic Hazard Ordinance 7.4.501, City Planning, in consultation with written approval of the City Engineer, may waive the requirement for the submittal of a Geologic Hazard Study on a property that is not otherwise excluded or exempted from the provisions of this part for the following:

- 1. Master plans, development plans, or subdivision plats for which geologic hazard reports have been previously prepared and reviewed and which are still considered to be relevant.
2. Development proposals west of Interstate Highway 25 which exhibit none of the following characteristics:
a. Slopes (existing or proposed) exceeding thirty three percent (33%) or which are otherwise unstable or potentially unstable.
b. Underground mining or subsidence activity.
c. A history of a landfill or uncontrolled or undocumented fill activity.

A letter shall accompany this application that states that the project meets the above noted criteria, and is prepared by a professional geologist or professional geotechnical engineer, who is qualified in accord with section 7.4.504.

A completed waiver request will be reviewed within a 3 day time period.

Professional Geologist / Professional Geotechnical Engineer Acknowledgment:

I hereby formally request that the development at 8655 Drennan Road be exempted from the requirement to submit a Geologic Hazard Study on the basis that review and on-site observation of the project has confirmed that all of the above referenced exemption criteria have been met. I hereby attest that I am a:

X Professional Geologist / Professional Geotechnical Engineer as defined by section 7.4.504

Submitted for and on behalf of Colorado Springs Utilities

Submitted by Date October 14, 2020

City Engineering: City Planning:

Date: Date:

SITE LOCATION PLAN

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DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

GEOLOGIC OVERLAY PLAN

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SURFICIAL SITE GEOLOGIC DEPOSITS

Middle Alluvium (Qam) (late Pleistocene) – Chiefly light-brownish gray, pale-brown, light-yellowish-brown, and grayish brown, poorly sorted sand and subordinate amounts of gravel.

Valley-side alluvium, undivided (Qav) (Holocene and late Pleistocene) – Chiefly brown to light-yellowish-brown, extremely poorly sorted sand, silty and clayey sand, and minor amounts of mostly pebble-size gravel.

Older eolian sand (Qes2) (late Pleistocene) – Unit is similar to Younger eolian sand (Qes1), consisting of very pale-brown, pale-brown, and light-yellowish-brown sand, except the Older eolian sand contains more fine sediment (chiefly silt) and a thicker more complex soil profile.

Cone-in-cone zone of Lavington of the Pierre Shale (Kpc) (upper Cretaceous) – Dark-gray, clayey or silty shale containing reddish-brown siderite ironstone concretions, gray iron-stained limestone concretions, thin bentonite beds, and concretions with cone-in-cone structure



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SURFICIAL GEOLOGY BASED ON MAPPING PERFORMED BY THE COLORADO GEOLOGIC SURVEY, GEOLOGIC MAP OF THE ELSMERE QUADRANGLE, EL PASO COUNTY, COLORADO, OPEN-FILE MAP 02-2.

LANDSLIDE SUSCEPTIBILITY PLAN

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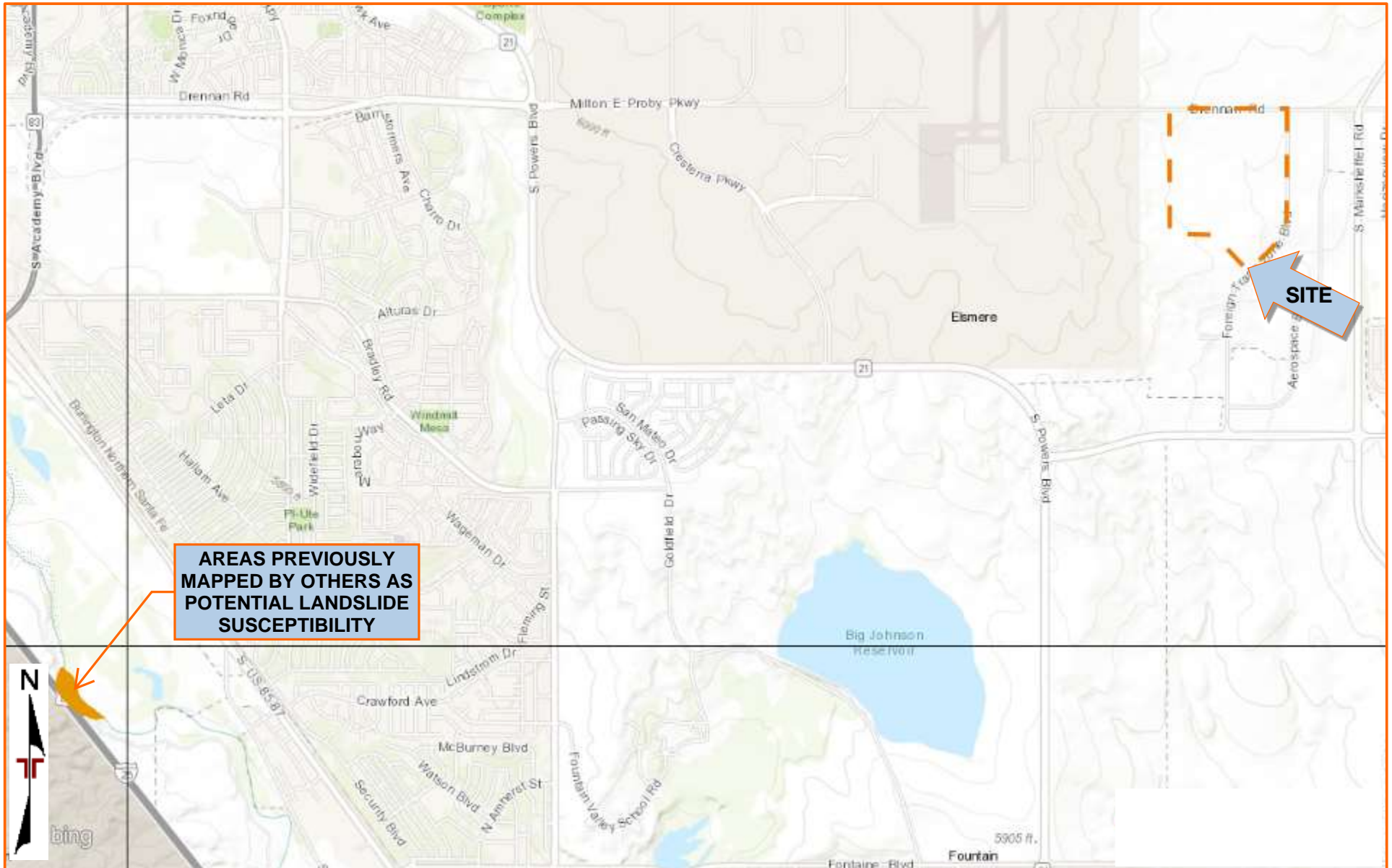


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL IMAGE AND LANDSLIDE SUSCEPTIBILITY AREAS PROVIDED BY COLORADO SPRINGS ARCGIS LANDSLIDE MAP, ACCESSED ELECTRONICALLY ON OCTOBER 13, 2020