



June 10, 2022

Jeffrey Adams
City of Cannon Beach
163 East Gower Street
Cannon Beach, OR 97110

**Subject: Forest Lawn Partition (P 22-01/CU 22-02)
Supplemental Geotechnical Findings**

Dear Mr. Adams:

This letter is provided on behalf of Patrick/Dave LLC (applicant) to demonstrate how the applicant's proposed partition of tax lot 51030DA04100 (referred to as the project site) to create three lots is consistent with applicable development requirements and standards related to potential geologic hazard areas. This letter is intended to supplement the already provided application package and narrative, and only addresses Cannon Beach Municipal Code (CBMC) standards that are specific to geologic hazards and geotechnical investigation requirements.

As identified in the applicant's previously submitted narrative, Earth Engineers, Inc. has prepared a geotechnical investigation and geologic hazard report (referred to as the "Earth Engineers Report"), which is attached to this letter. Exhibits contained within the original submittal package may be referenced within this letter, but are not directly attached; please reference the applicant's original submittal package for these items.

Title 16 – Subdivisions

16.04.130 Applicable Standards.

In making its decision, the planning commission shall determine whether the proposed subdivision or partition complies with the applicable standards of this code and the policies of the comprehensive plan, in conformance with the requirements of Section 17.88.110. Where this chapter imposes a greater restriction upon the land than is imposed or required by existing provisions of law, ordinance, contract or deed, the provisions of this chapter shall control. Pursuant to ORS 197.195(1), the city has determined that the following comprehensive plan policies are applicable standards for a proposed subdivision or partition.

A. General Development Policies.

- 1. General Development Policy 4. The city shall control excavation, grading, and filling in order to: avoid landslides and other geologic hazards; protect adjacent property and structures; provide for appropriate drainage improvements; minimize the extent of vegetation removal; minimize erosion and sedimentation; and protect the aesthetic character of the city.***

Response: This development policy, as applicable to the project site, is implemented through the following chapters within CBMC Title 17 – Zoning:

- CBMC 17.43 – Wetlands Overlay (WO) Zone;
- CBMC 17.50 – Development Requirements for Potential Geologic Hazard Areas;
- CBMC 17.62 – Grading, Erosion and Sedimentation Control; and
- CBMC 17.70 – Tree Removal and Protection.

Findings demonstrating the Tentative Partition Plan's compliance with CBMC 17.43, 17.62, and 17.70 are included within the applicant's originally submitted narrative.

Findings are provided for CBMC 17.50 within this letter, which are supported by the Earth Engineers Report. Earth Engineers conducted a geotechnical investigation and geologic hazard study of the project site, which found that the project site's potential geologic hazards can be mitigated through granulated, well graded, crushed rock structural fill as necessary, as well as pin pile or helical pier foundation systems for the future residential dwellings. While the need for retaining walls has not been identified at this point, the Earth Engineers Report also includes recommendations for retaining wall systems that are compatible with the project site's possible geologic hazards. The recommendations for structural fill, foundation systems, and retaining wall systems ensure that the project site can mitigate possible geologic hazards, including mitigating the risks of potential slides and earthquake shaking. As concluded and stated on page 23 of the Earth Engineers Report, the site should be considered developable provided the geotechnical engineering recommendations are followed.

- 2. General Development Policy 5. The density of residential development throughout the city shall be based on the capability of the land in terms of its slope, potential for geologic hazard and drainage characteristics. Density limits throughout the city shall generally be:**

Net Density Standards	
	Dwellings Per Acre
Duplex or medium (R2), (RMa), (MP), (RAM)	11

Response:

The project site is zoned R2 and the net acreage is approximately 1.1 acres/48,040 square feet¹; therefore, the maximum allowed density is 11 dwelling units per net acre. The applicant is proposing a three lot partition to allow for one single-family residential dwelling per lot, for a total of three dwellings within the site. As the resulting density is three dwelling units per acre, the maximum density of the R2 zone is not exceeded.

As identified in response to CBMC 16.04.310 in the applicant's original narrative, the project site's average slope is 6.48 percent, meaning the minimum lot size per dwelling unit is set by the R2 zone, which is 5,000 square feet. As shown on the Tentative Partition Plan (Exhibit B in the original application), each proposed lot is at least 5,000 square feet.

As identified in the applicant's original narrative and shown on the Preliminary Utility Plan (Exhibit H in the original application), stormwater service lines, anticipated to be four inches in diameter, will collect each future dwelling's stormwater runoff, which will then be conveyed to the existing public system within Forest Lawn Road and South Hemlock Street, which ensures adequate surface drainage within each proposed lot.

Findings are provided for CBMC 17.50 (Development Requirements for Potential Geologic Hazard Areas) within this letter, which are supported by the Earth Engineers Report. As concluded and stated on page 23 of the Earth Engineers Report, the site should be

¹ CBMC 17.04.135 defines "net density" to mean the gross acreage minus street dedications and area used for private streets and common driveways. Approximately 1,465 square feet is proposed to be used for a shared driveway to access Lots 1 and 3; therefore, the site's net acreage is approximately 1.1 acres (46,575 square feet) after deducting for this shared driveway.

considered developable provided the geotechnical engineering recommendations identified within the report are followed.

- 3. *General Development Policy 9. To control development in areas with slopes exceeding twenty percent and areas subject to potential geologic hazards so that potential adverse impacts can be minimized.***

Response:

Findings are provided for CBMC 17.50 (Development Requirements for Potential Geologic Hazard Areas) within this letter, which are supported by the Earth Engineers Report. Earth Engineers conducted a geotechnical investigation and geologic hazard study of the project site, which found that the project site's potential geologic hazards can be mitigated through granulated, well graded, crushed rock structural fill as necessary, as well as pin pile or helical pier foundation systems for the future residential dwellings. While the need for retaining walls has not been identified at this point, the Earth Engineers Report also includes recommendations for retaining wall systems that are compatible with the project site's possible geologic hazards. The recommendations for structural fill, foundation systems, and retaining wall systems ensure that the project site can mitigate possible geologic hazards, including mitigating the risks of potential slides and earthquake shaking. As concluded and stated on page 23 of the Earth Engineers Report, the site should be considered developable provided the geotechnical engineering recommendations are followed.

- 4. *General Development Policy 10. When site investigations are required in areas of potential landslide hazard, a site specific investigation shall be prepared by a registered geologist. Based on the conclusions of this investigation, an engineered foundation design by a soils engineer may be required by the building official. When site investigations are required in areas of potential coastal erosion hazard, the site specific investigation shall be prepared by a registered geologist with expertise in shoreline processes. Based on the conclusions of this investigation, protective structures designed by a registered civil engineer may be required by the building official. Site investigation reports shall meet the city's criteria for the content and format for geologic hazard reports.***

Response:

The Earth Engineers Report has been prepared by a Registered Geologist (RG), and a Certified Engineering Geologist (CEG) and Professional Engineer (PE), consistent with the credential requirement of this provision. The recommendations within the report for structural fill, foundation systems, and retaining wall systems ensure that the project site can mitigate possible geologic hazards, including mitigating the risks of potential slides and earthquake shaking. As concluded and stated on page 23 of the Earth Engineers Report, the site should be considered developable provided the geotechnical engineering recommendations are followed.

- 5. *General Development Policy 11. Site investigations by a qualified soils engineer may be required for the construction or development of property identified by the Soil Conservation Service as containing weak foundation soils. Site reports shall include information on bearing capacity of the soil, adequacy and method of drainage facilities, and the length of fill settlement necessary prior to construction.***

Response:

As identified within the Earth Engineers Report, compressible, organic soils were encountered within the project site at a depth of approximately 30 to 40 feet beneath the ground surface. The information requested by this standard is identified within the report. As previously identified, the project site's potential geologic hazards, including its soils, can be mitigated through granulated, well graded, crushed rock structural fill as necessary, as well as pin pile or helical pier foundation systems for the future residential dwellings. These foundation systems will penetrate through the organic soils to bear on the medium dense to very dense sandstone. While the need for retaining walls has not been identified

at this point, the Earth Engineers Report also includes recommendations for retaining wall systems that are compatible with the project site's possible geologic hazards. The recommendations for structural fill, foundation systems, and retaining wall systems ensure that the project site can mitigate possible geologic hazards, including mitigating the risks of potential slides and earthquake shaking, and the project site's compressible and organic soils. As concluded and stated on page 23 of the Earth Engineers Report, the site should be considered developable provided the geotechnical engineering recommendations are followed.

6. **General Development Policy 12. Site investigations by a registered geologist shall be performed, prior to development, in any area with a slope exceeding twenty percent. Based on the conclusions of this investigation, an engineered foundation design by a soils engineer may be required by the building official.**

Response: As previously identified, and per Cannon Beach GIS, the project site's average slope does not exceed 20 percent. This standard is not applicable.

G. Overall Policies – Geologic Hazards

1. **Geologic Hazard Policy 1. A site specific investigation performed by a qualified expert shall be a prerequisite for the issuance of any building permit in the following areas, as delineated on the master map:**

- a. **Those areas consisting of landslide topography developed in tertiary sedimentary rocks (TOMS);**

Response: As identified in the Earth Engineers Report, the project site soils are derived from sedimentary rock; therefore, a site investigation and geologic hazard study is required. As previously mentioned, a geologic hazard report is included as section 3.0 of the Earth Engineers Report. Findings are provided for CBMC 17.50 (Development Requirements for Potential Geologic Hazard Areas) within this letter, which are supported by the Earth Engineers Report.

- b. **Any property containing, or adjacent to all or part of, an active landslide;**

Response: As identified in section 3.0 of the Earth Engineers Report, a literature review indicates the project site is adjacent to an active landslide area. However, during on-site investigations, Earth Engineers did not observe any signs of recent or active landslides. Nonetheless, a geologic hazard report is included as section 3.0 of the Earth Engineers Report. Findings are provided for CBMC 17.50 (Development Requirements for Potential Geologic Hazard Areas) within this letter, which are supported by the Earth Engineers Report.

- c. **Any property having beach frontage;**

Response: The project site does not have beach frontage.

- d. **The area south of Maher Street underlain by the Astoria Formation (Tma units);**

Response: The project site is not south of Maher Street.

- e. **Within the two stream drainages south of West Way.**

Response: The project site is not south of West Way nor is it adjacent to the two stream drainages.

2. **Geologic Hazard Policy 2. Development requirements for the city are:**

a. Structures should be planned to preserve natural slopes. Cut and fill methods of leveling lots shall be discouraged.

Response: Future on-site grading plans within the proposed lots will be designed to preserve natural slopes and contours to the extent practicable. As noted on the Existing Conditions Plan (Exhibit C of the original application) and also within the Earth Engineers Report, the project site is relatively flat, with an elevation difference of only seven feet across the site. For this reason, substantial cut and fill and is not anticipated in order to construct each proposed lot's future residential dwellings and associated site improvements.

b. Access roads and driveways shall follow the slope contours to reduce the need for grading and filling.

Response: As shown on the Tentative Partition Plan (Exhibit B in the original application), the shared access for Lots 1 and 3, and the driveway accessing Lot 2, both generally follow existing slope contours, which will reduce the need for extensive cuts and fills within the project site. As previously noted, the project site is relatively flat, and is generally level where development is proposed, which will further reduce the need for extensive grading and filling.

c. Removal of vegetation shall be kept to a minimum for stabilization of slopes.

Response: As shown on the Tentative Partition Plan (Exhibit B of the original application), the project site's lot layout has been designed to preserve the vast majority of the site's natural resources, including a large majority of the site's existing trees. The only trees preliminarily identified for removal are those within Table 4 of the original narrative, where removal is necessary for the following reasons:

- Construction of dwellings, driveways, parking/vehicle turnaround areas, and the installation of utility connections;
- Poor health and structure of the tree; and
- Hazard risk for future development due to their health.

All of the above are justifiable reasons for tree removal per CBMC 17.70.020 (tree removal permit issuance criteria). The list of trees identified for removal in Table 4 is preliminary, and may change depending on the design of future single-family dwellings within the proposed lots. In addition, the Earth Engineers Report notes that retention of vegetation will prevent excessive erosion, and vegetation should only be removed where needed to complete proposed construction.

d. Drainage patterns shall not be altered in steeper areas. Roof drains shall be channeled into natural drainage or storm sewers.

Response: As identified in response to CBMC 16.04.310 in the applicant's original narrative, the project site's average slope is 6.48 percent, and as previously described within this letter, there is only a seven foot elevation difference across the site. As a result, future development will not occur on steep slopes. As identified in the applicant's original narrative and shown on the Preliminary Utility Plan (Exhibit H in the original application), stormwater service lines, anticipated to be four inches in diameter, will collect each future dwelling's stormwater runoff, which will then be conveyed to the existing public system within Forest Lawn Road and South Hemlock Street, which ensures stormwater will be channeled to public storm sewers as required.

- e. No development shall be allowed to block stream drainageways, or to increase the water level or water flow onto adjacent property.***

Response: As shown on the Existing Conditions Plan (Exhibit C in the original application), there are no stream drainageways within the project site. As identified in the applicant's original narrative and shown on the Preliminary Utility Plan (Exhibit H in the original application), stormwater service lines, anticipated to be four inches in diameter, will collect each future dwelling's stormwater runoff, which will then be conveyed to the existing public system within Forest Lawn Road and South Hemlock Street, which ensures stormwater will be channeled to public storm sewers as required and will not flow onto adjacent properties.

Title 17 – Zoning

17.50 Development Requirements for Potential Geologic Hazard Areas

17.50.020 Applicability.

The following are potential geologic hazard areas to which the standards of this section apply:

- A. In any area with an average slope of twenty percent or greater;***

Response: As previously identified, and per Cannon Beach GIS, the project site's average slope does not exceed 20 percent.

- B. In areas of potential landslide hazard, as identified in the city master hazards map and comprehensive plan;***

Response: As identified in section 3.0 of the Earth Engineers Report, a literature review indicates the project site is adjacent to an active landslide area. However, during on-site investigations, Earth Engineers did not observe any signs of recent or active landslides. Nonetheless, a geologic hazard report is included as section 3.0 of the Earth Engineers Report. Findings are provided to the provisions of this chapter below, which are supported by the Earth Engineers Report.

- C. In areas abutting the oceanshore, or velocity zone flood hazard, as identified on the city's FIRM maps;***

Response: The project site does not abut the oceanshore, and per Cannon Beach GIS and Clatsop County Webmaps, is not within or abut a velocity flood hazard zone.

- D. In areas identified by the soil survey of Clatsop County, Oregon as containing weak foundation soils; or***

Response: As identified within the Earth Engineers Report, compressible, organic soils were encountered within the project site at a depth of approximately 30 to 40 feet beneath the ground surface. As previously identified, the project site's potential geologic hazards, including its soils, can be mitigated through granulated, well graded, crushed rock structural fill as necessary, as well as pin pile or helical pier foundation systems for the future residential dwellings. These foundation systems will penetrate through the organic soils to bear on the medium dense to very dense sandstone. While the need for retaining walls has not been identified at this point, the Earth Engineers Report also includes recommendations for retaining wall systems that are compatible with the project site's possible geologic hazards. The recommendations for structural fill, foundation systems, and retaining wall systems ensure that the project site can mitigate possible geologic hazards, including mitigating the risks of potential slides and earthquake shaking, and the

project site's compressible and organic soils. As concluded and stated on page 23 of the Earth Engineers Report, the site should be considered developable provided the geotechnical engineering recommendations are followed.

E. In open sand areas regardless of the type of dune or its present stability, and conditionally stable dunes not located in a velocity flood hazard zone, as identified on the city's FIRM maps, which in the view of the building official have the potential for wind erosion or other damage.

Response: The project site is not located within in an open sand area and does not contain dunes. As previously identified, the project site does not abut the oceanshore and is not within a velocity flood hazard zone.

17.50.030 Procedure.

The requirements of this section shall be met prior to the issuance of a building permit. The city may require that the requirements of this section be met in conjunction with a request for the approval of a setback reduction, variance, conditional use, design review request, preliminary subdivision proposal, major partition request, minor partition request and preliminary planned development request.

Response:

17.50.040 Reports and Plans Required.

A. Geologic Site Investigation Report.

- 1. A geologic site investigation report shall be prepared by a registered geologist or engineering geologist. The report is to be prepared in conformance with the city's site investigation report checklist.***

Response: The Earth Engineers Report has been prepared by a Registered Geologist (RG), and a Certified Engineering Geologist (CEG) and Professional Engineer (PE), consistent with the credential requirement of this provision. The recommendations within the report for structural fill, foundation systems, and retaining wall systems ensure that the project site can mitigate possible geologic hazards, including mitigating the risks of potential slides and earthquake shaking. As concluded and stated on page 23 of the Earth Engineers Report, the site should be considered developable provided the geotechnical engineering recommendations are followed.

- 2. Where recommended by the geologic site investigation report, or required by the building official, an engineering report prepared by a registered civil engineer shall be prepared. The report shall discuss the engineering feasibility of the proposed development and include findings and conclusions for: the design and location of structures; the design and location of roads; the design and location of utilities; land grading practices, including excavation and filling; stormwater management; and vegetation removal and replanting.***

Response: Earth Engineers conducted a geotechnical investigation and geologic hazard study of the project site, which found that the project site's potential geologic hazards can be mitigated through granulated, well graded, crushed rock structural fill as necessary, as well as pin pile or helical pier foundation systems for the future residential dwellings. While the need for retaining walls has not been identified at this point, the Earth Engineers Report also includes recommendations for retaining wall systems that are compatible with the project site's possible geologic hazards. The recommendations for structural fill, foundation systems, and retaining wall systems ensure that the project site can mitigate possible geologic hazards, including mitigating the risks of potential slides and earthquake shaking.

As concluded and stated on page 23 of the Earth Engineers Report, the site should be considered developable provided the geotechnical engineering recommendations are followed.

3. ***The burden of proof shall be upon the applicant to show construction feasibility. A proposed use will be permitted only where:***
 - a. ***The geologic site investigation report indicates that there is not a hazard to the use proposed on the site or to properties in the vicinity; or***
 - b. ***The geologic site investigation report and engineering report specifies engineering and construction methods which will eliminate the hazard, or will minimize the hazard to an acceptable level.***

Response: Engineering and construction methods are specified within sections 4.0 and 5.0 the Earth Engineers Report. As discussed previously, the report found that the project site's potential geologic hazards can be mitigated through granulated, well graded, crushed rock structural fill as necessary, as well as pin pile or helical pier foundation systems for the future residential dwellings. While the need for retaining walls has not been identified at this point, the Earth Engineers Report also includes recommendations for retaining wall systems that are compatible with the project site's possible geologic hazards. The recommendations for structural fill, foundation systems, and retaining wall systems ensure that the project site can mitigate possible geologic hazards, including mitigating the risks of potential slides and earthquake shaking. As concluded and stated on page 23 of the Earth Engineers Report, the site should be considered developable provided the geotechnical engineering recommendations are followed.

4. ***The standards and recommendations contained in the geologic site investigation and engineering report, upon acceptance by the building official, shall become requirements of any building permit that is issued.***

Response: This provision is acknowledged by the applicant.

5. ***The building official may have the geologic site investigation report, or the engineering report reviewed by an independent expert of his or her choosing. Such a review may address either the adequacy or completeness of the site investigation, or the construction methods recommended in the engineering report. The applicant shall pay for the cost of the review.***

Response: This provision is acknowledged by the applicant.

6. ***A geologic site investigation report shall remain valid for a period of not more than five years from the date of its preparation. The continued reliance on a geologic site investigation report that is more than five years old requires the following additional new information: [...]***

Response: The Earth Engineers Report was prepared in May and June 2022, and is dated June 3, 2022. This application is being submitted and addended within five years of its preparation. It is anticipated that, if this application is approved, building permits for future residential dwellings will be submitted soon after land use approval. The standards of this provision will be adhered to in the event building permit applications are submitted more than five years after the Earth Engineers Report was prepared.

17.80 Conditional Uses

17.80.110 Overall Use Standards.

Before a conditional use is approved, findings will be made that the use will comply with the following standards:

D. The topography, soils and other physical characteristics of the site are appropriate for the use. Potential problems due to weak foundation soils will be eliminated or reduced to the extent necessary for avoiding hazardous situations.

Response: As identified within this letter, Earth Engineers conducted a geotechnical investigation and geologic hazard study of the project site, which found that the project site's potential geologic hazards can be mitigated through granulated, well graded, crushed rock structural fill as necessary, as well as pin pile or helical pier foundation systems for the future residential dwellings. While the need for retaining walls has not been identified at this point, the Earth Engineers Report also includes recommendations for retaining wall systems that are compatible with the project site's possible geologic hazards. The recommendations for structural fill, foundation systems, and retaining wall systems ensure that the project site can mitigate and reduce possible geologic hazards, including mitigating the risks of potential slides and earthquake shaking. As concluded and stated on page 23 of the Earth Engineers Report, the site should be considered developable provided the geotechnical engineering recommendations are followed. This criterion is met.

If you have any questions regarding these supplemental findings, please do not hesitate to contact me at (971) 229-8318, or at mrobinson@dowl.com.

Sincerely,

A handwritten signature in black ink, appearing to read 'M. Robinson', with a long horizontal line extending to the right.

Matthew Robinson
Associate Planner

cc: Patrick Gemma, David Pietka, Jamie Lerma, Read Stapleton (DOWL)

Attachment(s): Forest Lawn Geotechnical Investigation and Geologic Hazard Report