

Introduction

Following the county's original approval of this conditional use application, a LUBA appeal was filed regarding two approval criteria. First, the appeal asserted that TCLUO 4.130 could not be satisfied without a geologic hazard study. Second, the appeal asserted that TCLUO 6.040(3) was not satisfied because the findings did not adequately respond to public comments regarding geologic hazards, topography and wetlands. The parties agreed to a LUBA remand. This remand is being heard by the Board of Commissioners pursuant to TCLUO 10.130(1) regarding remand procedures.

The applicant has engaged several consultants to provide additional expert evidence on these topics, and those reports are attached. The applicant also provided a revised site plan from architect Studio Campo, with several minor changes to the campground layout which respond directly to the suggestions made by the public, the fire chief, the geologist, and the wetland consultant, which are summarized as follows. The proposal is still for 19 camp sites.

GEOTECHNICAL IMPACT REDUCTIONS:

- Relocated facilities support cabin to location that is more geologically stable due to underlying basalt rock, and requires less grading and foundation work
- Reduced road width in order to reduce cut and fill while meeting the requirements and recommendations by fire chief
- Downsized the former road on the north end for access to tent sites to a less intensive 10' multiuse trail that will not be used by motor vehicles, but will allow emergency vehicle access
- Aligned new roadways with existing gravel drive instead of requiring additional excavation
- Limited vehicle access north of the quarry to limit erosion, to support, service, and emergency vehicles only
- Relocated RV cabins on wheels to reduce the cut and fill grading

WETLAND IMPACT REDUCTIONS:

- Reduced roadway width and need for shoulder expansion over wetland at entrance to the site from Floyd Avenue
- Relocated parking and bathhouse away from the wetland area near the quarry
- Relocated the two septic fields to move further away from mapped wetlands
- The new site plan includes no planned improvements in mapped wetlands

- Relocated vehicular roadways all south of quarry to limit erosion and impact to wetlands around the quarry

ENVIRONMENTAL IMPACT REDUCTIONS:

- Rerouted pathways and roadways to reduce tree removal (96% retention of existing large trees, 6 trees removed)
- Maintaining previous voluntary 50' buffer of vegetation from neighboring properties

COMMUNITY IMPACT IMPROVEMENTS:

- At community's request, a 12' x 14' emergency supply shed for the community was added that is elevated above the tsunami zone

EMERGENCY VEHICLE ACCESS IMPROVEMENTS:

- Right-sized turning radiuses, grades, and the vehicle turnaround based on fire chief comments
- Reduced road width where possible from 26' to 16' in accordance with recommendations by fire chief
- Revised access to the north tent sites to a less intensive 10' multiuse trail sufficient for emergency vehicle access

ADDITIONAL BENEFICIAL REVISIONS:

- Improved tent site access to bathroom facilities by offering smaller shared bathrooms between tent sites
- Revised parking plan to allow for fire access turning radiuses and grades as well as to minimize impact to wetlands. Improved the parking area to satisfy the CUP condition of approval for parking.

The site plan was engineered by KPFF, a leading civil engineering firm which examined the new road layout, building locations, the grading required for same, and related civil engineering issues. A stamped geologic hazard study is provided by Adam Reese of Earth Engineers. The wetlands were delineated by soils scientist Christine McDonald, and the Department of State Lands has concurred with the delineation.

All of this new information and expert evidence supports the conclusion that the public comments are fully addressed, and the TCLUO 4.130 and 6.040(3) criteria are satisfied.

All of the new information provided for the remand hearing and expert evidence supports the conclusion that the public comments are fully addressed, and the TCLUO 4.130 and 6.040(3) criteria are satisfied. The applicant's proposed findings on those criteria, and the other applicable ordinance and comprehensive plan provisions follow.

TCLUO 10.020(6)(f)(iii) allows minor modification of an application prior to the Board of Commissioners hearing when there are limited changes.

iii. Minor Modification. Minor modifications involve a limited number of changes from the original application and typically should not alter any approval criteria and development standards which apply to the development proposal. The Director shall notify the applicant of this determination and take one of the following actions, at the direction of the applicant:

1. Accept the modifications and proceed with the review of the modified application. The Director may repeat, at his or her discretion, any part of the public notice or referral process to provide appropriate opportunity for public review of the modifications...

Proposed Findings: As noted above, the applicant made several small changes to the original site plan in response to public comments, and in order to reduce the impacts of the project. The original concept is unchanged; that is, 19 camp sites are provided, with a central support building, located in the same area of the property. Thus there are no additional off-site impacts, such as increased water consumption or vehicle trip generation. There are no material changes to the setbacks. Therefore, there is no increase in off-site impacts either to the adjacent neighbors or to the larger Tierra del Mar community. The changes can be summarized as reducing road widths, relocating improvements including parking away from the delineated wetland, and relocating improvements to more stable areas of geology, all of which will reduce the necessary grading.

Staff finds these changes do not require any alteration in the approval criteria and development standards because the use is the same; that is a campground with 19 sites, with the same public road access, and it is located in the same area within the larger property. Staff notified the applicant of this, and the applicant elected to proceed with Board of Commissioners review of the modified application.

TCLUO Section 3.010: RURAL RESIDENTIAL 2-ACRE (RR-2) ZONE

(3) USES PERMITTED CONDITIONALLY: *In the RR zone, the following uses and their accessory uses are permitted[.]*

(u) Parks, recreational campgrounds, primitive campgrounds hunting and fishing preserves, and other recreational uses and associated facilities, on a contiguous ownership of 10 or more acres.

Proposed Findings: The current request is for conditional use approval for a recreational campground consisting of 19 sites including tent sites, accessory cabins and a cabin to provide support to the facilities. The subject property is approximately 58.51-acres, with the RR-2 zoned portion of the subject property approximately 18-acres in size (Exhibit A). The proposed campground is within the RR-2 zoned portion of the property (Exhibit B).

(4) STANDARDS: *Land divisions and development in the RR-2 and RR-10 zone shall conform to the following standards, unless more restrictive supplemental regulations apply:*

(a) The minimum lot size is two acres for parcels zoned before October 4, 2000.

(f) The minimum front yard shall be 20 feet.

(g) The minimum side yard shall be 5 feet; on the street side of a corner lot, it shall be no less than 15 feet.

(h) The minimum rear yard shall be 20 feet; on a corner lot, it shall be no less than 5 feet.

(i) The maximum building height shall be 35 feet, except on ocean or bay frontage lots, where it shall be 24 feet. Higher structures may be permitted only according to the provisions of Article 8.

Proposed Findings: The site plan indicates all development will be located within the RR-2 zoned portion of the subject property (Exhibit B). The site plan indicates a 50-foot setback from the north, south, and westerly property lines for proposed structures, except for a 30-ft by 40-ft viewing platform located near the northerly property line (Exhibit B). Staff finds that these standards will be met through compliance with Conditions of Approval.

SECTION 5.030(2) A RECREATIONAL CAMPGROUND shall be built to State standards and shall comply with the following provisions:

a. A RECREATIONAL CAMPGROUND shall have:

i. A minimum size of 1 acre or the minimum lot size of the zone, whichever is greater;

ii. A minimum number of 4 sites;

Proposed Findings: The area of the RR-2 zoned property utilized for the campground is approximately 18-acres with (15) tent sites and (4) accessory cabin sites (Exhibit ____). Minimum size for the establishment of a campground in the RR-2 is 10-acres or more, so these standards are met.

iii. A minimum width of space 23 feet or state minimum whichever is greater, for each site;

iv. Lot depths may vary in size, however maximum unit lengths shall be designated for each proposed space, and each space shall include enough area for the required set-backs along with the maximum unit length;

Proposed Findings: The applicant's site plan illustrates six tent campsites maintain 23-ft by 40-ft in size, nine tent campsites maintain 30-ft by 40-ft spaces, and the accessory cabins are 23-ft by 40-ft in size with a single parking space (Exhibit ____). Staff find these standards can be met through compliance with conditions of approval.

v. A minimum distance between actual unit location and interior road right-of-way of 10 feet. Each campsite will have direct access to interior road right-of-way;

vi. And all property lines not abutting an exterior roadway shall be 10 feet. A minimum distance between actual unit and an exterior roadway shall be 20 feet;

vii. A minimum distance between actual units of 15 feet;

viii. Minimum distance between actual unit and community or service buildings of 10 feet;

Proposed Findings: The applicant's site plan illustrates that all sites will maintain over 10-ft from all interior road right-of-way, and over 20-ft from exterior roadways. Units will maintain a minimum 20-ft separation, with the units and

community buildings have a separation greater than 10-ft. Applicant's site plan confirms such setbacks and separation requirements are detailed. Staff find these standards can be met through compliance with conditions of approval.

ix. Campground roads shall have a surface width of at least 16 feet with 2 foot shoulders on each side. All interior park roads shall be surfaced to minimum County road standards and well drained. No on-street parking shall be allowed;

Proposed Findings: The site plan illustrates the interior road widths are at least 16 feet wide. The northern camp sites will be accessible by a 10-foot wide multiuse path, and carts will be provided. (Exhibit ____). Applicants states they will improve the road surface to County standards and will not allow on-street parking (Exhibit ____).

Tillamook County Public Works Director Chris Laity will require a Road Approach with their Department before approval (Exhibit ____).

Staff find this standard can be met through compliance with conditions of approval.

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- x. Walkways not less than three (3) feet wide may be required to be provided from trailer spaces to community and service buildings. All access roads and walkways should be well lighted;*
 - xi. All areas not used for spaces, motor vehicle parking, traffic circulation, or service or community buildings shall be completely and permanently landscaped or maintain existing natural vegetation. The landscaping shall be maintained in good condition;*
 - xii. A sight-obscuring fence and/or buffer strip of vegetation may be required on every side of a RECREATIONAL CAMPGROUND;*
 - xiii. Trash cans shall be provided in convenient locations for the use of guests of the park, and shall be located in such number, and shall be of such capacity, that there is no uncovered accumulation of trash at any time;*

Proposed Findings: Applicant provides that walkways will maintain 3-ft minimum width in all areas, with lighting and drainage sufficient for the site (Exhibit ____). Applicant details on the site plan a 50-ft buffer around the subject property boundaries to the north, south and west (Exhibit ____), detailing that natural vegetation for landscaping will be used to maintain the existing coastal forest, with landscaping to be maintained around sites and service buildings (Exhibit ____).

Applicant further states that trash enclosures with approved wildlife closures are provided to all spaces (Exhibit __). Staff find these standards can be met through compliance with conditions of approval.

xiv. All Recreational Vehicles staying in the park shall be assigned to a space. No space shall have more than one (1) Recreational Vehicle or tent assigned to it, except as provided in State law;

Proposed Findings: Applicant confirms that all spaces will be numbered for one individual RV or tent use (Exhibit __). Staff find this standard is met through compliance with conditions of approval.

xv. Approval of a recreational campground shall not be construed to be an approval of the building plans for building permit review purposes. All proposed building construction must meet Uniform Building Code requirements as part of building permit review;

Proposed Findings: Applicable building permit review in accordance with uniform building code requirements will be obtained, per the Applicant (Exhibit __). Staff find this standard can be met through compliance with conditions of approval.

xvi. On-site storage areas, for park residents only, may be allowed. If allowed, the storage area shall be screened or combined landscape and screening with a 6 foot high sight obscuring fence or hedge along all exterior property lines of the storage area;

Proposed Findings: Applicant has not proposed on-site storage areas for the park at this time (Exhibit __).

xvii. Preliminary plans which contain all the information specified in OAR 333-31-059 shall be submitted to the Planning Department when requesting Conditional Use approval.

Proposed Findings: Applicant's submission is being reviewed with materials for this Conditional Use request.

xix. The accessory commercial uses such as gas pump, laundry, grocery store and recreational facilities shall not exceed the requirements of Rural Commercial, Section 3.020.

Proposed Findings: Applicant provided that proposed commercial uses will not exceed Rural Commercial requirements (Exhibit ____). Staff find accessory commercial uses described within the proposal include a support cabin for the campers that will maintain bathrooms, showers, a convenience store, gift shop area, and a preparation kitchen (Exhibit ____).

xx. New full hook-up parks requiring a community septic/sewer system are permitted only within adopted unincorporated community boundaries.

Proposed Findings: The Applicant details those two onsite sanitation systems are proposed for the subject property meeting compliance with County sanitation requirements and OAR 333-031-0006.

SECTION 3.555: FRESHWATER WETLANDS OVERLAY (FW)

(1) PURPOSE AND AREAS INCLUDED: The purpose of this zone is to protect significant areas of freshwater wetlands, marshes and swamps from filling, drainage or other alteration which would destroy or reduce their biological value. Areas included in this zone are:

(b) Notification Wetlands: wetlands shown on the Statewide Wetland Inventory (discussed in the Goal 5 Element of the Comprehensive Plan).

(2) USES PERMITTED:

(b) Notification Wetlands: wetlands shown on the Statewide Wetland Inventory (discussed in the Goal 5 Element of the Comprehensive Plan).

(3) STANDARDS: The following standard shall be met in addition to the standards of the underlying zone.

(b) Development activities, permits, and land-use decisions affecting a Notification Wetland require notification of the Division of State Lands, and are allowed only upon compliance with any requirements of that agency. The applicant shall be responsible for obtaining approval from the Division of State Lands for activities on Notification Wetlands.

Proposed Findings: Mapped wetlands are indicated on the USFW National Wetlands Inventory (NWI) Map and are present on the tract, including Freshwater Forested/Shrub wetlands (Exhibit __). The applicant submitted a wetland

delineation prepared by Christine McDonald (Exhibit __) to the Department of State Lands (DSL). On January 17, 2023 DSL approved the delineation in the concurrence letter attached as Exhibit __.

Staff notes that the prior site plan includes vehicle use areas in the now-delineated wetland area, and these have been relocated away from the wetland. Staff reviewed the comment letter from Ms. McDonald, which explains there are: “no planned improvements in wetlands, septic fields have been relocated further away from mapped wetlands, reduced roadway size at the main crossing on the unnamed stream, and replacement of degraded culverts on the mountain stream S1.” Staff finds this is substantial expert evidence that the project will reduce potential adverse wetland impacts as compared to the prior site plan, and will improve the water quality and habitat resource values of this property.

Staff recommend a Condition of Approval that all local, state, and federal permits are obtained and provided at time of Zoning and Building Permit submittal, to confirm the siting of the campsites and improvements are not in conflict with the mapped wetlands on the tract.

SECTION 4.130: DEVELOPMENT REQUIREMENTS FOR GEOLOGIC HAZARD AREAS

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(1) The following are GEOLOGIC HAZARD AREAS to which the standards of this Section apply:

(b) Inactive landslides, landslide topography and mass movement topography identified in DOGAMI bulletins 74 and 79 where slopes are greater than 19 percent;

Proposed Findings: The subject properties lie within an area of potential landslide susceptibility as identified by DOGAMI map layers (Exhibit __). Staff finds that the subject property is partially located within a Geologic Hazard Area and that development within that area is subject to the standards of TCLUO 4.130(2).

(2) All development within GEOLOGIC HAZARD areas shall comply with the following standards:

(a) Vegetation removal shall be the minimum necessary to accommodate the use.

(b) Temporary measures shall be taken to control runoff and erosion of soils during construction. Such measures include temporary stabilization (mulching or sodding) sediment basins or other performance equivalent structures required by the Planning Department.

(c) Exposed areas shall be planted in permanent cover as soon as possible after construction.

(d) Storm water shall be directed into drainages with adequate capacity so as not to flood adjacent or downstream properties. Finished grades should preferably be designed to direct water flows along natural drainage courses.

(e) Additional requirements contained in a Geologic report required by this Section shall be followed.

Proposed Findings: The applicant's site plan demonstrates the soil disturbance areas are reduced from the prior plan. Vegetation removal will be limited to minimum required for the new interior road, multiuse path, and camp sites, and almost all trees will be retained. Temporary erosion control will be installed prior to construction. There are no large areas of impervious surface, which mitigates the risk of concentrated stormwater flows. At the time of applying for Zoning and Building Permit approval, Applicant will be required to submit engineering plans demonstrating compliance with TCLUO 4.130(2). Staff recommends that these standards be met through compliance with Conditions of Approval.

(3) A GEOLOGIC HAZARD report is required prior to approval of planned developments, coast resorts, subdivisions and partitions governed by the Land Division Ordinance, building permits, mobile home permits, sand mining, occurring in areas identified in (1) with the following exception:

(a) For building or mobile home or manufactured home permits in areas identified in (1)(b), reports are needed for lots 20,000 square feet or larger only where the proposed structure is to be situated on slopes greater than 29 percent or if (1)(f) applies.

Proposed Findings: Buildings are proposed to be sited within or near the Geologic Hazard Area. Applicant provided the Geologic Conditions and Geologic Hazard Report, stamped by Engineering Geologist Adam Reese of Earth Engineers, Inc., which is attached as Exhibit __. The report notes that the geology "is a common Coast Range lithologic sequence." It found that "the groundwater levels observed

at the time of our explorations should not impose a development constraint for the campground.”

The Geologic Hazard section of the report noted that “we concur with the mapped prehistoric landslide designation and that the landslides are currently inactive.” Regarding seismic risk, the report found that “We do not believe this property is at any greater risk from this hazard than other similar properties in the area.” The report also gave an opinion on the campground use. “It is our opinion that the proposed campground development on this property is geologically feasible.” Staff finds this report meets the standards for a geologic hazard report and that it is expert evidence that the proposed conditional use is geologically feasible. This requirement is satisfied.

4.140: REQUIREMENTS FOR PROTECTION OF WATER QUALITY AND STREAMBANK STABILIZATION

(1) The following areas of riparian vegetation are defined:

(a) Fifty (50) feet from lakes and reservoirs of one acre or more, estuaries, and the main stems of the following rivers where the river channel is more than 15 feet in width; Nestucca, Little Nestucca, Three Rivers, Tillamook, Trask, Wilson, Kilchis, Miami, Nehalem and North and South Fork Nehalem River.

(b) Twenty-five (25) feet from all other rivers and streams where the river or stream channel is greater than 15 feet in width.

(c) Fifteen (15) feet from all perennial rivers and streams where the river or stream channel is 15 feet in width or less. For estuaries, all measurements are horizontal and perpendicular from the mean high water line or the line of non-aquatic vegetation, whichever is most landward. Setbacks for rivers, streams, and coastal lakes shall be measured horizontal and perpendicular from the ordinary high water line.

Proposed Findings: An unnamed creek as mapped on the USFW National Wetlands Inventory (NWI) Map runs through the property east to west (Exhibits ____). Comments were received from the Oregon Department of Fish and Wildlife (ODFW) that states the area is in the vicinity of cutthroat trout (Exhibit ____). ODFW recommends consultation with their agency prior to fish passage determination for any crossing of streams/wetlands proposed, including the

entrance road location (Exhibit ____). The culvert at the quarry road location is degraded and will be replaced. Staff finds that culvert replacement will enhance both water quality and aquatic habitat by allowing aquatic species to pass under the road more freely than can be accomplished under current conditions. Staff finds that the riparian setbacks of TCLUO Section 4.140: Requirements for Protection of Water Quality and Streambank Stabilization shall be followed for any development. Staff recommends that this requirement be met through compliance with Conditions of Approval.

SECTION 4.160: PROTECTION OF ARCHAEOLOGICAL SITES

(1) The Planning Department shall review building permits and other land use actions that may affect known ARCHAEOLOGICAL SITES. If it is determined that the proposed action may affect the integrity of an ARCHAEOLOGICAL SITE, the Planning Director shall consult with the State Historic Preservation Office on appropriate measures to preserve or protect the site and its contents. No permit shall be issued until either the State Historic Preservation Office determines that the proposed activity will not adversely affect the ARCHAEOLOGICAL SITE, or the State Historic Preservation Office has developed a program for the preservation or excavation of the site.

Proposed Findings: At the time of applying for Zoning and Building Permit approval, Applicant will be required to submit evidence demonstrating compliance with TCLUO 4.130(2). Staff recommends that these standards be met through compliance with Conditions of Approval.

(2) Indian cairns, graves and other significant archaeological resources uncovered during construction or excavation shall be preserved intact until a plan for their excavation or reinterment has been developed by the State.

Proposed Findings: The State Historic Preservation Office was noticed as part of this application and have not provided comments at time of publication of the Staff Report. Staff recommends that as a Condition of Approval, Applicant be required to obtain all applicable federal, state, and local permits and adhere to applicable regulations including those required by the State Historic Preservation Office.

6.040: CONDITIONAL USE REVIEW CRITERIA

Any CONDITIONAL USE authorized according to this Article shall be subject to the following criteria, where applicable:

(1) The use is listed as a CONDITIONAL USE in the underlying zone, or in an applicable overlying zone.

Proposed Findings: The proposed use is listed as a conditional use in the underlying zone (TCLUO 3.010(3)(u)). Staff finds that this criterion has been met.

(2) The use is consistent with the applicable goals and policies of the Comprehensive Plan.

Proposed Findings: The Tillamook County Land Use Ordinance is an implementing document of the Comprehensive Plan. In the absence of evidence to the contrary, uses allowed conditionally in the Land Use Ordinance are presumed to be consistent with the Comprehensive Plan.

Applicant describes Goal 8 'Recreation Element' 2.2 which describes the Statewide Comprehensive Outdoor Recreation Plan developed by State Parks which identified goals for the County to promote and enhance recreational activities. Staff finds that the Applicant is proposing to develop a campground as it is defined in Ordinance and in Statute and that campgrounds are a use allowed in RR-2 zone subject to a finding that they also meet the criteria set forth in Article 6, which are discussed in this report.

(3) The parcel is suitable for the proposed use considering its size, shape, location, topography, existence of improvements and natural features.

Proposed Findings: Applicant states that the subject property would maintain 18-acres of area for the campground, while being a good distance off the public road system (Exhibit __). Applicant describes existing forest and fauna providing a natural setting, with the use of some existing internal roads that are being redesigned to campground guidelines as shown on the KPFF civil engineering drawings (Exhibit __).

The subject property is zoned Rural Residential 2-Acre (RR-2 and Small Farm and Woodlot (SFW-20) (Exhibit A). Development of the facilities are proposed to be

concentrated an approximate 18-acre area of Rural Residential 2-Acre (RR-2) zoned portion of the property (Exhibit _).

The subject property is irregularly shaped and encompasses 58.51-acres and the proposed area of development encompasses approximately 18 acres (Exhibits _____) The size and shape of the property are suitable for the campground because the site plans still allows for preservation of most trees and a significant buffer of natural vegetation to be maintained around the proposed area of development, including the 50-ft buffer described by the Applicant (Exhibits ____). Staff finds that the size and shape of the parcel is suitable to the provision of outdoor recreation opportunities on site and the proposed campground use.

The location of the subject property is suitable for the campground use because it is zoned RR-2 which, as discussed above, allows campgrounds with consideration on contiguous property greater than 10-acres. The 19 camp sites allow for low density use, which is suitable in this zone. Regarding vehicle access, the location is suitable because access is from Floyd Avenue, a County local access road, which comes off Sandlake Road, a County road, to the subject property. The Tillamook County Public Works Department provided comment that improvements from Sandlake Road to the proposed development will be required as part of development of the road approach (Exhibit ____). A Condition of Approval has been made to conform to any additional standards which might be required by the Tillamook County Public Works Department.

The subject property was previously used for a quarry, and the primary existing improvement is internal roads. Portions of the internal road are being reused, as shown n the site plan and the civil engineering drawings. This minimizes the impacts of new roads. Staff finds to proposed use is suitable for this property because the existing road improvements are being repurposed, and there are no significant improvements that are adversely impacts by the campground.

The topography of the site is suitable for the proposed revised site plan, because the applicant has modified the slight plan to reduce cuts and fills, has provided preliminary civil engineering drawings of the campground, a wetland delineation with DSL concurrence, and a geologic hazard study. Staff finds this expert evidence demonstrates the topography is suitable for this use.

The subject property has several natural features, and is currently densely vegetated (Exhibits __ and _). Staff finds that the significant existing vegetative cover provides an environment suitable to the requirements of TCLUO 5.030 for

campgrounds, and appropriate to provide outdoor recreational opportunities. The subject property has highly variable slopes and terrain with it generally sloping upward to the east (Exhibits __ and ____). Development is proposed to be primarily located on the slopes, east of an existing private roadway through the subject property (Exhibit _). Staff finds the civil engineering drawings, the geologic hazard study, and the wetland delineation demonstrate the topography is suitable for campground use, because the redesigned site plan will not adversely affect the natural features of the site. In particular, the soils consultant concluded “no planned improvements in wetlands, septic fields have been relocated further away from mapped wetlands, reduced roadway size at the main crossing on the unnamed stream, and replacement of degraded culverts on the mountain stream S1.” Staff finds this is expert evidence the property is suitable for campground use considering the natural features.

(4) The proposed use will not alter the character of the surrounding area in a manner which substantially limits, impairs or prevents the use of surrounding properties for the permitted uses listed in the underlying zone.

Proposed Findings: Applicant states the campground is intended to keep the property at a natural and untouched state (Exhibit _). Nearly all trees will be retained. 19 campsites in an 18-acre area are an overall density of about one site per acre. Applicant further details that there will be a 50-ft buffer around the subject property from neighboring properties for all sides, except the east (Exhibit __). The subject property is zoned Rural Residential 2-Acre and Small Farm and Woodlot (SFW-20) (Exhibit __). The United States Forest Service (USFS) owns the Forest (F) zoned property abutting the subject property to the east and south (Exhibit A). Unimproved SFW-20 zoned properties under private ownership abut the subject property to the north (Exhibit A). Adjacent RR-2 zoned properties under private ownership abut the subject property to the north, south and west (Exhibit A). These abutting RR-2 zoned properties are either vacant or improved with a single-family dwelling (Exhibit A).

Situated to the west is a pocket of zoned Rural Residential 2 Acre (RR-2) and Rural Commercial (RC) properties and are either unimproved or contain single family dwellings (Exhibit __).

Surrounding uses, consistent with the surrounding zoning, include timber stands, and rural single-family dwellings (Exhibit A).

An unimproved unnamed platted 40-foot right-of-way serves as separation between the subject property and adjacent RR-2 zoned lands to the southwest (Exhibit A).

Comments received on the original application included:

- Traffic congestion and increased parking on Sandlake Road and other roads within Tierra Del Mar.
- Insufficient existing roads to handle proposed development.
- Limited water availability for use and fire suppression.
- An excess of existing campgrounds and accommodations in the vicinity.
- Impacts to wetlands and water-features.
- Fire suppression concerns.

Oregon Department of Environmental Quality (DEQ) or the County Sanitarian and the County Environmental Health Department are the entities charged with the regulation of sewage, liquid waste and solid waste for recreational parks including overnight campgrounds. These agencies were noticed of the application. Staff recommends that as a Condition of Approval, the Applicant be required to demonstrate that they have obtained permit approvals from the County Sanitarian or DEQ for sewage and liquid waste disposal systems appropriate to the proposed development at the time of applying for Zoning and Building permits. Solid waste disposal is also subject to DEQ regulation. Both solid and sewage and liquid waste are addressed in OAR 333-31, Oregon Health Authority, Public Health Division rules addressing the construction, operation and maintenance of recreation parks, including overnight campgrounds. Staff recommends that as a Condition of Approval, Applicant obtain all required federal, state and local permits and licenses and adhere to all applicable rules and regulations.

Regarding water supply for fire safety, the fire marshal has reviewed the revised site plan and has not requested any changes. Regarding the concern regarding limited water supply generally, staff finds the local water company comments in the record are substantial evidence that this low density campground will not adversely impact water supplies in the surrounding area.

Staff finds there is not an excess supply of this type of campground in the area because this is a unique, low density type of campground that differs from most others in the area, because it is not designed for RVs, lacks ocean frontage, and is small in scale with just 19 camp sites.

As noted above, the site plan has been revised to reduce wetland impacts.

ODFW and USFWS were notified of this application. ODFW has provided comments recommending consultation for fish passage improvements, due to proximity to cutthroat trout habitat (Exhibit __). Staff finds the culvert replacement will improve fish passage opportunities consistent with the ODFW comments.

Staff has not identified evidence of impacts associated with the proposed campground development which would substantially impact the ability of a residential dwelling to be sited in the neighboring residential areas or would substantially impact the ability for residential uses to occur in dwellings sited in the neighboring residential areas. Adjacent Forest and SFW-20 zoned properties would maintain a proposed 50-ft buffer from proposed improvements (Exhibit B). Staff finds that this low density campground is set well back from public view, and concludes the campground will not alter the character of the surrounding area in a manner which substantially limits, impairs or prevents the use of surrounding properties for permitted uses.

(5) The proposed use will not have detrimental effect on existing solar energy systems, wind energy conversion systems or wind mills.

Proposed Findings: Applicant states the proposal will not have a detrimental effect on solar or wind systems (Exhibit __). Applicant states they will utilize solar energy in their development (Exhibit __). Staff find no record of such facilities and improvements on the subject properties or within the vicinity (Exhibit __), and finds that the proposed structures are not tall enough to create shadow and solar impacts on surrounding properties.

Regarding wind energy, staff is not aware of any wind energy facilities or equipment in or near the campground that will be affected by the proposal. Staff finds that this criterion has been met.

(6) The proposed use is timely, considering the adequacy of public facilities and services existing or planned for the area affected by the use.

Proposed Findings: Staff finds the proposed campground is timely because there is a demand for year-around facilities with Pacific City experiencing a demand and shortage of facilities, as explained by the applicant (Exhibit __).

Regarding public facilities, the subject property is currently served off Floyd Avenue, a County local access road, which comes off Sandlake Road, a County

road, to the subject property. The Tillamook County Public Works Department provided comment that improvements from Sandlake Road to the proposed development will be required as part of development of the road approach (Exhibit ___). Staff recommends that as a Condition of Approval, a letter from the Tillamook County Public Works Department be required at the time of applying for Zoning and Building permits.

The property is located within the service area of the Nestucca Rural Fire Protection District. Chief Oeder commented that the plans showing road width, grade and pullouts are acceptable for the Nestucca Rural Fire Protection District (Exhibit C). Staff recommends that as a Condition of Approval, a letter from the Nestucca Rural Fire Protection District confirming service to the campground development be required at the time of applying for Zoning and Building permits.

Tillamook County Environmental Health detailed requirements for licensing of a tourist facility, restaurant license and RV park license through their division. Staff recommend a Condition of Approval that final approval of campground design be provided at time of apply for Zoning and Building Permits from Tillamook County Environmental Health.

Based on these favorable comments from local public service providers, staff finds the proposed campground is timely and can be adequately served by existing public facilities.

**TWO CAPES LOOKOUT
CAMPGROUND**

OREGON TREEHOUSE PARTNERS
600 FLOYD AVENUE, CLOVERDALE, OR 97112

Project Title

NOT FOR
CONSTRUCTION

Landscape Architect
STUDIO CAMPO
2546 15TH STREET
DENVER, CO 80211

Consultant

| REV. | DATE | DESCRIPTION |
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| A | 2/15/23 | ISSUE NOTE |

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| Project Manager | Drawn By | CP |
| Amanda Jeter | Reviewed By | AJ |
| Date | February 2023 | |
| Project ID | 136 | |

Project Manager
Amanda Jeter

Drawn By
CP

Date
February 2023

Reviewed By
AJ

Project ID
136

Sheet Title

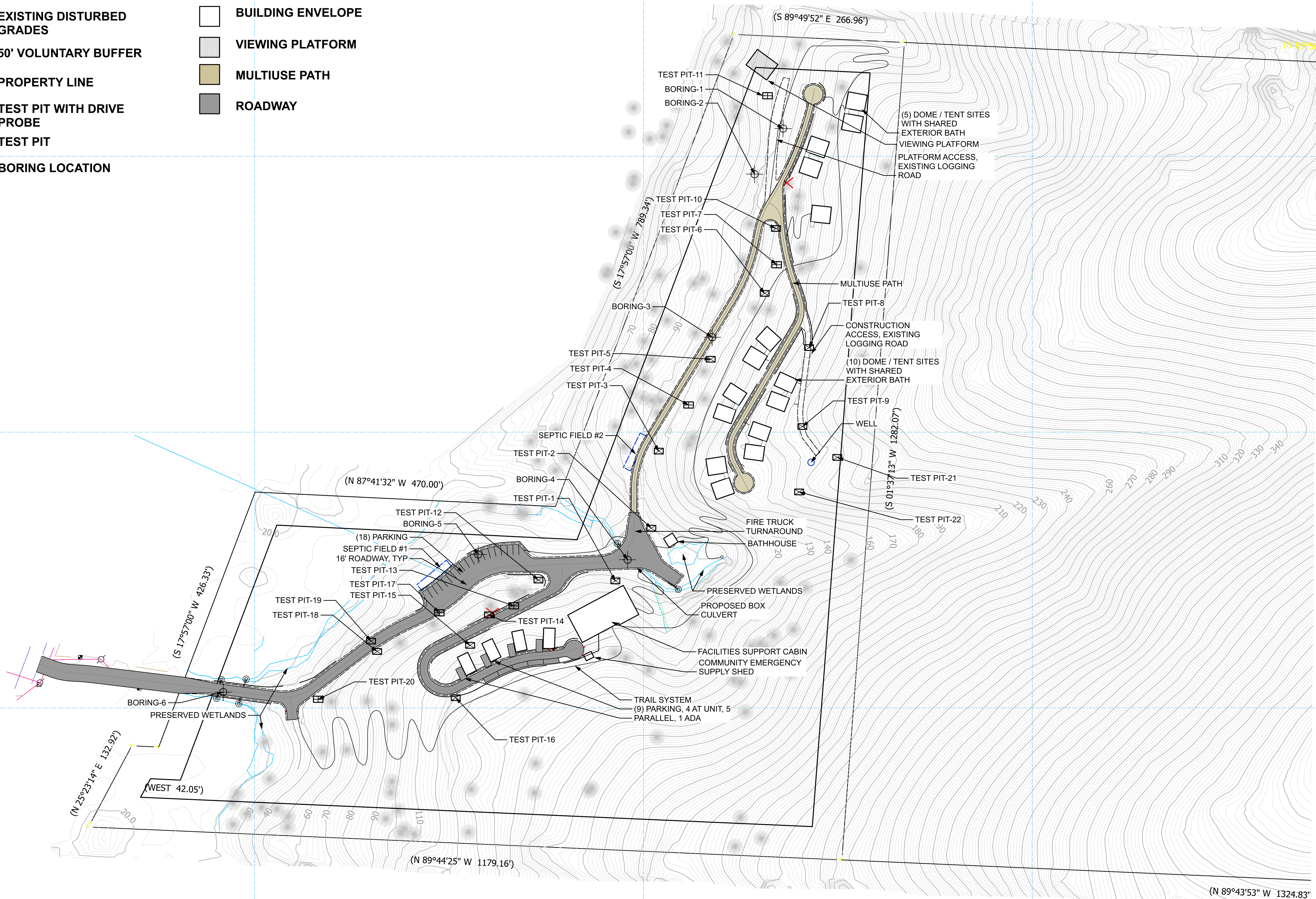
**REVISED CUP SITE
PLAN**

Sheet No.

L0-01

LEGEND

- EXISTING DISTURBED GRADES
- 50' VOLUNTARY BUFFER
- PROPERTY LINE
- ☐ TEST PIT WITH DRIVE PROBE
- ☒ TEST PIT
- ⊕ BORING LOCATION
- BUILDING ENVELOPE
- ▒ VIEWING PLATFORM
- MULTIUSE PATH
- ROADWAY



DRAFT

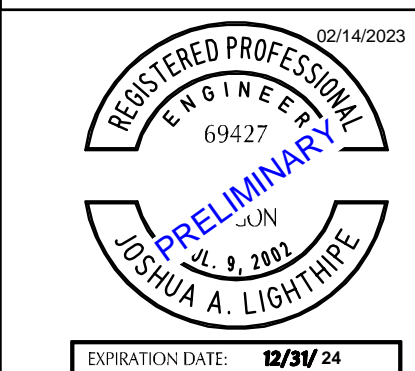
NOT FOR CONSTRUCTION - 2/15/2023



**TWO CAPES LOOKOUT
CAMPGROUND**

OREGON TREEHOUSE PARTNERS
600 FLOYD AVENUE, CLOVERDALE, OR 97112

Project Title



Landscape Architect

STUDIO CAMPO
2546 15TH STREET
DENVER, CO 80211

Consultant

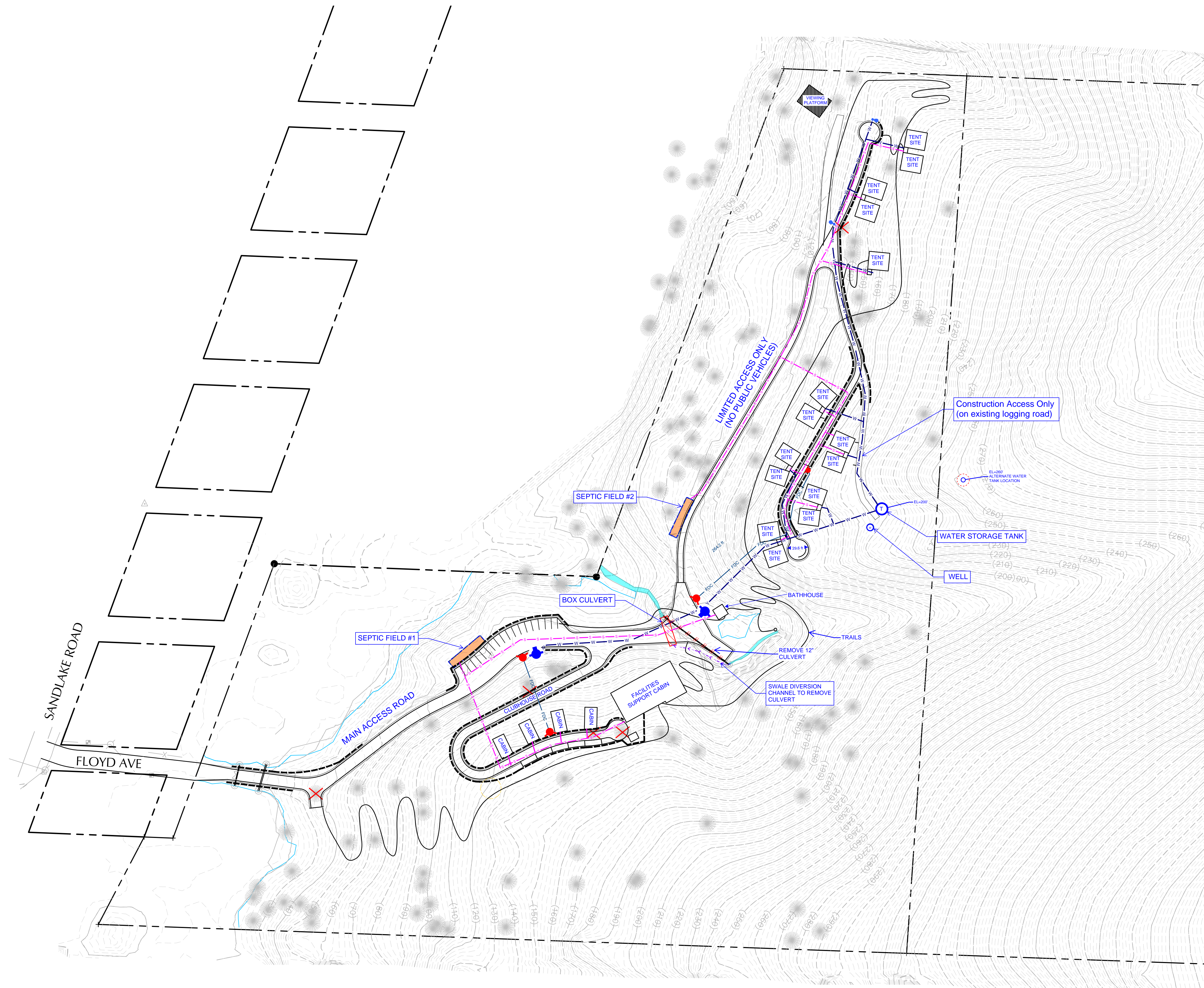
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| Project Manager Amanda Jeter | Drawn By PS, RC |
| Date February 2023 | Reviewed By JL |
| Project ID 136 | |

Sheet Title
**PRELIMINARY
UTILITY PLAN**

Sheet No.
C1



SHEET LEGEND

- YARD HYDRANT/HOSE BIB
- FIRE HYDRANT
- FDC STANDPIPE
- WATER MAIN/LINE
- FDC STANDPIPE LINE
- SANITARY MAIN/LINE
- EDGE OF WETLAND
- PROPOSED WALL
- EX. STREAM
- REMOVE TREE

D

C

B

A

4

3

2

1

4

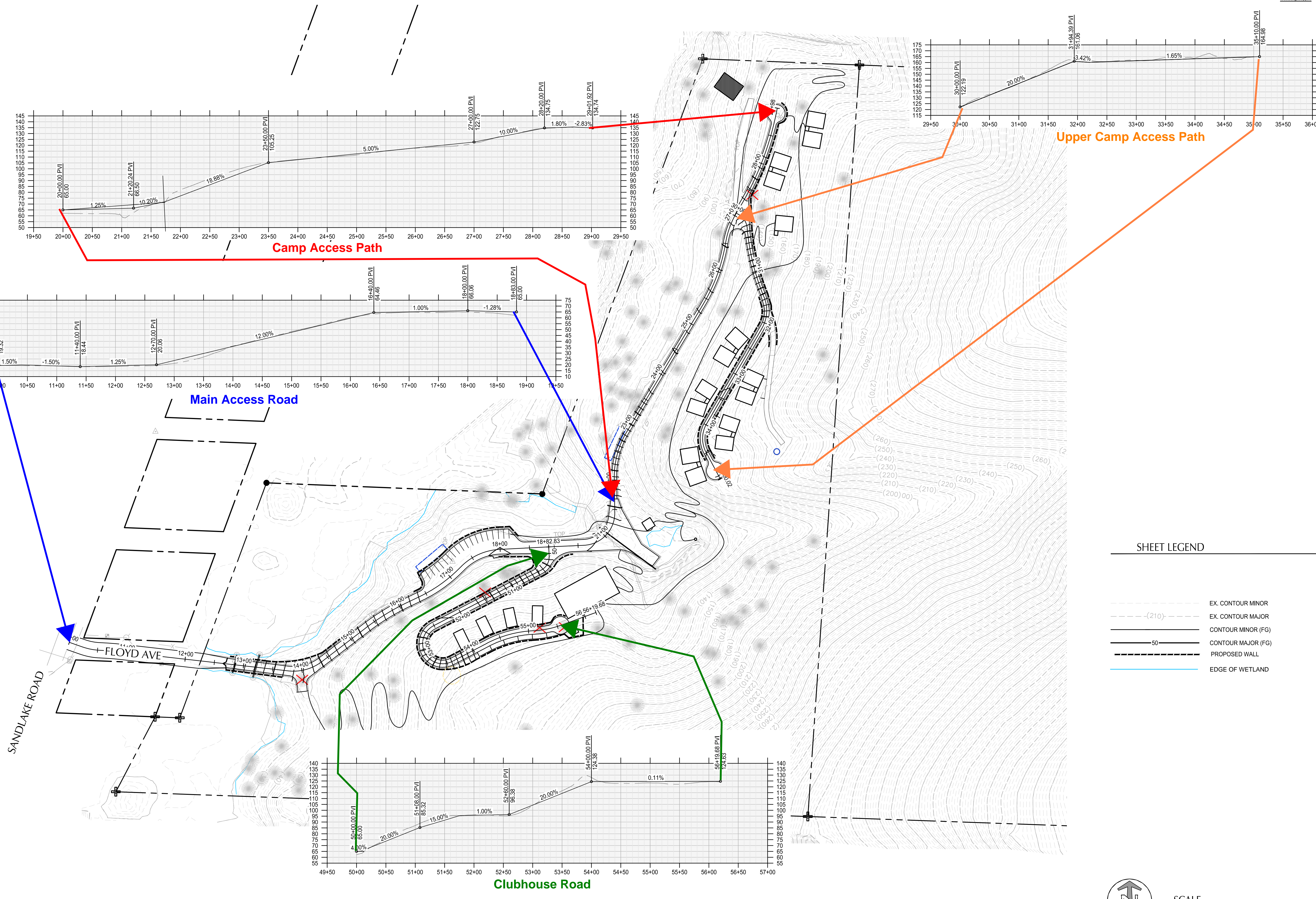
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1

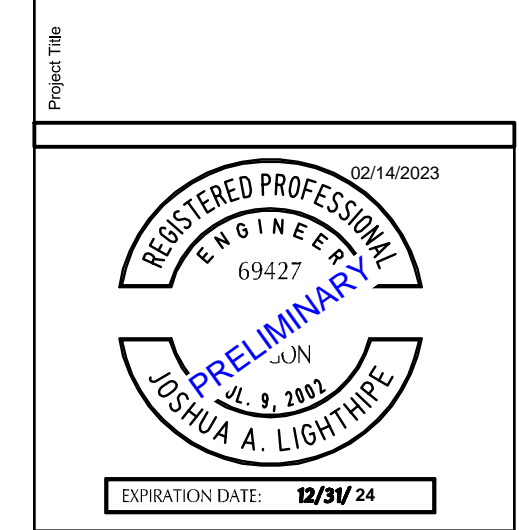
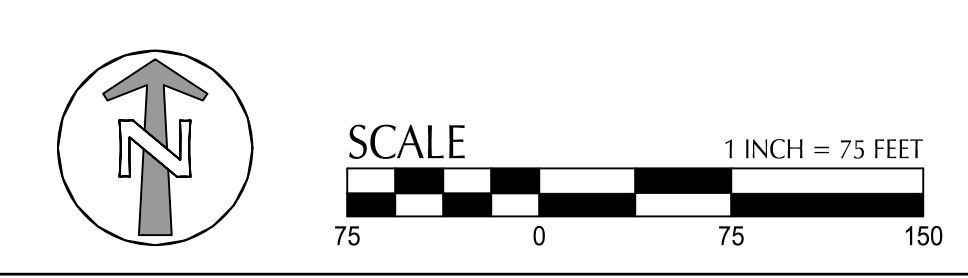
**TWO CAPES LOOKOUT
CAMPGROUND**

OREGON TREEHOUSE PARTNERS
600 FLOYD AVENUE, CLOVERDALE, OR 97112



SHEET LEGEND

| | |
|--|--------------------|
| | EX. CONTOUR MINOR |
| | EX. CONTOUR MAJOR |
| | CONTOUR MINOR (FG) |
| | CONTOUR MAJOR (FG) |
| | PROPOSED WALL |
| | EDGE OF WETLAND |



Landscape Architect
STUDIO CAMPO
2546 15TH STREET
DENVER, CO 80211

Consultant

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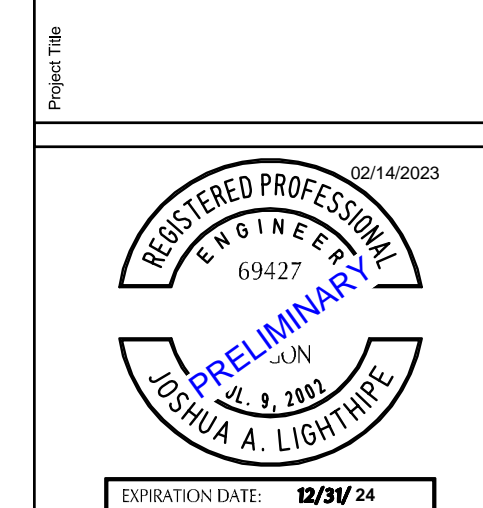
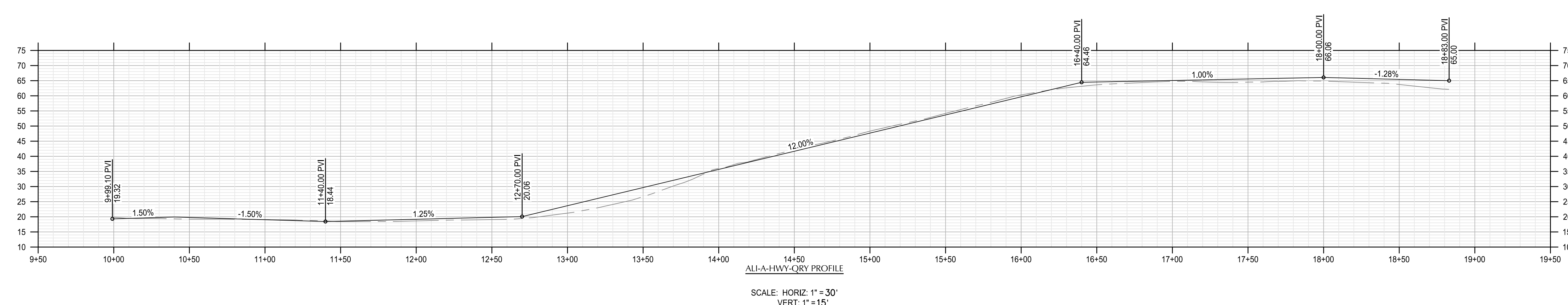
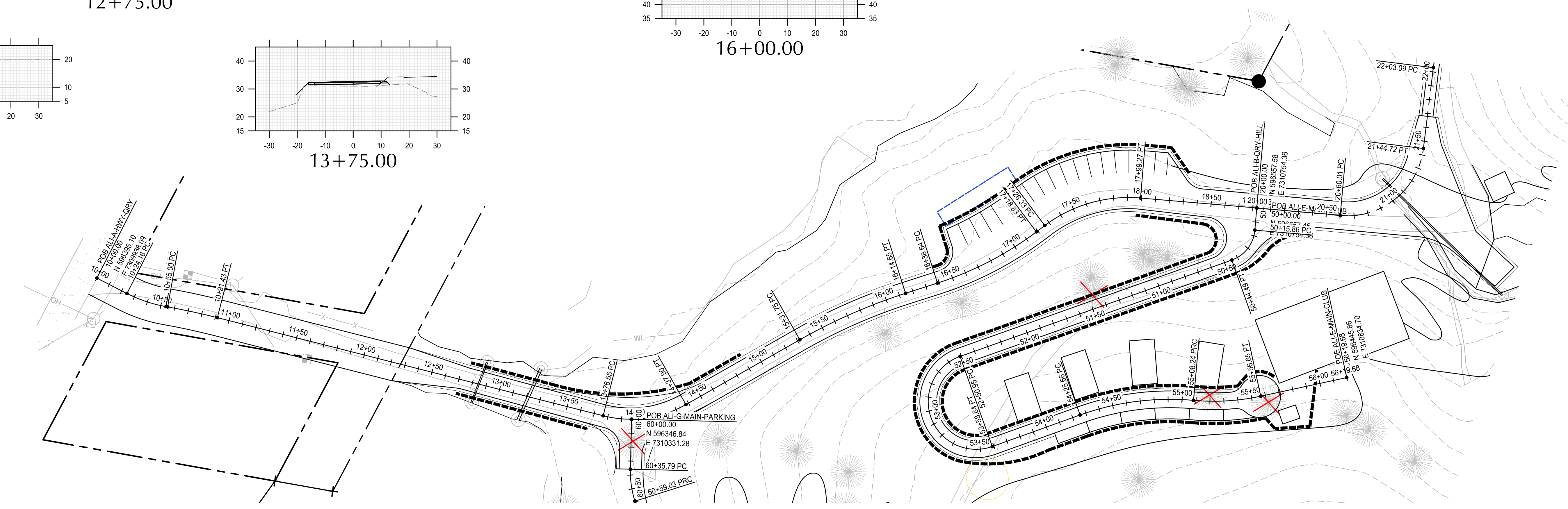
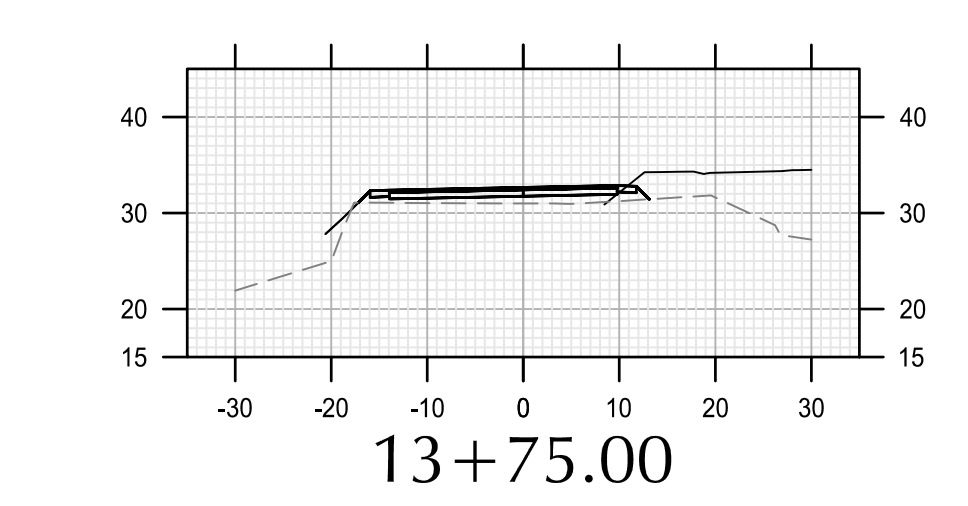
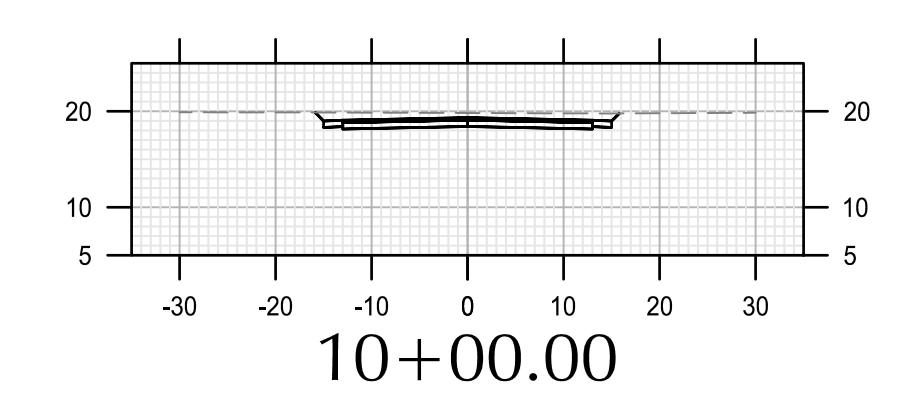
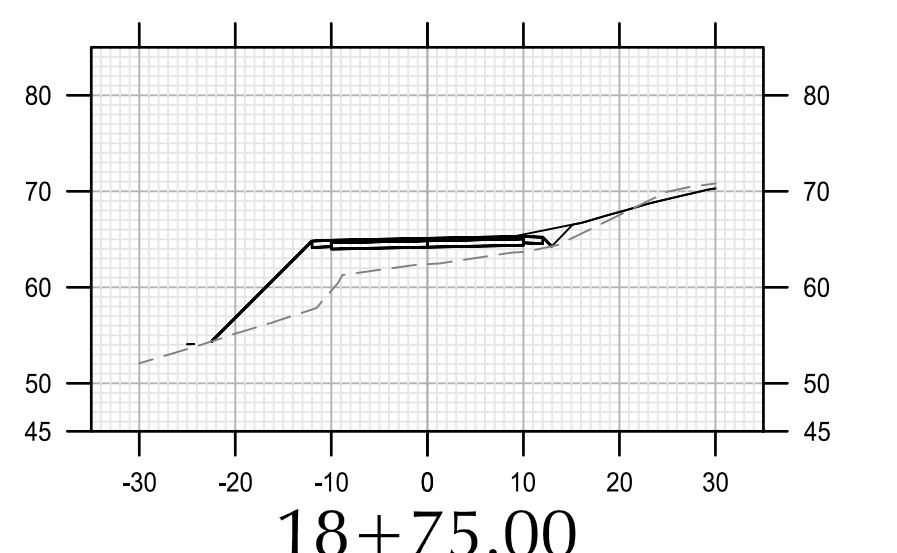
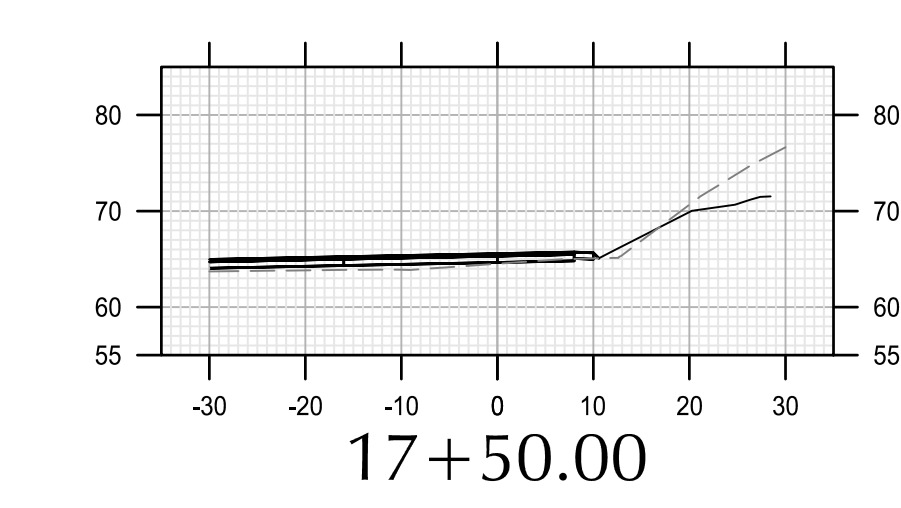
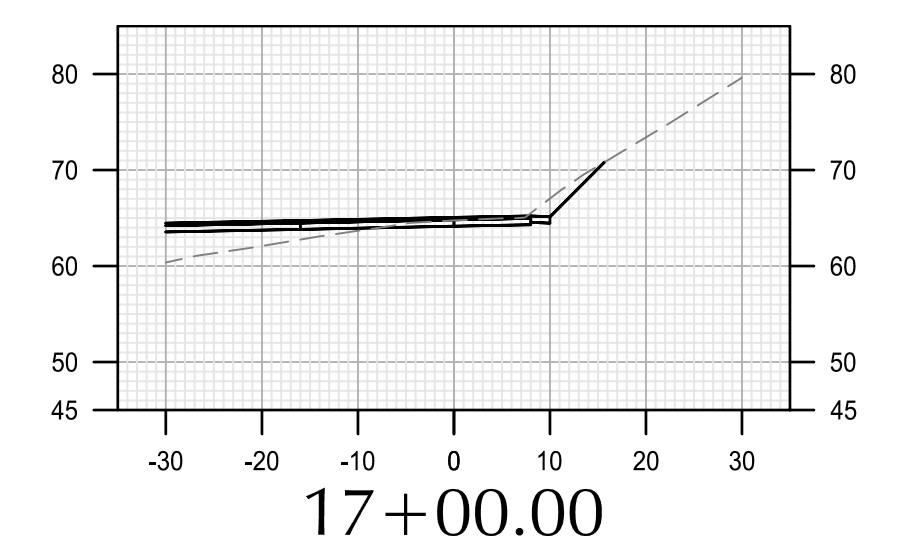
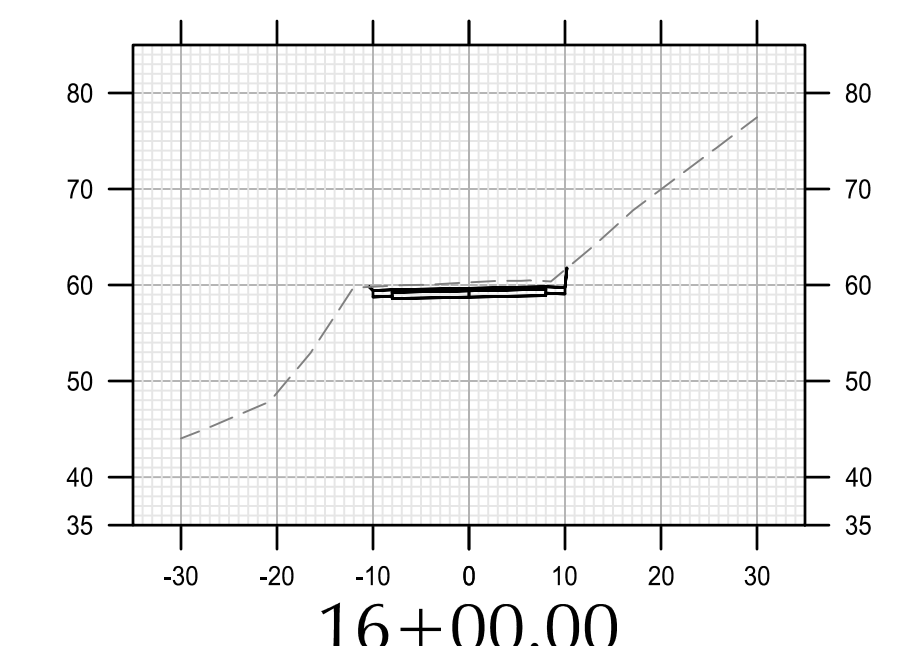
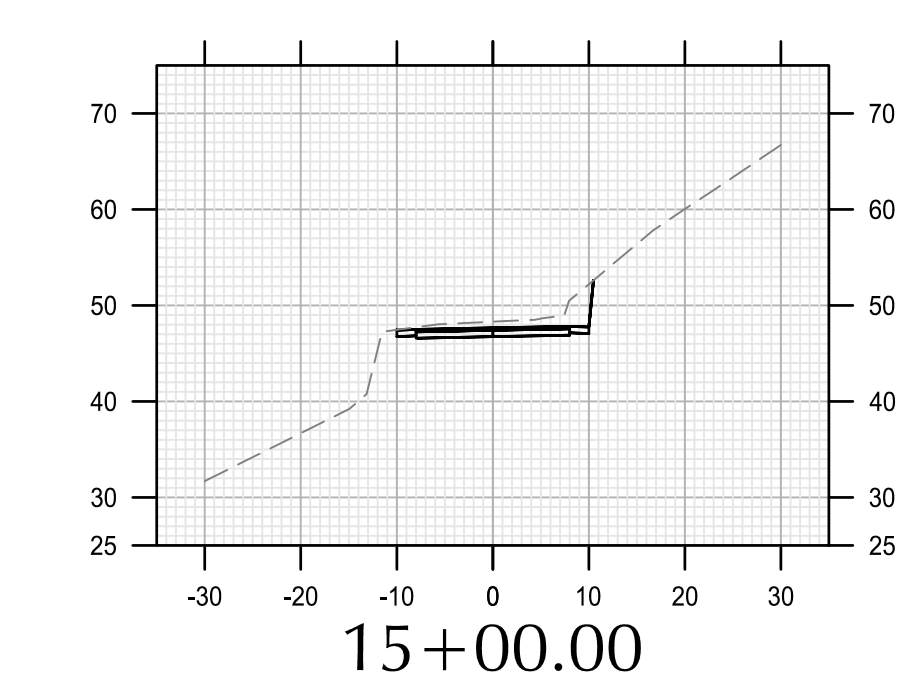
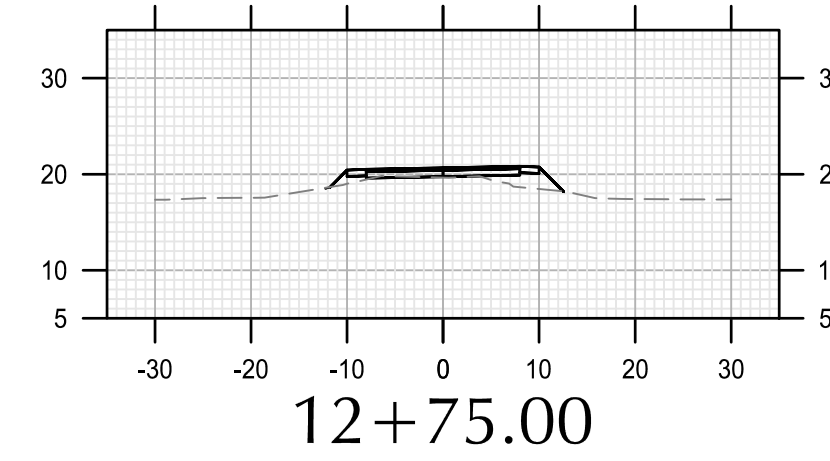
Project Manager: Amanda Jeter
Drawn By: PS, RC
Date: February 2023
Reviewed By: JL
Project ID: 136

Sheet Title:
**PRELIMINARY
GRADING PLAN**

Sheet No.:
C2

**TWO CAPES LOOKOUT
CAMPGROUND**

OREGON TREEHOUSE PARTNERS
600 FLOYD AVENUE, CLOVERDALE, OR 97112



STUDIO CAMPO
2546 15TH STREET
DENVER, CO 80211

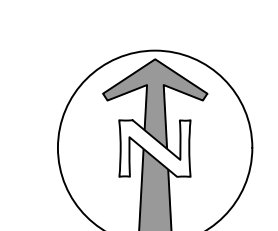
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Project ID: 136

**PRELIMINARY
GRADING
PROFILE**

Sheet No. **C3**





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February 15, 2023

Jordan Ramis PC
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Attention: James D. Howsley

Phone: (360) 567-3913

[E-mail: Jamie.howsley@jordanramis.com](mailto:Jamie.howsley@jordanramis.com)

**Subject: Geologic Conditions and Geologic Hazard Report
Proposed Two Capes Lookout
Tax Lot 600
Tierra Del Mar, Tillamook County, Oregon
EEI Report No. 22-113-1**

Dear Mr. Howsley:

Earth Engineers, Inc. (EEI) is pleased to transmit our report for the above referenced project. The attached report includes the results of field and laboratory testing, an evaluation of geologic hazards that may influence the proposed development as well as general recommendations site development.

We appreciate the opportunity to perform this geologic study and look forward to continued participation during the geotechnical design and construction phases of this project. If you have any questions pertaining to this report, or if we may be of further service, please contact our office.

Respectfully submitted,
Earth Engineers, Inc.

Adam Reese, R.G., C.E.G.
Principal Engineering
Geologist

Jake Munsey, R.G., C.E.G.
Senior Engineering
Geologist

Attachment: Geologic Conditions and Geologic Hazard Report
Distribution (electronic copy only):

Addressee
Kevin Gindlesperger - kevingindy@yahoo.com

**GEOLOGIC CONDITIONS
AND
GEOLOGIC HAZARD REPORT**

for the

**Proposed Two Capes Lookout – Tax Lot
600
Tierra Del Mar, Tillamook County, Oregon**

Prepared for

**Oregon Treehouse Partners, LLC
1276 NW 107th Ave
Portland, Oregon 97229**

Prepared by

**Earth Engineers, Inc.
2411 Southeast 8th Avenue
Camas, Washington 98607
Telephone (360) 567-1806**

EEI Report No. 22-113-1

February 15th, 2023



**Adam Reese, R.G., C.E.G.
Principal Engineering
Geologist**

**Jake Munsey, R.G., C.E.G.
Senior Engineering
Geologist**

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1.0 PROJECT INFORMATION

1.1 Project Authorization

Earth Engineers, Inc. (EEI) has completed a limited geologic conditions and geologic hazard evaluation for the proposed Two Capes Lookout – camping facility property development located at Tax Lot 600 of Section 6, Township 4 South, Range 10 West of the Willamette Meridian, Tillamook County, Oregon. Our services were authorized by Kevin Gindlesperger of Oregon Treehouse Partners, LLC on April 5, 2022 by signing EEI proposal No. 22-P156 issued on April 1, 2022.

1.2 Project Description

Our current understanding of the project is based on the information Kevin Gindlesperger of Oregon Treehouse Partners, LLC, provided to EEI Principal Engineering Geologist Adam Reese and Senior Engineering Geologist Jake Munsey. In addition, we received subsequent design and procurement documents from the project landscape architect, Studio Campo. We received the following documents:

- **October 18, 2022 Request for Proposal “Two Capes Lookout Campground RFP, Civil & Structural Engineering Request for Proposals,” Provided by Studio Campo.** The RFP indicates that an 18 acre portion of the site will be used to develop the first phase of campgrounds that includes roadways, a 19-site recreational campground, clubhouse, and bathhouse.
- **Topography Survey prepared for Oregon Treehouse Partners by Northstar Surveying, Dated August 16, 2022.**
- **Architectural drawings by Officeuntitled drawings, dated November 10, 2021, Including Sheets A00.00, A10.04, A10.05, A21.01, A30.00, A30.01, and A40.01.**
- **August 11, 2008 report by Ash Creek Associates, Inc titled “Geologic and Geotechnical Report, Tierra Vista, LLC, Tierra Del Mar, Tillamook County, Oregon.”**

Briefly, we understand the plan is to construct a boutique campground that consists of property access roads, a camping support structure, approximately 19 camp sites, a viewing platform, surface parking, pedestrian trails, and a bathhouse. Based on information provided by the design team, our understanding is that the individual camping sites will either consist of tent platforms (15) and small (approximately 400 sq ft) cabins (4). The proposed site plan sketch is shown below in Figure 1 and Figure 2.

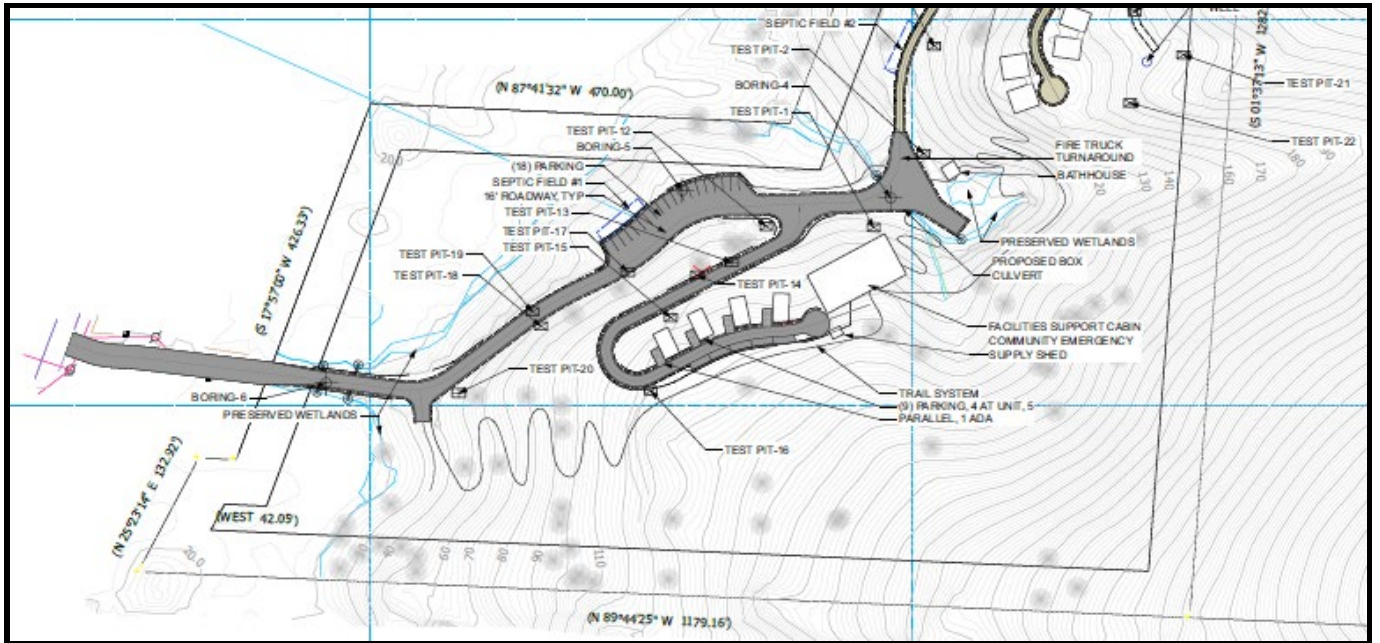


Figure 1: Site plan for the proposed Two Capes Lookout development (south portion); Source: Revised CUP Site Plan L0-01 (Site Plan) by Studio Campo, dated February 2023

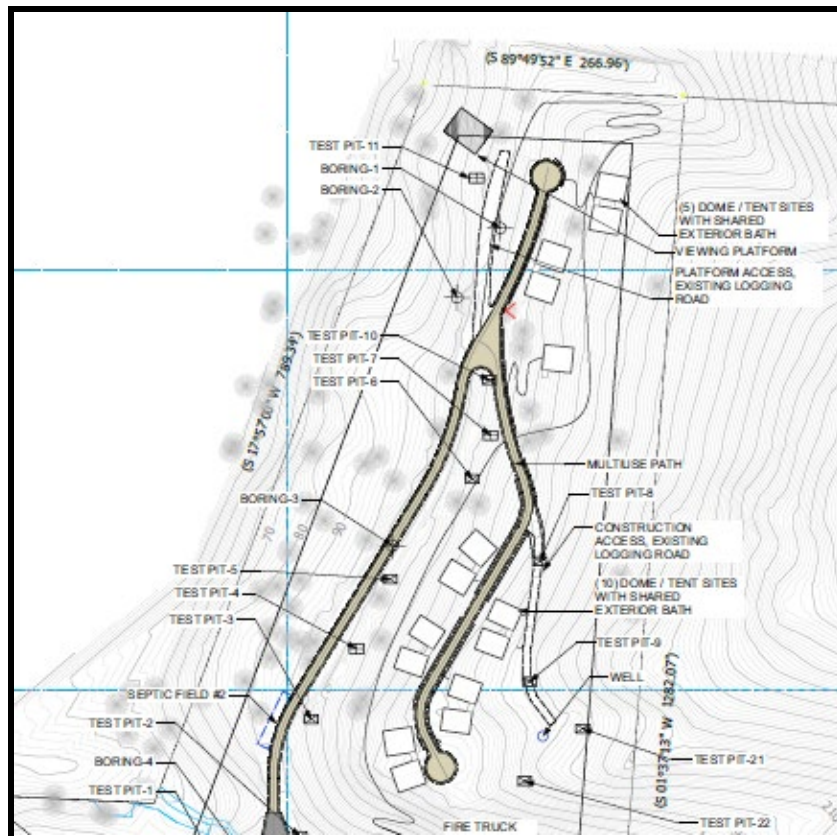


Figure 2: Site plan for the proposed Two Capes Lookout development (north portion); Source: Revised CUP Site Plan L0-01 (Site Plan) by Studio Campo, dated February 2023

1.3 Purpose and Scope of Services

We have not been provided detailed foundation loading or grading plans for the proposed construction. With regard to future geotechnical design considerations, we are assuming typical, relatively lightly loaded residential foundation loads of 3 kips per linear foot for wall footings, 40 kips per column footing, and 150 psf for floor slabs. With regard to future design grades, we are assuming that new cuts and fills will generally be limited to about 4 feet or less. We assume all structures will be constructed in accordance with the 2019 Oregon Structural Specialty Code (OSSC), an amendment to the 2018 International Building Code (IBC), or to the current building code at the time of design and construction.

The purpose of our services was to explore the subsurface conditions on the property in the areas of planned development in order to better define the geologic conditions (i.e. subsurface soil, rock, and groundwater properties) that may impact the project. In addition, this report presents the results of a Geologic Hazard Assessment to meet the requirements of Tillamook County Code Section 4.130 for properties located in areas of potential geologic hazards. Our subsurface explorations were spread throughout the proposed development areas on the property for the purpose of assessing the overall development potential or and potential risks for the proposed development. Due to the extent and nature of the slope stability hazards potentially impacting the property, site-specific geotechnical investigation is recommended prior to construction of site infrastructure and structures to confirm conditions are consistent with those found in the tested areas.

Our site investigation consisted of advancing six Standard Penetration Test (SPT) borings (B-1 through B-6) to depths ranging from 4 to 46.5 feet below ground surface (bgs), as well as advancing twenty-two test pits (TP-1 through TP-22) to depths of 1 to 14 feet bgs. In some cases, we utilized the topography to get a longer vertical profile with the test pits. For example, when next to a steep cut, we excavated our test pits into the hillside as we advanced the test pit further downward. Where such explorations were performed, this is noted as negative depths in our boring logs. The exploration locations are shown on Appendix B, and the exploration logs are included in Appendix C.

Select soil samples were tested in the laboratory to determine material properties for our evaluation. Laboratory testing was accomplished in general accordance with ASTM procedures.

This report briefly outlines the testing procedures, presents available project information, describes the site and subsurface conditions, and presents recommendations regarding the following:

- A discussion of subsurface conditions encountered, including pertinent soil and rock properties and groundwater conditions.
- A Geologic Hazard Assessment in accordance with Tillamook County requirements.
- Discussions on geotechnical issues that may impact the project.

The recommendations presented in this report are based on the available project information and

the subsurface materials described in this report. If any of the noted information is incorrect, please inform EEI in writing so that we may amend the recommendations presented in this report if appropriate and if desired by the client. EEI will not be responsible for the implementation of our recommendations when we have not been notified of project changes.

2.0 SITE AND SUBSURFACE CONDITIONS

2.1 Site Location and Description

The subject property is located at 600 Floyd Avenue, Cloverdale, Tillamook County, Oregon and consists Tax Lot 600 (Map 4S-10W-6) adjacent Sand Lake Road in the unincorporated community of Tierra Del Mar. The property location relative to surrounding features is provided in Appendix A – Site Location Plan.

The 58.51-acre property is irregular in shape and is classified as vacant rural property according to the Tillamook County. We understand that the proposed Phase I development (the site) consists of roughly the westernmost one-third of the property (approximately 18 acres). The property is bordered to the north and east by vacant land, to the west by vacant land and developed residential lots, and to the south by vacant land and rural land improved with a



Figure 3: Property location, outlined in red and the site located in yellow. (base image source: <http://tillamookcountymaps.co.tillamook.or.us/geomoose2/geomoose.html>)

manufactured home, as shown below in Figure 2.

Previous site development included the construction of rough-graded access road that winds to the east from a gated entrance off of Sandlake Road, then north to the northern portion of the property. Two auxiliary roads also branch off of this road, as shown in Figure 1.

Broadly, the subject property slopes downward to the west at an average slope of approximately 2H:1V (Horizontal:Vertical). Excluding the site's west facing slopes, the site's topographic relief is largely dominated by an unnamed creek that roughly bisects the site from east to west. There is also an old rock quarry where the existing access road crosses the creek. Locally, slopes are generally steeper than 2H:1V where the road is cut into the hillside, on the downhill side of the road, and in the old rock quarry area. We generally consider slopes steeper than 2H:1V to be oversteepened.

The vegetation at the site generally includes understory consisting of deciduous trees, blackberries, grasses and ferns. The canopy generally consists of large Sitka spruce and fir trees. A few curved tree trunks were observed, indicating local soil creep or shallow landsliding.



Photo 1: A tree with a curved trunk, as observed along the access road (photo center).



Photo 2: Photo looking northeast along the existing road before the creek. Note that the existing road cut has an oversteepened slope.

2.2 Subsurface Materials

Our site explorations consisted of six Standard Penetration Test (SPT) borings (B-1 through B6) and twenty-two test pits (TP-1 through TP-22). Test pits TP-1, TP-4, TP-7, TP-13, TP-17 and TP-20 were co-located with a drive probe testing to determine the relative strength of the soil.

The drive probe test is based on a “relative density” exploration device used to determine the distribution and to estimate strength of the subsurface soil units. The resistance to penetration is measured in blows-per- $\frac{1}{2}$ -foot of an 11-pound hammer which free falls roughly $3\frac{1}{2}$ feet driving a 1-inch diameter pipe into the ground. This measure of resistance to penetration can be used to estimate the relative density of soils. For a more detailed description of this geotechnical exploration method, please refer to the Slope Stability Reference Guide for National Forests in the United States, Volume I, USDA, EM-7170-13, August 1994, P 317-321. Results of the hand auger borings and drive probe tests are reported in Appendix C.

The borings were advanced with a subcontracted Buck Rogers 160 solid-stem auger drill rig from Dan J. Fischer Excavation, Inc. of Forest Grove, Oregon. The borings were advanced to depths ranging from 4 to 46.5 feet bgs. Upon completion, the borings were backfilled with bentonite chips to the ground surface. SPT samples were generally taken at 2.5-foot intervals in the upper 10 to 15 feet, and then at 5-foot intervals thereafter, to the terminal depths of the borings.

The test pits were excavated with a subcontracted Cat 315D excavator equipped with a 2-foot-wide smooth bucket from Coastway Construction, Inc., of Pacific City, Oregon. The test pits were advanced to depths ranging from 1 to 14 feet bgs. Disturbed grab samples were obtained from the major soil strata encountered in the test pits.

Select soil samples were tested in the laboratory to determine material properties for our evaluation. Results of the drilled borings and test pits are reported in the Exploration Logs in Appendix C. Laboratory testing was performed in general accordance with ASTM procedures. The testing performed included moisture content tests (ASTM D 2216), fines content determinations (ASTM D1140), and Atterberg Limits tests (ASTM D 4318). The test results have been included on the Exploration Logs in Appendix C.

In general, we encountered a surficial to massive layer of colluvial deposits over either basalt bedrock, or marine sedimentary bedrock, which is a common Coast Range lithologic sequence.

Colluvium and Landslide Deposits: We generally encountered colluvium in all explorations, with the exception of B-4, B-6, TP-18, and TP-19. The colluvium was highly variable in terms of grain size and composition, and often include cobbles suspended within a fine-grained soil matrix. This material predominately consisted of silts and clays; however, occurrences of silty sand, clayey gravel, silty gravels, and sandy silts were also present. When encountered in areas where not placed as fill, this highly variable mixture of earth materials is often the result of historic landsliding. This material was the terminal stratum at exploration locations TP-3, TP-4, TP-5, TP-6, TP-7, TP-10, TP-13, TP-17, TP-20, TP-22, and B-3. In boring B-3, this material was extended to the maximum exploration depth of 31.5 feet. SPT blow counts indicated that this material is very soft to stiff.

Siltstone Bedrock: We encountered marine sedimentary siltstone bedrock in several of our explorations. The siltstone was grayish-brown to tan and orange with black staining along fractures, moderately weathered, and intensely fractured. SPT blow counts indicated a very stiff to hard apparent density. Where encountered in our soil borings, this stratum extended to the maximum terminal depth of our borings, with the exception of boring B-5 where a sandstone unit was encountered beneath the siltstone. The depth to the top of the marine sedimentary bedrock (where encountered) is indicated in Table 1 below. The maximum exploration depth in this stratum was 46.5 feet at location B-1.

Table 1: Depth to marine sedimentary rock

| Exploration location | Depth to marine sedimentary rock (ft) |
|----------------------|---------------------------------------|
| TP-8 | 9.5 |
| TP-9 | 5.5 |
| TP-11 | 9.5 |
| TP-14 | 5 |
| TP-15 | 6 |
| TP-16 | 3.5 |
| TP-18 | 0.5 |
| TP-19 | 0.5 |

| | |
|-----|----|
| B-1 | 36 |
| B-2 | 20 |
| B-5 | 11 |

Sandstone Bedrock: At location B-5, we encountered a decomposed sandstone unit below the siltstone stratum at a depth of approximately 20 feet bgs. The sandstone was reddish-orange, decomposed, poorly graded, and medium dense. This material extended to the maximum depth of our exploration (31.5 feet bgs).

Basalt Bedrock: We encountered equipment refusal on dense basalt bedrock at five of our exploration locations. The basalt was gray to dark gray, slightly weathered to intensely weathered, intensely fractured, and very dense. Equipment refusal was generally encountered immediately after encountering this stratum. The only exception to this is where test pits were advanced into the cut slope adjacent the road, where the excavator was able to reach upward and scrape down the side of the basalt bedrock to assess the vertical profile.

Table 2: Depth to basalt bedrock

| Exploration location | Depth to marine sedimentary rock (ft) |
|----------------------|---------------------------------------|
| TP-1 | -10 |
| TP-2 | 1 |
| TP-12 | 10.5 |
| TP-21 | 1 |
| B-4 | 3.5 |

Lowland Soil Profile: We conducted one exploration, boring B-6, through the fill located at the property entrance where the road crosses the wetland. In general, the road surface at this location consisted of an 8-inch thick gravel section. Beneath the gravel, a silty gravel fill was encountered to a depth of approximately 7 feet bgs. The gravel was medium brown, well graded, and loose to medium dense. Below the silty gravel fill, a soft silt fill was encountered to a depth of 10.5 feet bgs. A thin layer of highly organic peat was encountered from 10.5 to 11 feet bgs. The peat soil was black, wet, and soft. Below the peat soils, a poorly graded sand unit was encountered to the maximum exploration depth of 20 feet bgs. The sand was blueish gray, wet, and medium dense. At the time of drilling, this sand readily flowed into the borehole when the augers were retracted and is considered to have liquefaction potential later discussed in this report.

The above subsurface descriptions from the test pits and borings highlight the major subsurface stratification features and material characteristics. The exploration logs included in Appendix C should be reviewed for specific information at specific locations. This record includes soil descriptions, stratifications, and locations of the samples. The stratifications shown on the log represent the conditions only at the actual exploration location. Variations may occur and should be expected between locations. The stratifications represent the approximate boundary

between subsurface materials and the actual transition may be gradual. The fill extent at each exploration location was derived based on an examination of the soil samples, the presence of foreign materials, field measurements, and the subsurface data. Depending on location within the development area, the actual fill extent may be greater or lesser than that shown on the exploration logs and discussed herein. Water level information obtained during field operations is also shown on the log. The samples that were not altered by laboratory testing will be retained for 90 days from the date of this report and then will be discarded.

2.3 Groundwater Information

Groundwater was encountered at location B-6 at a depth of approximately 11 feet bgs. At location TP-4 and TP-12, slow groundwater seepage into the test pits was observed at 8.5 feet and 9 feet bgs, respectively. Elsewhere on the proposed Phase 1 development area, groundwater was not observed in our explorations at the time of drilling or excavation. The groundwater levels observed at the time of our explorations should not impose a development constraint for the campground. It should be noted that subsurface groundwater levels can fluctuate seasonally during periods of extended wet or dry weather or from changes in land use.

3.0 GEOLOGIC HAZARD ASSESSMENT

3.1 Soil Survey

The United States Department of Agriculture (USDA) Soil Survey provides geographical information of the soils in Tillamook County as well as summarizing various properties of the soils. The USDA shows the native soils on the lowermost part of the site (gated entrance area) as Waldport fine sand, 0-5% slopes, (excessively drained stabilized sand dunes on marine terraces of eolian origin) and Haceta fine sand, 0-3% slopes (poorly drained interdune sands of eolian origin). The upper portions of the site are mapped as Klootchie-Necanium complex, 30-60% slopes¹. This well drained complex is formed on mountain slopes from a parent material of colluvium and residuum derived from igneous rock and tuff.

3.2 Geology

The region is underlain by a framework of Miocene aged (23 to 5 million years ago) volcanic rocks and Oligocene (33 to 23 million years ago) to Miocene aged marine sedimentary deposits that have been deposited over a basement rock of Eocene-aged (54 to 33 million years ago) volcanic arc deposits. Overlying this framework are Quaternary-aged (1.8 million years ago to present) marine terrace deposits, beach and dune deposits and landslide deposits.

The 1994 U.S. Geological Survey (USGS)² geologic map of the project area indicates the site is underlain by a lower Miocene and Oligocene-aged tuffaceous siltstone Member of the Alsea Formation (Tal) and immediately adjacent, a middle Miocene-aged Grande Ronde Basalt (Tigr). The tuffaceous siltstone material is described as “massive and bioturbated, containing abundant white tuff beds, calcareous concretions, and sparse thin feldspathic sandstone beds”. The Grand Ronde Basalt is described as “Sheet-like and irregular bodies of aphyric, columnar jointed tholeiitic basalt and diabase intruded into and overlain by baked sedimentary strata” See Figure 4 below for the 1994 mapped area.

Prior mapping by Schlicker, et al (1972) described the surficial geology of the site vicinity as Oligocene- to Miocene-aged marine sedimentary bedrock, unconformably overlying a northwest-trending strip of Eocene-aged volcanic rocks. Erosion of the clayey soils of the weathered sedimentary bedrock can become excessive during periods of heavy rain, resulting in prevalence of soil creep and landslides. The Oregon Department of Geology and Mineral Resources (DOGAMI) Statewide Landslide Information Database for Oregon (SLIDO) maps a large pre-historic (>150 years) deep-seated (failure depth of approximately 52 feet deep) rotational rock slide on the west-facing slopes that intersects the norther most portion of the proposed project area, with the toe of the slide terminating on the at the wetlands below the site.

¹ Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/> accessed January 4, 2021.

² Wells, R.E., Snively, P.D., MacLeod, N.S., Kelly, M.M., and Parker, M.J., 1994. Geologic Map of the Tillamook Highlands, Northwest Oregon Coast Range, U.S. Geological Survey, Open-File Report OF-94-21, 1:62,500.

A smaller, historic (<150 years) deep-seated landslide (failure depth of approximately 35 feet deep) translational rock slide is mapped immediately below the location of the proposed camping support structure, with the toe of the slide also terminating at the wetlands below the site.

3.3 Seismicity

Oregon's position at the western margin of the North American Plate and its location relative to the Pacific and Juan de Fuca plates have had a major impact on the geologic development of the state. The interaction of the three plates has created a complex set of stress regimes that influence the tectonic activity of the state. The western part of Oregon is heavily impacted by the influence of the active subduction zone formed by the Juan de Fuca Oceanic Plate converging upon and subducting beneath the North American Continental Plate off the Oregon coastline.

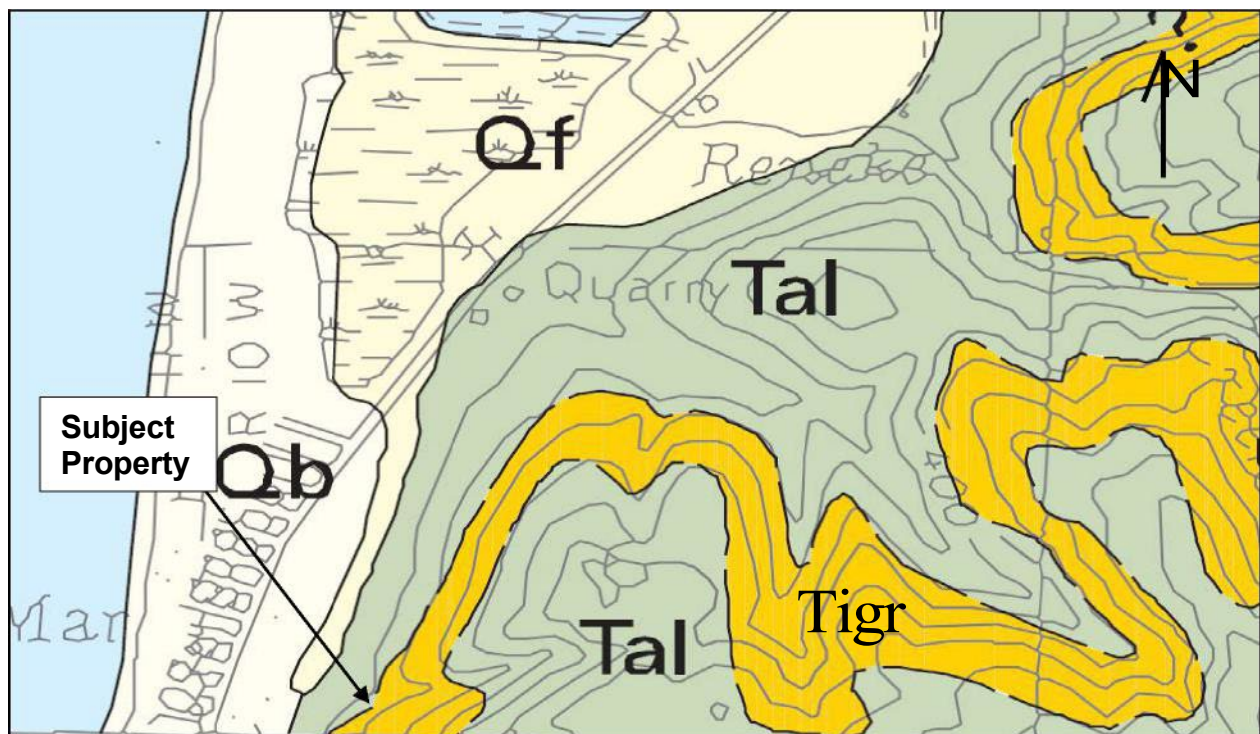


Figure 4: Geologic map of the area (source: Wells and others, 1994).

The Cascadia Subduction Zone, located approximately 100 kilometers off of the Oregon and Washington coasts, is a potential source of earthquakes large enough to cause significant ground shaking at the subject site. Research over the last several years has shown that this offshore fault zone has repeatedly produced large earthquakes, on average, every 300 to 700 years. It is generally understood that the last great Cascadia Subduction Zone earthquake occurred about 300 years ago, in 1700 AD. Although researchers do not necessarily agree on the likely magnitude, it is widely believed that an earthquake moment magnitude (M_w) of 8.5 to

9.5 is possible. The duration of strong ground shaking is estimated to be greater than 1 minute, with minor shaking lasting on the order of several minutes.

Additionally, earthquakes resulting from movement in upper plate local faults are considered a possibility. Crustal earthquakes are relatively shallow, occurring within 10 to 20 kilometers of the surface. Oregon has experienced at least two significant crustal earthquakes in the past decade—the Scotts Mills (Mt. Angel) earthquake (M_w 5.6) on March 25, 1993 and the Klamath Falls earthquake (M_w 5.9) on September 20, 1993. Based on limited data available in Oregon, it would be reasonable to assume a M_w 6.0 to 6.5 crustal earthquake may occur in Oregon every 500 years (recurrence rate of 10 percent in 50 years). The USGS Quaternary Fault and Fold Database of the United States does not map any crustal faults in the immediate vicinity of the property. However, Snavely and others maps a northwest-trending, left lateral, strike-slip fault approximately 0.5 miles southwest of the property, as shown in Figure 3 above.

In accordance with ASCE 7-16 we recommend a Site Class D (stiff soil profile) with an average standard penetration resistance of 15 to 50 blows per foot when considering the average of the upper 100 feet of bearing material beneath the surface. This recommendation is based on the drive probe blow counts, as well as our local knowledge of the area geology.

Inputting our recommended Site Class as well as the site latitude and longitude into the Structural Engineers Association of California (SEAOC) – OSHPD Seismic Design Maps website (<http://seismicmaps.org>) which is based on the United States Geological Survey, we obtained the seismic design parameters shown in Table 1 below.

Table 1: Seismic Design Parameter Recommendations (ASCE 7-16)

| PARAMETER | RECOMMENDATION |
|---------------------------------------|---------------------------|
| Site Class | D |
| S_s | 1.282 |
| S_1 | 0.669g |
| F_a | 1.000 |
| F_v | Null – See Section 11.4.8 |
| $S_{MS} (=S_s \times F_a)$ | 1.282g |
| $S_{M1} (=S_1 \times F_v)$ | Null – See Section 11.4.8 |
| $S_{DS} (=2/3 \times S_s \times F_a)$ | 0.854g |
| Design PGA ($=S_{DS} / 2.5$) | 0.342g |
| MCE_G PGA | 0.635g |
| F_{PGA} | 1.100 |
| $PGA_M (MCE_G \text{ PGA} * F_{PGA})$ | 0.699g |

Note: Site latitude = 45.250751, longitude = -123.961155

The return interval for the ground motions reported in the table above is 2 percent probability of exceedance in 50 years.

Per Section 11.4.8 of ASCE 7-16 a site-specific seismic site response is required for structures on Site Class D and E sites with S_1 greater than or equal to 0.2g. The S_1 value for this site is greater than 0.2g as shown in Table 1 above. Therefore, a site response analysis is required as part of the design phase. However, Section 11.4.8 does provide an exception for not requiring a site response analysis (reference Sections 11.4.8.1, 11.4.8.2 and 11.4.8.3). The project Structural Engineer should determine if the tent platforms, cabins and proposed amenity building will meet any of the exceptions—if the building does not meet the exception requirements, then EEI should be retained to perform a site-specific site response analysis.

We understand a Supplement 1 dated December 12, 2018 has been issued for ASCE 7-16 to correct some issues in the original publication. One of the corrections in the Supplement pertains to Table 11.4-2 (see table below) for determining the value of the Long-Period Site Coefficient, F_v , which is then used to calculate the value of T_s . The T_s value is needed for one of the exceptions in Section 11.4.8. Without the correction in Supplement 1, it would not be possible to determine F_v and calculate T_s . Based on Supplement 1, the F_v value may be determined from the following corrected table.

Table 2: Long-Period Site Coefficient, F_v (corrected Table 11.4-2 in ASCE 7-16).

| | Mapped Risk-Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameter at 1-s Period | | | | | |
|------------|--|------------------------|------------------------|------------------------|------------------------|------------------------|
| Site Class | $S_1 \leq 0.1$ | $S_1 \leq 0.2$ | $S_1 \leq 0.3$ | $S_1 \leq 0.4$ | $S_1 \leq 0.5$ | $S_1 \geq 0.6$ |
| A | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| B | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| C | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.4 |
| D | 2.4 | 2.2^a | 2.0^a | 1.9^a | 1.8^a | 1.7^a |
| E | 4.2 | 3.3^a | 2.8^a | 2.4^a | 2.2^a | 2.0^a |
| F | See Section 11.4.8 | See Section 11.4.8 | See Section 11.4.8 | See Section 11.4.8 | See Section 11.4.8 | See Section 11.4.8 |

Note: use linear interpolation for intermediate values of S_1 .

^a See requirements for site-specific ground motions in Section 11.4.8. These values of F_v shall be used only for calculation of T_s .

3.4 Site Reconnaissance

On April 8, 2022, EEI Principal Engineering Geologist Adam Reese, R.G., C.E.G., and Senior Engineering Geologist Jake Munsey, R.G., C.E.G., conducted a reconnaissance of the subject property and the local site vicinity, making observations of the slopes, vegetation, surface drainage, exposed soils and bedrock, and general topography of the surrounding areas.

During our reconnaissance, we observed the surface of the slopes for evidence of instability, and checked for on-site evidence of slope creep or recent landslide movement. While in the project area we also observed the condition of existing streets, adjacent homes, slopes and graded areas, and other engineered structures in the local site vicinity. While we did consider the general effects potentially caused by a major earthquake, we did not analyze the site-specific effects of a major earthquake, or conduct global slope stability analyses. Because the site is located in the vicinity

of historic and ancient, large landslide masses, it should be assumed that if a major earthquake occurs, it could reactivate the ancient landslide mass. This risk is not only true for this property, but all of the other previously developed lots in the area. It is our opinion that subject property is not more susceptible to earthquake risk than other previously developed hillslope lots in the Tierra del Mar, and it is not practical to engineer a solution that would totally mitigate this risk.

Based on the provided topographic map and consistent with elevations available on Google Earth, the site lies between elevations of approximately 20 and 220 feet above mean seal level and the slopes broadly descend to the west and southwest. The overall average slope within the project area is approximately 2H:1V, which do not on average consider to be oversteepened slopes. However, some portions of the site have slopes that are steeper than 2H:1V, which we consider to be oversteepened. These areas generally include locations where the road is cut into the hillside, the downhill side of the road (typically the result of fill), and in the old rock quarry area. As noted above, the site access road was rough graded as a part of past preliminary property development, including sidecast (non-engineered) fills and oversteepened slope cuts as part of the improvised road building.

The site is primarily covered with understory consisting of deciduous trees, blackberries, grasses and ferns. The canopy generally consists of large Sitka spruce and fir trees. A few curved tree trunks were observed, indicating local soil creep or shallow landsliding during the growth of the tree. In our limited observations, we did not observe evidence of distress in roads or adjacent house foundations in the vicinity of the site caused by slope movement.

3.5 Geologic Hazards

The Oregon Department of Geology and Mineral Resources (DOGAMI) maps various geologic hazards, such as 100-year flooding, earthquake ground shaking, tsunamis, and landslides.³ Based on this service, the geologic hazards associated with development of this property include the following:

- Severe expected shaking from a Cascadia earthquake (estimated magnitude 9.0+/-).
- Very strong expected earthquake shaking.
- Moderate to high landslide hazard.
- Mapped pre-historic and historic landslide deposits.
- Tsunami inundation from local Cascadia Subduction Zone Earthquake.
- Earthquake induced liquefaction

It should be noted that liquefaction was not a mapped hazard on or near the property. Figures 5 through 8 below show mapping of the geologic hazards presented by Oregon's HazVu, Figure 9 shows the mapped landslide inventory presented by Oregon's SLIDO, and Figure 10 shows modeled tsunami inundation predictions from the website <http://nvs.nanoos.org/TsunamiEvac>.

³ Oregon HazVu: Statewide Geohazards Viewer, available online at: <http://www.oregongeology.org/sub/hazvu/> accessed 8/11/2021

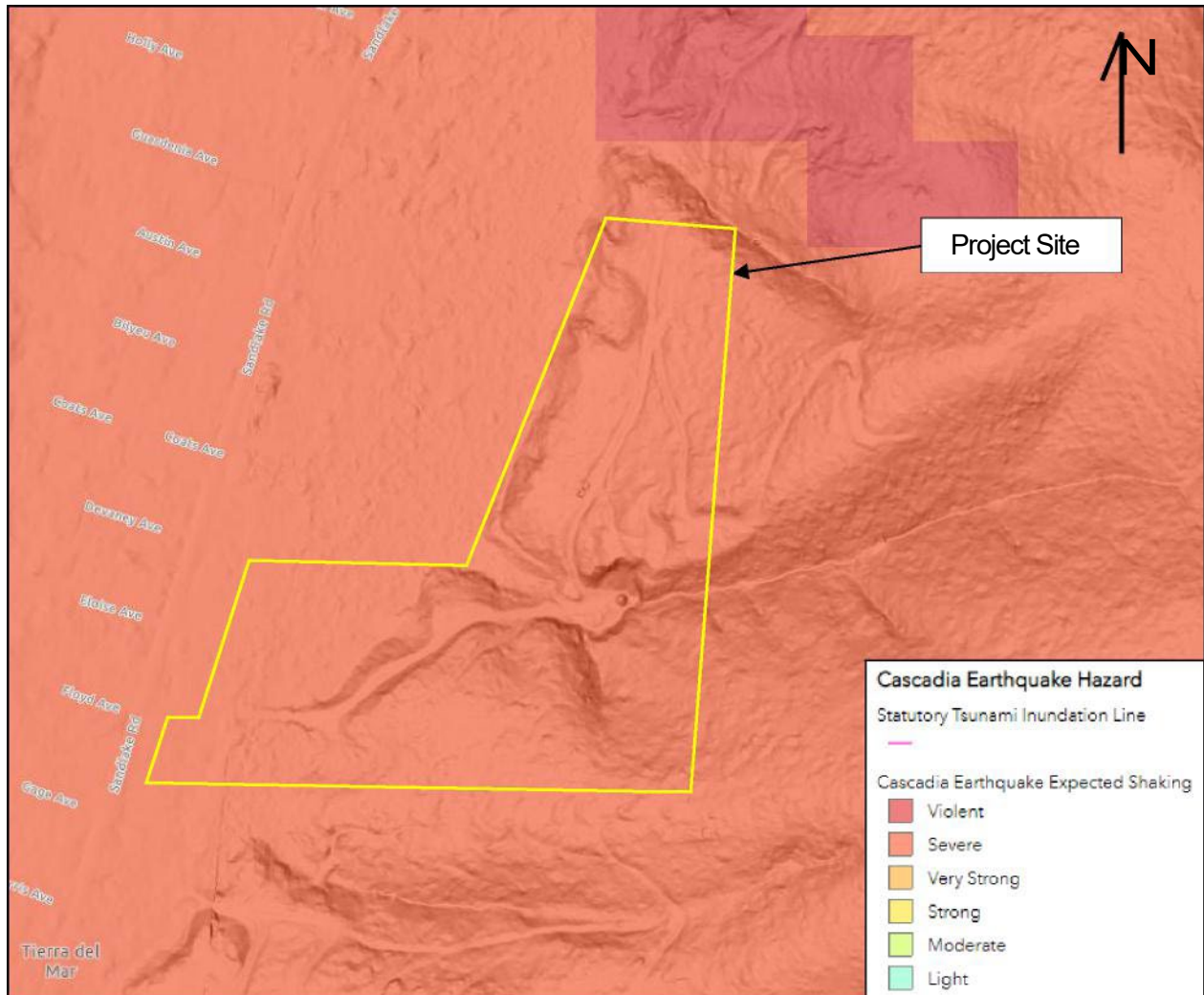


Figure 5: HazVu map showing extent and degree of Cascadia earthquake hazards for the property and vicinity.

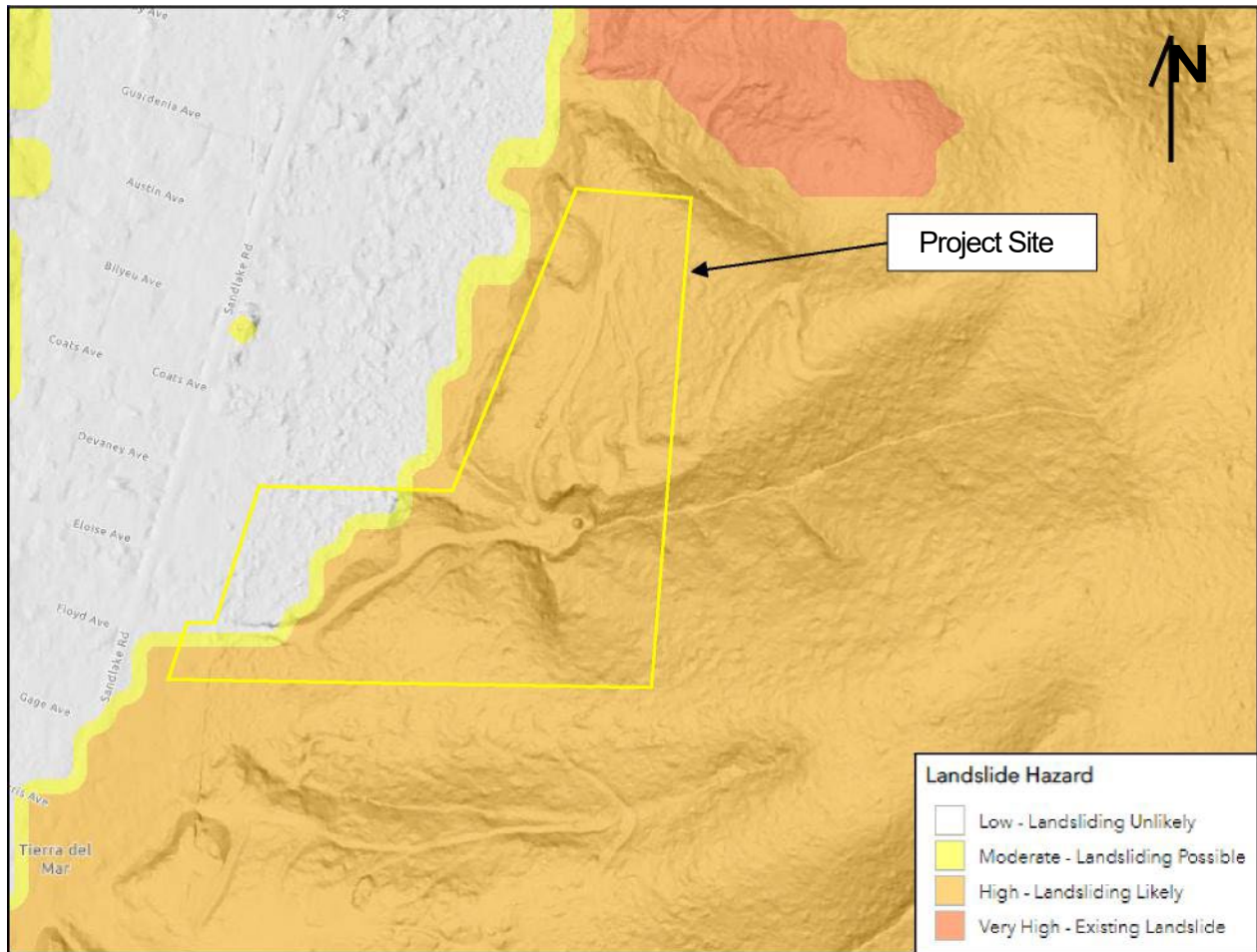


Figure 7: HazVu map showing extent and degree of landslide hazards.



Figure 8: HazVu map showing extent and degree of liquefaction hazards.

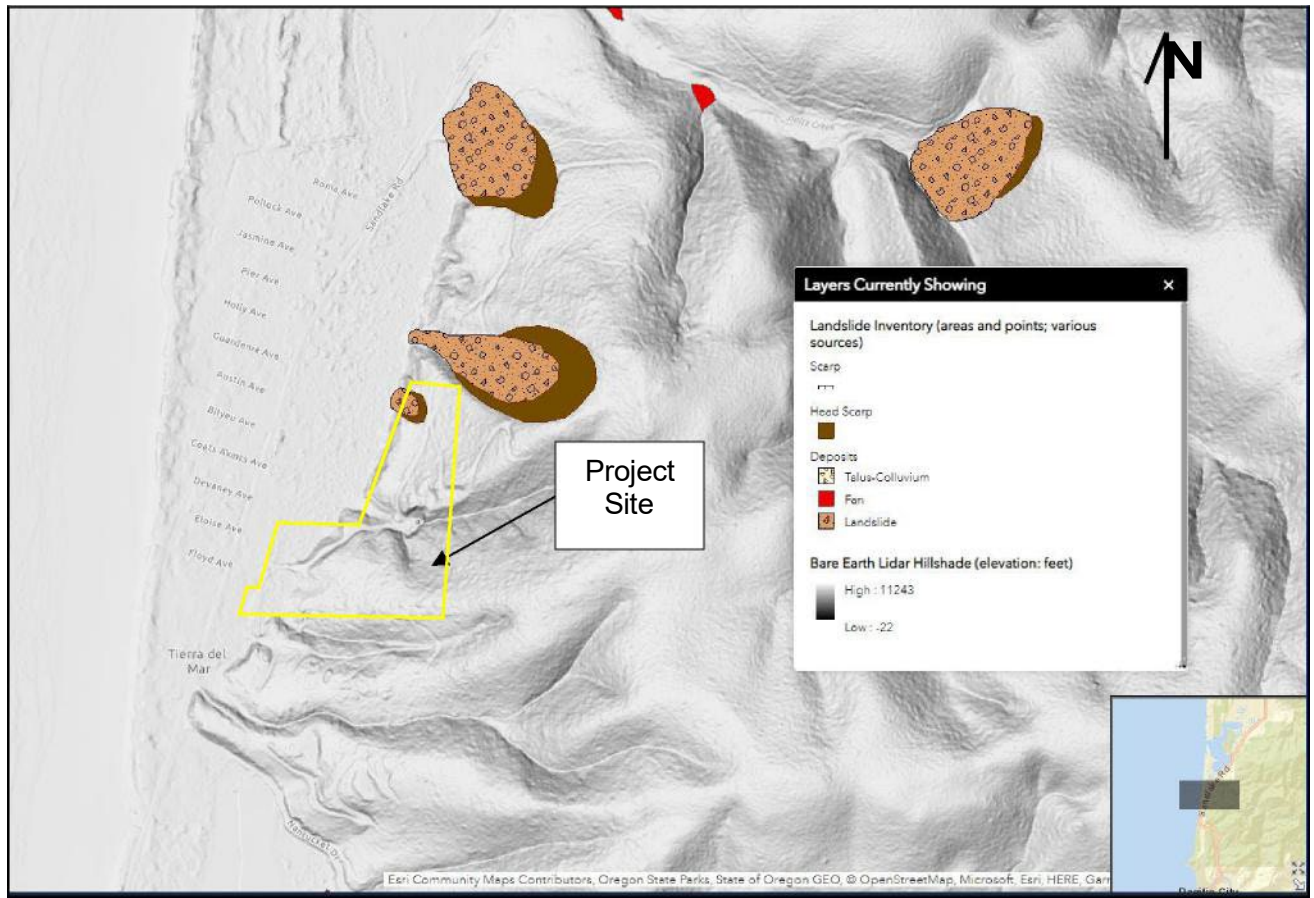


Figure 9: SLIDO map showing the landslide inventory on the property and vicinity.

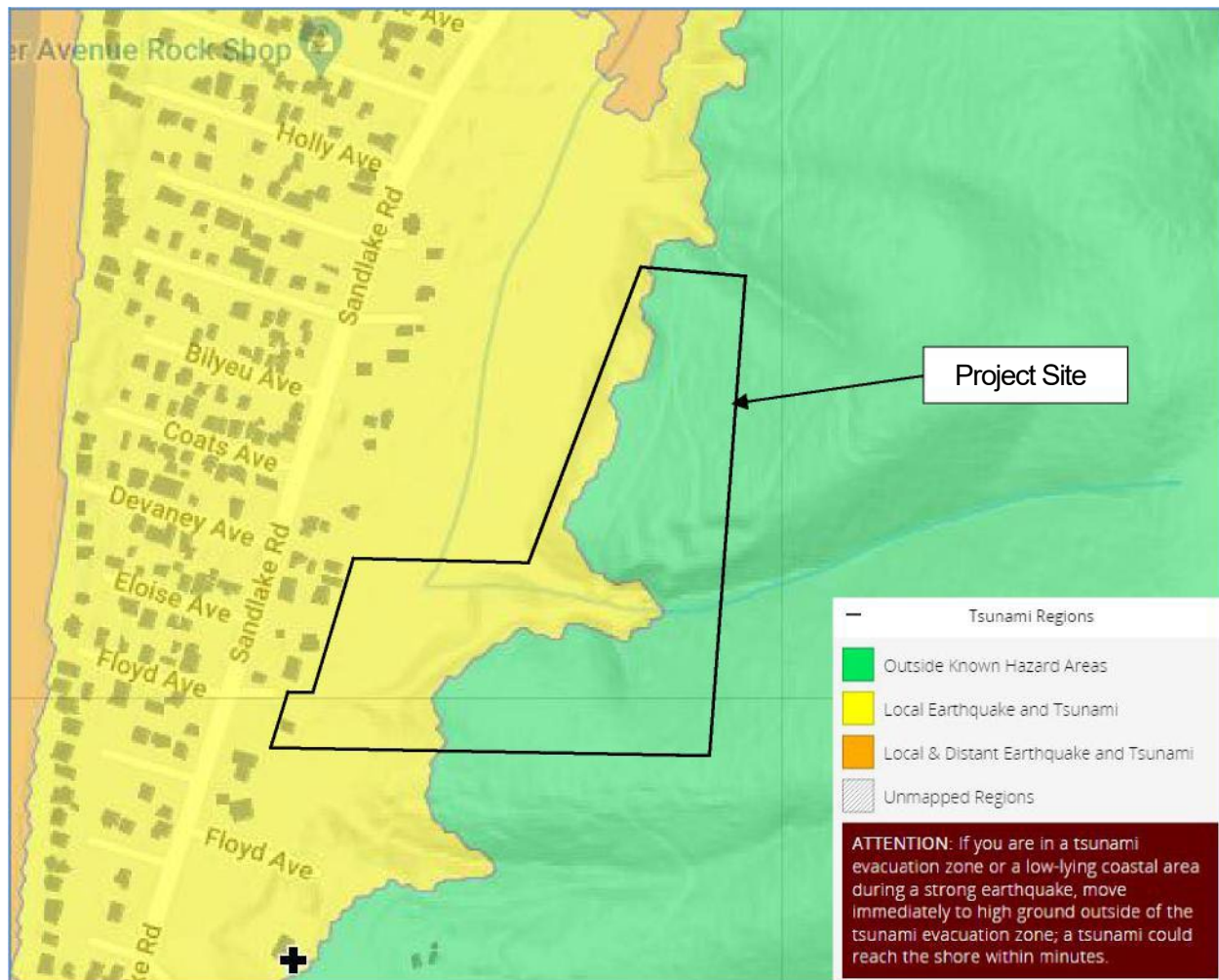


Figure 10: Tsunami inundation map for the property and vicinity.

Based on our site reconnaissance and subsurface explorations, we consider the site to have the following geologic hazards:

- Shallow soil creep, shallow landsliding, and deep-seated landslide potential;
- Potential local slope instability associated with loose near surface fills and shallow soils;
- Possible slope instability (landslide) concerns resulting from regional seismic activity.
- Potential localized liquefaction during a seismic event at the lowermost portion of the site (where the road crosses the wetland).
- Tsunami inundation from a local Cascadia Subduction Zone Earthquake.

The northern margins of the site are partially located on areas mapped as pre-historic (i.e. active >150 years ago) landslides. Based on our explorations and surface observations, we concur with the mapped pre-historic landslide designation and that the landslides are currently inactive. Although a major seismic event could reactivate the slide mass, the likelihood and

extent of this risk is unknown. We do not believe that this property is at any greater risk from this hazard than other similar properties in the area.

The potential for soil liquefaction during seismic ground shaking is generally associated with loose, saturated, non-plastic, recently deposited sands and some very recently deposited silt soils. Older soil deposits as well as both fines content and plasticity of fines have been found to reduce the likelihood of liquefaction. Except for the lowermost portion of the site (gated entrance), the type of subsurface soil encountered during our explorations is not typically associated with liquefaction issues. However, it should be noted that the sands encountered at location B-6 would be a potential liquefaction hazard. This only applies to the area where the road crosses the wetland near the gated entrance way. In a major seismic event, it should be anticipated that damages to the road in this area will occur.

We do not consider the site to be in a coastal erosion hazard area since it is located at an elevation of over 20 feet and about 1,000 feet from the coastline. Similarly, we do not consider, flooding, and storm surges as hazards for this site.

Because of the relatively low elevation of the subject properties above sea level, tsunami inundation and scour are considered likely geologic hazards at this site. A tsunami, or seismic sea wave, is produced when a fault under the ocean floor shifts vertically, displacing the seawater above it. The lower portion of this property is within the tsunami inundation zone as predicted by DOGAMI. In the event of a subduction zone earthquake it is unlikely that structures within the inundation zone could withstand several minutes of ground shaking followed shortly by the crushing lateral force of a tsunami. There are no mitigation recommendations for this – it is a risk that must be accepted with developments within tsunami inundation zone. We consider that most of Tierra Del Mar is at much greater risk from damages caused by a large Tsunami.

It is our opinion that the proposed campground development on this property is geologically feasible, subject to mitigation of the geologic hazard risks and geotechnical issues. Primary considerations to maintaining the existing state of site slope stability equilibrium include: limiting excavations that could destabilize the slope, limiting the placement of fill, limiting the size of the building footprint to minimize disruption of the native soils and vegetation, utilizing deep foundation systems and/or engineered retaining structures (where necessary), and maintaining adequate site surface and subsurface drainage to prevent saturation of the slope.

Ultimately, developing property in this area of Tierra Del Mar and similar coastal areas means there is an acceptance of future risk by the developer that the property is located in a known landslide hazard area. While the area may appear stable at this time, there are conditions that could change that could change the stability that cannot be controlled (e.g., earthquakes, long periods of heavy rainfall, developments on adjacent properties, etc). These risks are common to other, similar properties in the area.

3.6 Slope Stability

We qualitatively evaluated the slope stability of the site. Based on the topographic site plan drawings provided to us, the overall average site slope is not steeper than approximately 2H:1V. As such, we do not consider the entirety of the property to be oversteepened; however, there are localized oversteepened areas on portions of the property planned for development. These conditions can be mitigated, as described in Section 3.5 above. As discussed above, the property currently appears to be geologically stable when considering global, deep-seated landsliding; however, there is potential that the pre-historic landslide mass could reactivate in the future—especially during a major earthquake.

Within our explorations advanced in preliminary assessment of the property, we observed a high degree of variability in the subsurface conditions encountered. Our investigation findings indicate a likelihood of past slope movement on portions of the subject property, as well as risk of future slope movement. Based on these observations, we recommend that site-specific geotechnical investigation is conducted for each of the proposed structures and road alignment when finalized design plans are available.

4.0 SITE SUITABILITY RECOMMENDATIONS

4.1 Factors Influencing Site Development

Based on the subsurface investigation and evaluation of geologic hazards, it is our professional opinion that the primary factors impacting the proposed development include the following:

- 1. Potential slope instability.** In general, landslides typically occur as result of a combination of several key factors, including steep slopes, soil conditions (especially moisture-sensitive fine-grained soils), climate (as with the wet seasonal climate inherent of the Oregon Coast, resulting in seasonally high surface moisture infiltration and groundwater fluctuation), and a trigger (e.g., an earthquake, concentration of surface water on the slope, loading or unloading of the slope, etc.). The subject property has these inherent factors of steep slopes, landslide-prone soil conditions, and climate. Conditions observed on the property, including presence of uncontrolled fill, steep localized slopes, shallow groundwater seeps/springs, observed indications of apparent shallow landsliding and creep, and historic/pre-historic deep seated landslides impacting portions of the property, are further indications that the property is at risk of future slope instability.

To reduce the risk of triggering a landslide or reactivating the ancient landslide, we recommend that site drainage be carefully controlled. We also recommend that the building footprints be limited, so that the new construction is not as disruptive to the native soils and vegetation. Additionally, we also recommend that minimal additional weight be placed on the slopes to reduce the potential for landslide reactivation. This can be achieved through construction of lightweight structures (e.g., the planned cabins and tent platforms) or deep foundations (e.g., piles or piers) that bear directly on the bedrock stratum.

Finally, once construction is completed for this project, we recommend maintaining ground cover and vegetation on the property. This will reduce erosion, inhibit transpiration of surface water, and provide anchorage of the near surface soils. The site should be reseeded or planted as soon as possible following the completion of the development. General maintenance, such as placement of mulch or stary, should be expected to promote young plant growth.

- 2. Undocumented fill soils and landslide deposits.** As noted in the both the drilled boring and test pit logs, the subsurface investigation encountered both fill soils and landslide deposits on the property. The presence of such materials under footings, slabs, or roads could result in excess settlements and unsatisfactory foundation and slab on grade performance.
- 3. Risks associated with earthquake shaking.** It is well-known that the Oregon Coast is at risk of a Cascadia Subduction Zone earthquake (predicted magnitude of approximately 9.0) within the life of the proposed structures. Should this earthquake strike, there is significant risk of landside occurrence on the subject property. We do not anticipate that it will be

possible to completely mitigate the risk of damage from such an event.

4. **Uncertainties in characterizing the site subsurface conditions.** As with all subsurface investigations, the boring logs only represent the conditions at the actual exploration location. Variances occur and should be expected. The grading and erosional history of the site, as well as the nature and extent of fill material, is difficult to characterize. The type of bedrock and depth to bedrock will significantly impact the design of foundations. In order to adequately understand the geotechnical conditions for the foundation design of structures, we recommend that supplemental borings be completed in locations where comprehensive subsurface investigation has not yet been completed.

In summary, assuming that the generally unmitigable risks outlined above are acceptable, we recommend that this site is geologically suitable for the planned development, provided our mitigation recommendations are followed.

4.2 Site Preparation

Topsoil, vegetation, roots, and any other deleterious soils will need to be stripped from beneath the structure areas (i.e. buildings and pavement). The existing site vegetation should not be removed beyond the proposed construction areas of the site, with the exception for construction access road, materials storage areas or stockpile locations. A representative of the Geotechnical Engineer should determine the depth of removal at the time of construction.

Any existing utilities present beneath the proposed construction will need to be located and rerouted as necessary and any abandoned pipes or utility conduits should be removed to inhibit the potential for subsurface erosion. Utility trench excavations should be backfilled with properly compacted structural fill in accordance with Section 4.3 below.

We recommend that the test pits excavated as part of this study be re-excavated to their full depth, and backfilled with properly compacted structural fill as detailed in Section 4.3 below.

As mentioned above, vegetation should only be removed where needed to complete the proposed construction. This includes the building, and site improvement and grading areas, as well as areas used to temporarily store soil and rock on the site.

Final landscaping should be put in place where the soil is exposed as soon as practicable once final site grades are established. Ground covers and creeping shrubs should be used to help protect from soil erosion. Jute, burlap, or similar geotextile (or loosely placed straw) may be used to protect the soil while the vegetation is being established, especially during the much wetter winter months. The landscape architect or contractor should assist in the selection of the specific plants that are suitable for this climate and use.

Based on our past experience, site preparation will be very difficult to conduct during the wet season (i.e. typically about October to May). In addition, the geotechnical inspections will likely

need to be more intensive (and costly) during wet weather construction. While not required, we recommend consideration be given to performing all earthwork during the drier summer months.

4.3 Structural Fill

As stated above in Section 4.1, we recommend that minimal additional weight be placed in the development areas to raise site grades. The added weight of any structural fill should not be substantially greater than the weight of soil removed from the property during excavation.

Where structural fill is required, it should be free of organic or other deleterious materials, have a maximum particle size less than about 6 inches, be relatively well graded, and have a liquid limit less than 45 and plasticity index less than 25. In our professional opinion, the granular (sandy) on-site soils free of organics can be appropriate for use as structural fill. However, we recommend the fine-grained on-site soils (silt/clay) not be used for structural fill due to its plasticity and moisture sensitivity. As an alternative to using the native granular soils for structural fill, imported well-graded crushed rock gravel may be used.

We recommend any fill soils be moisture conditioned to within 3 percentage points below and 2 percentage points above optimum moisture as determined by ASTM D1557 (Modified Proctor). If water must be added, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying. The topsoil is not appropriate for structural fill but could be used as topsoil in landscaping areas.

Fill should be placed in a relatively uniform horizontal lift on the prepared subgrade. Each loose lift should be about 1 foot thick. The type of compaction equipment used will ultimately determine the maximum lift thickness. Structural fill should be compacted to at least 95 percent of the Modified Proctor maximum dry density as determined by ASTM D1557.

Each lift of compacted structural fill should be tested by a representative of the Geotechnical Engineer prior to placement of subsequent lifts. The fill should extend horizontally outward beyond the exterior perimeter of the buildings and pavements at least 5 and 3 feet, respectively, prior to sloping.

Fills that are constructed on slopes steeper than 5H:1V, such as the current site slopes, should be benched into the hillside. Level benches should be a minimum of 4 feet wide laterally, and should be cut into the slope for every five feet of vertical rise. The placement of fill should begin at the base of the slopes. All benches should be inspected by a representative of the Geotechnical Engineer and approved prior to placement of structural fill lifts. If evidence of seepage is observed in the bench excavations, a supplemental drainage system may need to be designed and installed to prevent hydrostatic pressure buildup behind the fill. Fill and cut slopes and disturbed natural soil slopes should be graded no steeper than 2H:1V.

5.0 CONSTRUCTION CONSIDERATIONS

EI should be retained to provide observation and testing of construction activities involved in the foundation, earthwork, and related activities of this project. EI cannot accept any responsibility for any conditions that deviate from those described in this report, nor for the performance of the foundations if not engaged to also provide construction observation for this project.

5.1 Moisture Sensitive Soils/Weather Related Concerns

The upper soils encountered at this site are expected to be sensitive to disturbances caused by construction traffic and to changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. In addition, soils that become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather.

5.2 Drainage, Groundwater, and Stormwater Considerations

Water should not be allowed concentrate and collect on the slopes. Positive site drainage should be maintained throughout construction activities. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff.

The site grading plan should be developed to provide rapid drainage of surface water away from the building areas and to inhibit infiltration of surface water around the perimeter of the buildings. The grades should be sloped away from the building areas.

5.3 Excavations

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document and subsequent updates were issued to better ensure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, basement excavations or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to

maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

We are providing this information solely as a service to our client. EEI does not assume responsibility for construction site safety or the contractor's compliance with local, state, and federal safety or other regulations.

6.0 GEOLOGIC HAZARD SUMMARY FINDINGS AND CONCLUSIONS

We are providing this section of our report for compliance with Tillamook County Land and Water Development and Use Ordinance (TCLWUO), Section 4.130 (Development Requirements for Geologic Hazard Areas), and Section 3.530 (Beach and Dune Overlay Zone) as adopted on May 11, 2022.

This Geologic Hazard Report was prepared to contain the applicable provisions outlined in the Oregon State Board of Geologist Examiners (OSBGE) publication "Guidelines for the Preparation of Engineering Geologic Reports" 2nd Edition dated May 30, 2014. This report is valid for purposes of meeting the requirements of Section 4.130 for a period of five years from the report date, and is only valid for the development plan addressed in the report. We have reviewed the requirements of Section 3.530 (Beach and Dune Overlay Zone) and have determined that it does not apply to this project as it is out of the Beach and Dune Overlay Zone. Therefore, it is not part of our Geologic Hazard Summary.

This report was prepared by Adam Reese, R.G., C.E.G., and Jake Munsey, R.G., C.E.G., both of whom have been licensed in their respective fields and practicing in the State of Oregon for 10 and 17 years, respectively. The authors have the appropriate qualifications to complete this report and provide the recommendations herein.

6.1 Applicable Content of 4.130(4)

As detailed below, all applicable content requirements of subsection 4.130(4) have been addressed, or are not applicable to the review.

- (a) Development density (when more than one use is possible): It is our professional opinion that the lot is suitable for the development of the proposed campground facilities provided that our recommendations are followed.
- (b) Locations for structures and roads: The location of the proposed camp sites, cabins, other ancillary structures, and infrastructure improvements, as shown in Figures 1 and 2 above, are acceptable when considering the impact of geologic hazards.
- (c) Land grading practices, including standards for cuts and fills: Based on the project drawings referenced above, the proposed structures have been designed to be compact, which corresponds with our recommendation to limit the area of ground and vegetation disturbance, and to limit soil loads. Our recommended standards for cuts and fills are outlined in Section 4.3.
- (d) Vegetation removal and re-vegetation practices: As outlined in Sections 4.1 and 4.2, we recommend vegetation removal be limited to the areas of construction, and that replanting occur after construction has been completed in areas that were stripped of vegetation.

- (e) Foundation design (if special design is necessary): As noted in sections 4.1, we are recommending structures either be lightweight, or supported by a deep foundation system (e.g., piles or drilled piers) that extend into the bedrock stratum.
- (f) Road design (if applicable): Not applicable at this time. Grading plans for road construction have not yet been completed. It is anticipated that slope stability mitigation will be required for portions of the road alignment, such as retaining walls and engineered cuts/fills. As such, we anticipate that the road design be completed after preliminary grading plans have been prepared.
- (g) Management of stormwater runoff during and after construction: As discussed in Section 4.1 and 5.2, we recommend that stormwater not be allowed to collect and concentrate on slopes.

(B) Summary findings and Conclusions:

- (a) The type of use proposed and the adverse effects it might have on adjacent areas: As noted in Section 1.2 above, the type of use is a campground with road infrastructure, a camping support structure, 19 camp sites, a viewing platform, surface parking, pedestrian trails, and bathhouse. Provided the recommendations in our report are followed, we recommend that there will be no increased adverse effects on adjacent areas.
- (b) Hazards to life, public and private property, and the natural environment which may be caused by the proposed use: It is our professional opinion that if our recommendations in this report are followed, the increased hazard risk to life, public and private property, and the natural environment is low.
- (c) Methods for protecting the surrounding area from any adverse effects of the development: We are recommending site stripping and vegetation removal for construction be limited to only the construction area, with erosion control measures during construction. Once construction is complete, disturbed soil areas should be replanted or addressed with other soil erosion prevention measures.
- (d) Temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation: As discussed previously, we are recommending site stripping and vegetation removal for construction be limited to the construction area. Once construction is complete, disturbed soil areas should be replanted or covered with other soil erosion prevention measures.
- (e) The proposed development is adequately protected from any reasonably foreseeable hazards including but not limited to GEOLOGIC HAZARDS, wind erosion, undercutting, ocean flooding, and storm waves. Undercutting, ocean flooding and storm waves are not hazards at this site. The geologic hazards include shallow slope creep, landsliding, settlement, earthquake-induced damage from landsliding, tsunami inundation, earthquake induced liquefaction, and severe ground shaking. Some of these hazards cannot be

completely mitigated; however, assuming that the generally unmitigable risks outlined above are acceptable and provided our mitigation recommendations are followed, we recommend that this site is geologically suitable for the planned development.

- (f) The proposed development is designed to minimize adverse environmental effects: We recommend that the project has been designed to minimize an increase in adverse environmental effects.

7.0 REPORT LIMITATIONS

As is standard practice in the geotechnical industry, the conclusions contained in our report are considered preliminary because they are based on assumptions made about the soil, rock, and groundwater conditions exposed at the site during our subsurface investigation. A more complete extent of the actual subsurface conditions can only be identified when they are exposed during construction. Therefore, EEI should be retained as your consultant during construction to observe the actual conditions and to provide our final conclusions. If a different geotechnical consultant is retained to perform geotechnical inspection during construction, then they should be relied upon to provide final design conclusions and recommendations, and should assume the role of geotechnical engineer of record, as is the typical procedure required by the governing jurisdiction.

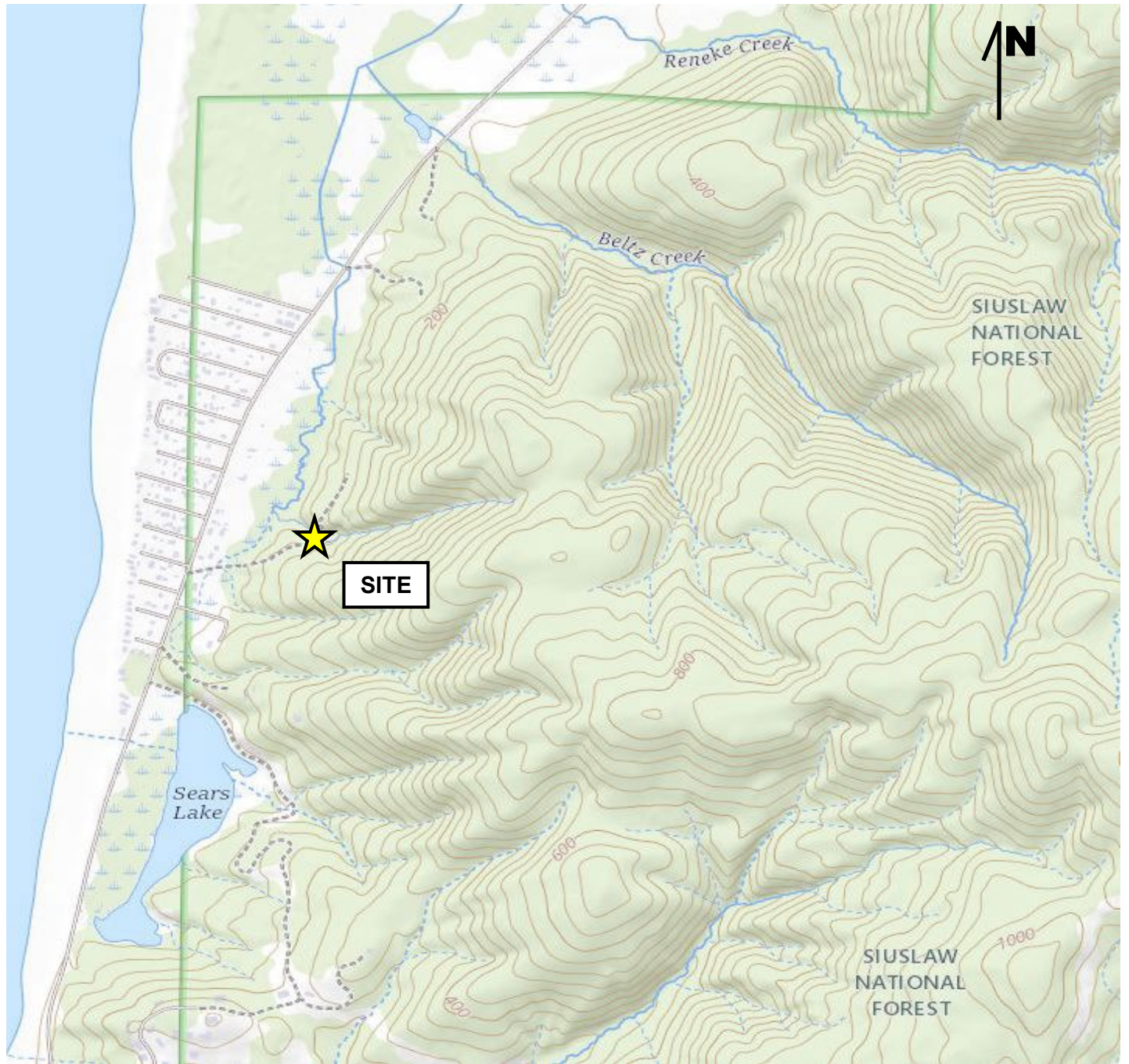
The geologic conditions and geologic hazard recommendations presented in this report are based on the available project information, and the subsurface materials described in this report. If there are any revisions to the plans for this project, or if deviations from the subsurface conditions noted in this report are encountered during construction, EEI should be notified immediately to determine if changes in the recommendations are required. If EEI is not retained to review these changes, we will not be responsible for the impact of those conditions on the project.

The Engineering Geologist signatories warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional engineering geology practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are more complete, the EEI should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering geology recommendations have been properly incorporated into the design documents. At this time, it will be necessary to submit supplementary recommendations.

This report has been prepared for the exclusive use of Oregon Treehouse Partners, LLC and their representatives for the specific application to the proposed Two Capes Lookout Campground development at 600 Floyd Avenue, Cloverdale Tillamook County, Oregon to be located on Tax Lot 600 off of Sand Lake Road. EEI does not authorize the use of the advice herein nor the reliance upon the report by third parties without prior written authorization by EEI.

APPENDIX A – SITE LOCATION PLAN



Map Source: <https://viewer.nationalmap.gov/advanced-viewer/>



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**Oregon Treehouse Partners
Tax Lot 600, Two Capes Lookout
Tierra Del Mar, Tillamook County,
Oregon**

**Report No.
22-113-1**

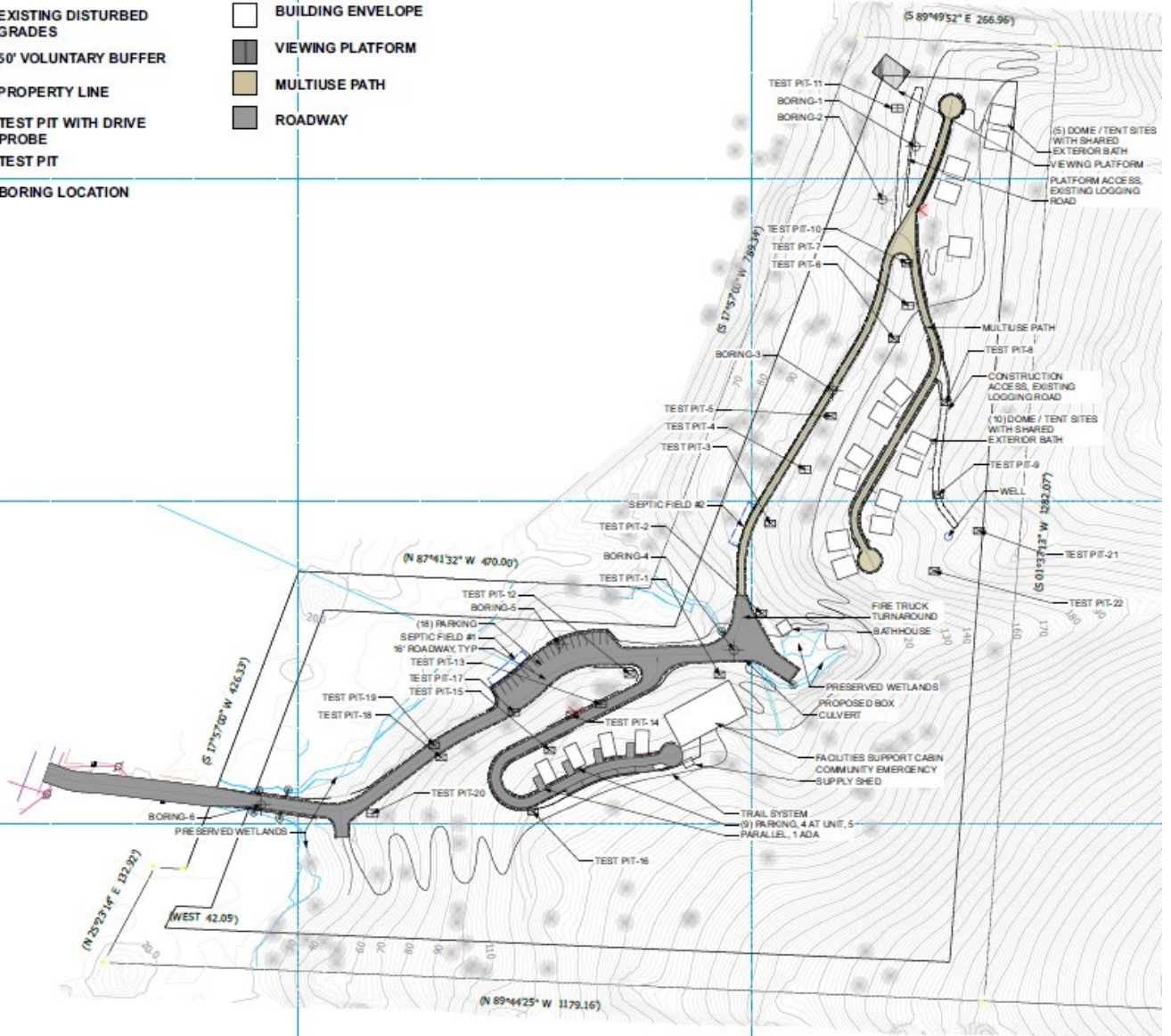
February 15, 2023

APPENDIX B – SITE EXPLORATION PLAN



LEGEND

- | | | | |
|--|---------------------------|--|-------------------|
| | EXISTING DISTURBED GRADES | | BUILDING ENVELOPE |
| | 50' VOLUNTARY BUFFER | | VIEWING PLATFORM |
| | PROPERTY LINE | | MULTIUSE PATH |
| | TEST PIT WITH DRIVE PROBE | | ROADWAY |
| | TEST PIT | | |
| | BORING LOCATION | | |



Base Drawing Source: Revised CUP Site Plan L0-01 (Site Plan) by Studio Campo, dated February 2023.



Oregon Treehouse Partners
 Tax Lot 600, Two Capes Lookout
 Tierra Del Mar, Tillamook County, Oregon

Report No.
 22-113-1

February 15, 2023



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Appendix C: Boring B-1

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Location of Exploration: See Appendix B
 Logged By: Jake Munsey

Report Number: 22-113-1
 Drilling Contractor: Dan J Fischer Excavating, Inc.
 Drilling Method: Solid Stem Auger
 Drilling Equipment: Buck Rogers 160
 Approximate Ground Surface Elevation (ft msl): 134'
 Date of Exploration: 5/11/2022

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | | | |
|------------|-------------|-------------------|---|---------------|--------------------|-----------------------|----------------------|----------------------|--------------|---------------|------------------|---------|----------------------------|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Blows per 6 Inches | N ₆₀ value | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | Plastic Limit | Pocket Pen (tsf) | Remarks | |
| 0 | | | SILT FILL (ML)- Medium brown, moist, non plastic, soft | SPT-1 | 1 1 3 | 4 | 48 | | | | | | |
| 2 | | | SILT (ML)-Very light brown, moist, non plastic, medium stiff | SPT-2 | 3 3 3 | 8 | 54 | | | | | 1 | |
| 4 | | | Becomes stiff | SPT-3 | 3 3 3 | 9 | 59 | | | | | 1 | |
| 6 | | | SILT with sand and trace gravel (ML)- Very light brown, moist, low plasticity, medium stiff | SPT-4 | 2 2 2 | 9 | 42 | | | | | 1.75 | |
| 8 | | | Becomes damp | SPT-5 | 4 6 5 | 11 | 33 | | | | | 1.25 | |
| 10 | | | SILT with Sand and large angular mudstone gravels (ML)- Very light brown, wet, non plastic, stiff | SPT-6 | 2 1 2 | 3 | 75 | | | | | 0.25 | Harder drilling |
| 12 | | | Becomes hard (SILTSTONE COBBLE) | SPT-7 | 6 6 12 | 18 | 27 | | | | | | |
| 14 | | | | SPT-8 | 3 3 3 | 4 | 67 | | | | | 1.25 | Harder drilling |
| 16 | | | Becomes medium plasticity | SPT-9 | 14 8 11 | 19 | 49 | | | | | | Becomes very hard drilling |
| 18 | | | Silty GRAVEL (GM)-Medium brown, wet, well graded, dense, some basalt gravels and cobbles | SPT-10 | 10 12 26 | 38 | 28 | | | | | | |
| 20 | | | | SPT-11 | 11 18 20 | 38 | 22 | | | | | | |
| 22 | | | | SPT-12 | 11 13 21 | 34 | 32 | | | | | | |
| 24 | | | SILT (ML)- Olive brown, moist, non plastic, hard (SILTSTONE) | SPT-13 | 12 26 35 | 61 | 25 | | | | | | |
| 26 | | | | SPT-14 | 45 35 35 | 70 | 20 | | | | | | |

Notes : Boring terminated at a depth of approximately 45 feet below ground surface (bgs). Groundwater was not encountered at the time of drilling. Boring backfilled with bentonite chips on 5/11/22. Approximate elevation from site topographical survey by Northstar surveying, dated 8/16/2022.



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Appendix C: Boring B-3

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Location of Exploration: See Appendix B
 Logged By: Jake Munsey

Report Number: 22-113-1
 Drilling Contractor: Dan J Fischer Excavating, Inc.
 Drilling Method: Solid Stem Auger
 Drilling Equipment: Buck Rogers 160
 Approximate Ground Surface Elevation (ft msl): 118
 Date of Exploration: 5/12/2022

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | |
|------------|-------------|-------------------|--|---------------|--------------------|-----------------------|----------------------|----------------------|--------------|---------------|---------|------------------|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Blows per 6 Inches | N ₆₀ value | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | Plastic Limit | | Pocket Pen (tsf) |
| 0 | | | SILT FILL (ML)- Medium brown, moist, low plasticity, soft | | | | | | | | | Grass cover |
| 2 | | | | SPT-1 | 1 2 | 4 | 71 | | | | 0.25 | |
| 4 | | | SILT (ML)-Very light brown, moist, non plastic, stiff | SPT-2 | 2 3 4 | 9 | 66 | | | | 0.5 | |
| 6 | | | Becomes medium stiff | SPT-3 | 3 3 | 6 | 49 | | | | 2 | |
| 8 | | | | SPT-4 | 3 5 5 | 10 | 50 | | | | 1.25 | |
| 10 | | | SILT with sand (ML)- Very light brown, moist, non plastic, stiff | | | | | | | | | |
| 12 | | | Becomes medium stiff | SPT-5 | 2 3 | 5 | 67 | | | | 2.25 | |
| 14 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 20 | | | SILT (ML)-Very light brown, moist, non plastic, soft | SPT-6 | 1 2 | 4 | 85 | | | | 1 | |
| 22 | | | | | | | | | | | | |
| 24 | | | Very soft, trace gravel | SPT-7 | 1 1 1 | 2 | 89 | | | | 0.25 | |
| 26 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 30 | | | | SPT-8 | 1 2 | 4 | 77 | | | | | |
| 32 | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |

Notes : Boring terminated at a depth of approximately 30 feet below ground surface (bgs). Groundwater was not encountered at the time of drilling. Boring backfilled with bentonite chips on 5/12/22. Approximate elevation from site topographical survey by Northstar surveying, dated 8/16/2022.



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Appendix C: Boring B-4

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Drilling Contractor: Dan J Fischer Excavating, Inc.
 Drilling Method: Solid Stem Auger
 Drilling Equipment: Buck Rogers 160
 Approximate Ground Surface Elevation (ft msl): 62
 Date of Exploration: 5/12/2022

Location of Exploration: See Appendix B
 Logged By: Jake Munsey

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | |
|------------|-------------|-------------------|---|---------------|--------------------|-----------------------|----------------------|----------------------|--------------|---------------|---------|-------------------|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Blows per 6 Inches | N ₆₀ value | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | Plastic Limit | | Pocket Pen (tsf) |
| 0 | | ○ ○ ○ ○ ○ | GRAVEL FILL (GW)- Medium brown, wet ,well graded, dense | | | | | | | | | |
| 2 | | ○ ○ ○ ○ ○ | | | | | | | | | | |
| 4 | | | BASALT BEDROCK-Gray, hard, fresh, R-4 | SPT-1 | 24 32 30 | 62 | 6 | | | | | Equipment refusal |
| 6 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |

Notes : Boring terminated at a depth of approximately 4 feet below ground surface (bgs). Groundwater was not encountered at the time of drilling. Boring backfilled with bentonite chips on 5/12/22. Approximate elevation from site topographical survey by Northstar surveying, dated 8/16/2022.



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Appendix C: Boring B-5

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Drilling Contractor: Dan J Fischer Excavating, Inc.
 Drilling Method: Solid Stem Auger
 Drilling Equipment: Buck Rogers 160
 Approximate Ground Surface Elevation (ft msl): 64
 Date of Exploration: 5/12/2022

Location of Exploration: See Appendix B
 Logged By: Jake Munsey

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | |
|------------|-------------|--|--|---------------|--------------------|-----------------------|----------------------|----------------------|--------------|---------------|---------|------------------|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Blows per 6 Inches | N ₆₀ value | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | Plastic Limit | | Pocket Pen (tsf) |
| 0 | | CLAY (CL)- Light gray with orange mottling, moist, low plasticity, stiff | Very stiff | SPT-1 | 4 | 15 | 39 | | | | 2 | |
| 2 | SPT-2 | | | 6 | 17 | 46 | | | | 2.5 | | |
| 4 | SPT-3 | | | 6 | 20 | 40 | | | | 2.25 | | |
| 6 | SPT-4 | | | 6 | 25 | 32 | | | | | | |
| 8 | | SILT (ML)- Grayish brown, moist, non plastic, hard | Becomes reddish orange, with sand | SPT-5 | 9 | 38 | 34 | | | | 3 | |
| 10 | SPT-6 | | | 4 | 12 | 35 | | | | | | |
| 12 | | SAND (SP)- Reddish orange, moist, poorly graded, medium dense (Decomposed SANDSTONE) | Becomes wet | SPT-7 | 4 | 11 | 37 | | | | | |
| 14 | SPT-8 | | | 6 | 16 | 38 | | | | | | |
| 16 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | |

Notes : Boring terminated at a depth of approximately 30 feet below ground surface (bgs). Groundwater was not encountered at the time of drilling. Boring backfilled with bentonite chips on 5/12/22. Approximate elevation from site topographical survey by Northstar surveying, dated 8/16/2022.



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Appendix C: Boring B-6

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Location of Exploration: See Appendix B
 Logged By: Jake Munsey

Report Number: 22-113-1
 Drilling Contractor: Dan J Fischer Excavating, Inc.
 Drilling Method: Solid Stem Auger
 Drilling Equipment: Buck Rogers 160
 Approximate Ground Surface Elevation (ft msl): 22
 Date of Exploration: 5/12/2022

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | |
|------------|-------------|-------------------|--|---------------|--------------------|-----------------------|----------------------|----------------------|--------------|---------------|---------|------------------|---|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Blows per 6 Inches | N ₆₀ value | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | Plastic Limit | | Pocket Pen (tsf) | |
| 0 | | | GRAVEL FILL (GW)- Medium brown, dense, (ROAD GRAVEL) | | | | | | | | | | |
| 2 | | | Silty GRAVEL FILL (GM)- Medium brown, moist, well graded, loose | | | | | | | | | | |
| 4 | | | Becomes medium dense | SPT-1 | 5 | 10 | 30 | | | | | | |
| 6 | | | | SPT-2 | 4 | 13 | 31 | | | | | | |
| 8 | | | SILT FILL (ML) - light grayish brown, moist to wet, low plasticity, soft | SPT-3 | 1 | 3 | 40 | | | | 0.25 | | |
| 10 | | | PEAT (PT)- Black, wet, soft | SPT-4 | 1 | 13 | 77 | | | | | | |
| 12 | | | SAND (SP) - Blueish gray, wet, poorly graded, medium dense | | | | | | | | | | Flowing SAND |
| 14 | | | Becomes loose | SPT-5 | 4 | 7 | 20 | | | | | | |
| 20 | | | | | | | | | | | | | No sample collected due to flowing SAND |
| 22 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | |
| 46 | | | | | | | | | | | | | |

Notes : Boring terminated at a depth of approximately 20 feet below ground surface (bgs). Groundwater was estimated to be approximately 11 feet bgs at the time of drilling. Boring backfilled with bentonite chips on 5/12/22. Approximate elevation from site topographical survey by Northstar surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-1

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 11, 2022

Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | |
|------------|-------------|-------------------|--|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|--|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit | |
| -15 | | | ANCIENT LANDSLIDE - semi consolidated, weathered siltstone and basalt cobble clasts, intensely weathered, wet, friable, very soft R0 | | | | | | | | | | Excavation begins into slope above road surface. Probable prehistoric landslide deposits |
| -10 | | | BASALT - rusted, intensely weathered, intensely fractured <1.5", soft R1 | | | | | | | | | | |
| -5 | | | BASALT - dark gray, rust staining on joints and fractures, intensely fractured 2"-4", moderately weathered, moderately hard R3 | | | | | | | | | | |
| -1 | | | | GRAB | | | | 2 | | | | | Approximately elevation of road surface |
| 1 | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 1 foot bgs. Test pit was advanced into the uphill side of the road embankment, hence our exploration begins at a negative depth of 15 feet above the ground surface. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/11/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-2

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 11, 2022

Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | |
|------------|-------------|-------------------|---|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|---------------------------------|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit | |
| 0 | | | TOPSOIL - brown, silty gravel with roots, wet | | | | | | | | | | |
| | | | FILL - gray, crushed basalt gravel | | | | | | | | | | |
| 1 | | | BASALT - gray, slightly weathered, intensely fractured, hard R4 | | | | | | | | | | |
| | | | | | | | | | | | | | Machine refusal at 1.5 feet bgs |

Notes: Test pit terminated at a depth of approximately 1.5 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/11/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-3

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 11, 2022

Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | |
|------------|-------------|-------------------|--|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|---|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit | |
| -9 | | | TOPSOIL - brown silt with roots, wet | | | | | | | | | | |
| -7 | | | CLAYEY SAND (SC) - mottled orange and tan, moist to wet, loose | | | | | | | | | | Probable prehistoric landslide deposits |
| -3 | | | | GRAB 2 | | | | 38 | | | | | |
| 0 | | | | GRAB 1 | | | | 40 | | | | | Approximate elevation of road surface |
| 3 | | | Becomes medium dense with some small <1/8" siltstone fragments | | Mod | | | | | | | | |
| 4 | | | | GRAB 3 | | | | 41 | | | | | |
| 10 | | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 10 feet bgs. Test pit was advanced into the uphill side of the road embankment, hence our exploration begins at a negative depth of 9 feet above the ground surface. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/11/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-4

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 11, 2022

Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | |
|------------|-------------|-------------------|---|--|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|---|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit | |
| 0 | | | TOPSOIL - brown silt with roots, wet | | | 2 | | | | | | | |
| 1 | | | CLAY (CL) - brown, moist, stiff | | | 4 | | | | | | | |
| 2 | | | SILT (ML) - brown, moist to wet with sand and scattered angular basalt gravels, cobbles, and some smaller siltstone fragments | GRAB 1 | | 6 | | 40 | | | | | |
| 3 | | | | | | | 7 | | | | | | Probable prehistoric landslide deposits |
| 4 | | | | | GRAB 2 | | 12 | | | | | | |
| 5 | | | | | | | 7 | | 44 | | | | |
| 6 | | | | | | | 12 | | | | | | |
| 7 | | | | | | | 6 | | | | | | |
| 8 | | | | | | | 6 | | | | | | |
| 9 | | | | lightly consolidated | | | 7 | | | | | | |
| 10 | | | | SILT (ML) - brown, wet, stiff with sand and basalt gravels and cobbles | | | 9 | | | | | | |
| 11 | | | | | | | | 11 | | | | | |
| 12 | | | | | | | 11 | | | | | | |
| 13 | | | | | GRAB 3 | | 12 | | 75 | | | | |
| 14 | | | | | | 11 | | | | | | | |
| 15 | | | | | | 9 | | | | | | | |
| 16 | | | | | | 12 | | | | | | | |

Notes: Test pit terminated at a depth of approximately 13 feet bgs. Groundwater seepage was encountered at 9 ft bgs at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/11/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-5

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon
 Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 11, 2022

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | |
|------------|-------------|-------------------|--|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|---|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit | |
| 0 | | | TOPSOIL - brown silt with roots, wet | | | | | | | | | | |
| 1 | | | | | | | | | | | | | |
| 2 | | | CLAY (CL) - brown, moist to wet with sand and small siltstone fragments | | | | | | | | | | Probable prehistoric landslide deposits |
| 3 | | | | | | | | | | | | | |
| 4 | | | | GRAB 1 | | | | 54 | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | CLAY (CL) - brown, moist to wet with gravel to cobble sized angular basalt fragments and small white flakes of chalk | | | | | | | | | | Probable prehistoric landslide deposits |
| 7 | | | | | | | | | | | | | |
| 8 | | | Some grinding on basalt cobbles | | | | | | | | | | |
| 9 | | | SILTY SAND (SM) - brown, moist to wet, medium dense with gravel and cobble | | | | | | | | | | Probable prehistoric landslide deposits |
| 10 | | | | GRAB 2 | | | | 34 | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | More grinding and more basalt fragments | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 13 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/11/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-6

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon
 Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 11, 2022

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | |
|------------|-------------|-------------------|--|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit |
| 0 | | | TOPSOIL- brown silt with roots, wet | | | | | | | | | |
| 1 | | | SILT (ML) - brown, wet, medium stiff with sand and basalt gravels, cobbles, and boulders | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | | | SILT (ML) - brown, wet, medium stiff with sand | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 6 | | | | GRAB 1 | | | | 88 | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 13 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/11/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-7

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 11, 2022

Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | |
|------------|-------------|-------------------|--|--|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|--|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit | |
| 0 | | | TOPSOIL - brown silt with roots, wet | | | 8 | | | | | | | |
| 1 | | | SILT (ML) - brown, moist, stiff | | | 5 | | | | | | | |
| 2 | | | | | | | 4 | | | | | | |
| 3 | | | | | GRAB 1 | | 4 | | 50 | | | | |
| 4 | | | | | | | 4 | | | | | | |
| 5 | | | | | | | 5 | | | | | | |
| 6 | | | | Some basalt cobbles and boulders present | | | 6 | | | | | | |
| 7 | | | | | | | 11 | | | | | | |
| 8 | | | | Becomes wet, sandy | | | 13 | | | | | | |
| 9 | | | | | | | 50 | | | | | | |
| 10 | | | | | GRAB 2 | | | | 19 | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 12 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/11/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-8

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon
 Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 11, 2022

| Depth (ft) | Water Level | Lithology | | | Sampling Data | | | | | | | Remarks | |
|------------|-------------|-------------------|--|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------------|---------|---|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | Plastic Limit | | |
| 0 | | | TOPSOIL - brown silt with roots, wet | | | | | | | | | | |
| 1 | | | | | | | | | | | | | |
| 2 | | | SILT (ML) - brown, moist with some sand and basalt cobbles and boulders | | | | | | | | | | Probable prehistoric landslide deposits |
| 3 | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | CLAY (CL) - grayish brown with orange mottling with siltstone fragments | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 9 | | | | GRAB 1 | | | | 36 | | | | | |
| 10 | | | SILTSTONE - grayish brown with rust mottling and black weathering, moist, intensely fractured and moderately weathered, very soft R0 | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 11 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/11/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-9

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon
 Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 11, 2022

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | |
|------------|-------------|-------------------|---|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|---|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit | |
| 0 | | | TOPSOIL - brown silt with roots, wet | | | | | | | | | | |
| 1 | | | FILL - brown silty cobble | | | | | | | | | | |
| 2 | | | SILT (ML) - brown, moist, medium stiff to stiff with sand and some basalt cobbles | | | | | | | | | | Probable prehistoric landslide deposits |
| 5 | | | CLAY (CL) - grayish brown with rust mottling, moist to wet, medium stiff with siltstone fragments | | | | | | | | | | |
| 6 | | | SILTSTONE - grayish brown with rust mottling, moist, intensely fractured and moderately weathered, very soft R0 | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 14 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/11/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-10

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 12, 2022

Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

| Depth (ft) | Water Level | Lithology | | | Sampling Data | | | | | | Remarks | |
|------------|-------------|-------------------|---|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit |
| 0 | | | TOPSOIL - brown silt with roots, wet | | | | | | | | | |
| 1 | | | SILTY SAND (SM) - Brown with rust mottling, wet, medium dense | | | | | | | | | |
| 2 | | | | GRAB 1 | | | | 38 | | | | |
| 3 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 5 | | | | | Mod | | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | Becomes more coarse with scattered basalt cobbles | | | | | | | | | |
| 9 | | | SILT (ML) - Brown, moist, medium stiff | | | | | | | | | |
| 10 | | | | GRAB 2 | | | | 68 | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 11 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/12/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-11

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon
 Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 12, 2022

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | |
|------------|-------------|-------------------|---|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|--|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit | |
| 0 | | | TOPSOIL - brown silt with roots, wet | | | 5 | | | | | | | |
| 1 | | | | | | 3 | | | | | | | |
| 2 | | | SILT (ML)- Brown, wet. medium stiff | | | 3 | | | | | | | |
| 3 | | | With basalt cobbles below 3 feet | GRAB 1 | | 4 | | | | | | | |
| 4 | | | | | | 3 | 1.00 | 45 | | | | | |
| 5 | | | | | | 2 | | | | | | | |
| 6 | | | CLAY (CL) - brown, wet, stiff, silty with siltstone fragments and small white flakes of chalk | | | 6 | | | | | | | |
| 7 | | | | | | 7 | | | | | | | |
| 8 | | | | | | 9 | | | | | | | |
| 9 | | | | | | 9 | | | | | | | |
| 10 | | | SILTSTONE - grayish brown with rust mottling, moist, intensely fractured and moderatley weathered, very soft R0 | GRAB 2 | | 9 | | | | | | | |
| 11 | | | | | | 8 | | | | | | | |
| 12 | | | | | | 8 | | | | | | | |
| 13 | | | | | | 10 | | | | | | | |
| 14 | | | | | | 14 | | | | | | | |
| 15 | | | | | | 11 | | | | | | | |
| 16 | | | | | | 11 | | 37 | | | | | |
| | | | | | | 10 | | | | | | | |
| | | | | | | 13 | | | | | | | |
| | | | | | | 29 | | | | | | | |

Notes: Test pit terminated at a depth of approximately 9.5 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/12/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-12

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 12, 2022

Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | |
|------------|-------------|-------------------|--|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|---|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit | |
| 0 | | | TOPSOIL - brown silt with roots, wet | | | | | | | | | | |
| 1 | | | SANDY SILT (ML) - brown with red, tan, and black clasts, wet, medium stiff (landslide deposit) | | | | | | | | | | Probable prehistoric landslide deposits |
| 5 | | | | GRAB 1 | | | | 48 | | | | | |
| 8 | | | CLAYEY GRAVEL (GC) - gray and rust mottled, wet, medium dense with siltstone and basalt clasts | | | | | | | | | | Water seeping slowly at 8.5 feet |
| 9 | | | | GRAB 2 | | | | 33 | | | | | |
| 11 | | | BASALT - rust stained, intensely weathered, intensely fractured | | | | | | | | | | |
| 11 | | | | GRAB 3 | | | | 7 | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 12 feet bgs. Groundwater seepage was encountered at 8.5 ft bgs at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/12/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-13

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon
 Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 12, 2022

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | |
|------------|-------------|--------------------------------|---|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|---|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit | |
| 0 | | [Wavy pattern symbol] | TOPSOIL - brown silt with roots, wet | | | 4 | | | | | | | |
| 1 | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | |
| 3 | | [Vertical line pattern symbol] | SILT (ML) - brown, moist, soft to stiff with some siltstone fragments | | | 3 | | | | | | | Probable prehistoric landslide deposits |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 11 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/12/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-14

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 12, 2022

Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | |
|------------|-------------|-------------------|---|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|---|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit | |
| 0 | | | TOPSOIL - brown silt with roots, wet | | | | | | | | | | |
| 1 | | | | | | | | | | | | | |
| 2 | | | SILT (ML) - brown, moist, soft to stiff with some siltstone fragments | | | | | | | | | | Probable prehistoric landslide deposits |
| 3 | | | SILTY GRAVEL (GM) - tan and orange, moist, dense with siltstone clasts | | | | | | | | | | |
| 4 | | | | GRAB 1 | | | | 30 | | | | | |
| 5 | | | SILTSTONE- Tan and orange with black weathering on joints, intensely fractured and moderately weathered, very soft R0 | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 7 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/12/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-15

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 12, 2022

Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | |
|------------|-------------|-------------------|---|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit |
| 0 | | | TOPSOIL - brown silt with roots, wet | | | | | | | | | |
| 1 | | | | | | | | | | | | |
| 2 | | | SILT (ML) - brown, moist, soft to stiff with some siltstone fragments | | | | | | | | | Probable prehistoric landslide deposits |
| 3 | | | | | | | | | | | | |
| 4 | | | SILTY GRAVEL (GM) - tan and orange, moist, dense with siltstone clasts | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 6 | | | SILTSTONE- Tan and orange with black weathering on joints, intensely fractured and moderately weathered, very soft R0 | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 8 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/12/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-16

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 12, 2022

Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | |
|------------|-------------|-------------------|---|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit |
| 0 | | | TOPSOIL - brown silt with roots, wet | | | | | | | | | |
| 1 | | | | | | | | | | | | |
| 2 | | | SILT (ML) - brown, moist, soft to stiff with some siltstone fragments | | | | | | | | | Probable prehistoric landslide deposits |
| 3 | | | | | | | | | | | | |
| 4 | | | SILTSTONE- Tan and orange with black weathering on joints, intensely fractured and moderatley weathered, very soft R0 | GRAB 1 | | | | 42 | | | | |
| 5 | | | | GRAB 2 | | | | 35 | | | | |
| 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 7 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/12/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-17

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 13, 2022

Location of Exploration: See Appendix B
 Logged By: Jake Munsey, C.E.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | | |
|------------|-------------|-------------------|--|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|--|---|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit | | |
| 0 | | | SILT (ML) - brown, moist, medium stiff, non plastic | | | 13 | | | | | | | | |
| 1 | | | CLAY (CL) - light gray with orange mottling, moist, stiff, low plasticity | | | 17 | | | | | | | | |
| 2 | | | SILTY SAND (SM) - Brown with rust mottling, wet, medium dense, intensely weathered with 6"-8" diameter angular basalt cobbles Becomes more oxidized, reddish brown. | GRAB 1 | | 16 | | 41 | | | | | | |
| 3 | | | | | | 7 | | | | | | | | Probable prehistoric landslide deposits |
| 4 | | | | | | 11 | | | | | | | | |
| 5 | | | | | | 14 | | | | | | | | |
| 6 | | | | | | 10 | | | | | | | | |
| 7 | | | | | | 13 | | | | | | | | |
| 8 | | | | | | 18 | | | | | | | | |
| 9 | | | | | | 26 | | | | | | | | |
| 10 | | | | | GRAB 2 | | 23 | | 33 | | | | | |
| 11 | | | | | | | 23 | | | | | | | |
| 12 | | | | | | 27 | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 10 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/13/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-18

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 13, 2022

Location of Exploration: See Appendix B
 Logged By: Jake Munsey, C.E.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | |
|------------|-------------|-------------------|--|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|-----------------------------|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit |
| 0 | | | SILT (ML) - brown, moist, medium stiff, non plastic | | | | | | | | | |
| 1 | | | SILTSTONE- Olive gray with black weathering along joints, intensely fractured and moderatley weathered, very soft R0 | | | | | | | | | Very hard digging |
| 2 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | Machine refusal at 4.5 feet |
| 5 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 4.5 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/13/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-19

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 13, 2022

Location of Exploration: See Appendix B
 Logged By: Jake Munsey, C.E.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | |
|------------|-------------|-------------------|--|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|-------------------|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit |
| 0 | | | SILT (ML)- Brown, moist, medium stiff, non plastic | | | | | | | | | |
| 1 | | | SILTSTONE- Olive gray with black weathering along joints, intensely fractured and moderatley weathered, very soft R0 | | | | | | | | | Very hard digging |
| 2 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 2 feet bgs. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/13/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-20

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon
 Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 13, 2022

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | | |
|------------|-------------|-------------------|---|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---|--|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit | |
| -4 | | | TOPSOIL - brown silt with roots, wet | | | | | | | | | | |
| -3 | | | CLAY (CL) - very light brownish orange with gray mottling, moist, medium stiff, low plasticity | | | | | | | | | | |
| -1 | | | SILTY SAND (SM) - Brown with rust mottling, moist, medium dense, with 6"-8" diameter angular basalt cobbles, intensely weathered. Some well grounded gray siltstone cobbles | | | | | | | | | | |
| 0 | | | CLAY (CL) - light gray, moist, non plastic, very stiff, with sand and siltstone gravels | GRAB 1 | | 10 | | 35 | | | | Probable prehistoric landslide deposits | |
| 1 | | | | | | 10 | | | | | | | |
| 2 | | | | | | 8 | | | | | | | |
| 3 | | | | | | 6 | | | | | | | |
| 4 | | | | | | 9 | | | | | | | |
| 5 | | | | | | 8 | | | | | | | |
| 6 | | | | GRAB 2 | | 8 | | 34 | | | | | |
| 7 | | | | | | 8 | | | | | | | |
| 8 | | | | | | 8 | | | | | | | |
| 9 | | | | | | 13 | | | | | | | |
| 10 | | | | GRAB 3 | | 15 | | | | | | | |
| | | | | | | 19 | | | | | | | |
| | | | | | | 25 | | | | | | | |
| | | | | | | 24 | | | | | | | |
| | | | | | | 26 | | | | | | | |
| | | | | | | 26 | | | | | | | |
| | | | | | | 26 | | | | | | | |
| | | | | | | 26 | | | | | | | |

Notes: Test pit terminated at a depth of approximately 10 feet bgs. Test pit was advanced into the uphill side of the road embankment, hence our exploration begins at a negative depth of 4 feet above the ground surface. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/13/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-21

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 12, 2022

Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | |
|------------|-------------|-------------------|---|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit |
| 0 | | | TOPSOIL - brown, silty gravel with roots, wet | | | | | | | | | |
| 1 | | | BASALT - dark gray with rust staining, intensely weathered, intensely fractured, moderately hard R3 | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 2 feet bgs due to digging refusal. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/12/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.



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Appendix C: Test Pit TP-22

Sheet 1 of 1

Client: Oregon Treehouse Partners
 Project: Tierra Del Mar Development
 Site Address: Tax Lot 600, Tierra Del Mar, Oregon

Report Number: 22-113-1
 Excavation Contractor: Coastway
 Excavation Method: CAT 315 D Excavator
 Excavation Equipment: 2-foot wide smooth bucket
 Approximate Ground Surface Elevation (ft msl):
 Date of Exploration: May 12, 2022

Location of Exploration: See Appendix B
 Logged By: Ken Andrieu, R.G.

| Depth (ft) | Water Level | Lithology | | Sampling Data | | | | | | | Remarks | |
|------------|-------------|-------------------|---|---------------|----------------|--------------------------------|-------------------|----------------------|----------------------|--------------|---------|---------------|
| | | Lithologic Symbol | Geologic Description of Soil and Rock Strata | Sample Number | Digging Effort | Drive Probe Blows Per 6 Inches | Pocket Pen. (tsf) | Moisture Content (%) | % Passing #200 Sieve | Liquid Limit | | Plastic Limit |
| 0 | | | TOPSOIL - brown, silty gravel with roots, wet | | | | | | | | | |
| 1 | | | SILTY GRAVEL (GM) - brown, moist, loose, angular basalt cobbles with some siltstone cobbles below 5 feet, old basalt talus or possible fill | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |

Notes: Test pit terminated at a depth of approximately 7 feet bgs due to caving. Groundwater seepage was not encountered at the time of our exploration. Test pit loosely backfilled with excavated soil on 5/12/22. Approximate elevation from site topographical survey by Northstar Surveying, dated 8/16/2022.

APPENDIX D: SOIL CLASSIFICATION LEGEND

| APPARENT CONSISTENCY OF COHESIVE SOILS (PECK, HANSON & THORNBURN 1974, AASHTO 1988) | | | | |
|---|-----------------------------------|---|---------------|---|
| Descriptor | SPT N ₆₀ (blows/foot)* | Pocket Penetrometer, Q _p (tsf) | Torvane (tsf) | Field Approximation |
| Very Soft | < 2 | < 0.25 | < 0.12 | Easily penetrated several inches by fist |
| Soft | 2 – 4 | 0.25 – 0.50 | 0.12 – 0.25 | Easily penetrated several inches by thumb |
| Medium Stiff | 5 – 8 | 0.50 – 1.0 | 0.25 – 0.50 | Penetrated several inches by thumb w/moderate effort |
| Stiff | 9 – 15 | 1.0 – 2.0 | 0.50 – 1.0 | Readily indented by thumbnail |
| Very Stiff | 16 – 30 | 2.0 – 4.0 | 1.0 – 2.0 | Indented by thumb but penetrated only with great effort |
| Hard | > 30 | > 4.0 | > 2.0 | Indented by thumbnail with difficulty |

* Using SPT N₆₀ is considered a crude approximation for cohesive soils.

| APPARENT DENSITY OF COHESIONLESS SOILS (AASHTO 1988) | |
|--|--|
| Descriptor | SPT N ₆₀ Value (blows/foot) |
| Very Loose | 0 – 4 |
| Loose | 5 – 10 |
| Medium Dense | 11 – 30 |
| Dense | 31 – 50 |
| Very Dense | > 50 |

| MOISTURE (ASTM D2488-06) | |
|--------------------------|---|
| Descriptor | Criteria |
| Dry | Absence of moisture, dusty, dry to the touch, well below optimum moisture content (per ASTM D698 or D1557) |
| Moist | Damp but no visible water |
| Wet | Visible free water, usually soil is below water table, well above optimum moisture content (per ASTM D698 or D1557) |

| PERCENT OR PROPORTION OF SOILS (ASTM D2488-06) | |
|---|--|
| Descriptor | Criteria |
| Trace | Particles are present but estimated < 5% |
| Few | 5 – 10% |
| Little | 15 – 25% |
| Some | 30 – 45% |
| Mostly | 50 – 100% |
| Percentages are estimated to nearest 5% in the field. Use "about" unless percentages are based on laboratory testing. | |

| SOIL PARTICLE SIZE (ASTM D2488-06) | |
|------------------------------------|--|
| Descriptor | Size |
| Boulder | > 12 inches |
| Cobble | 3 to 12 inches |
| Gravel - Coarse Fine | ¾ inch to 3 inches No. 4 sieve to ¾ inch |
| Sand - Coarse Medium Fine | No. 10 to No. 4 sieve (4.75mm) No. 40 to No. 10 sieve (2mm) No. 200 to No. 40 sieve (.425mm) |
| Silt and Clay ("fines") | Passing No. 200 sieve (0.075mm) |

| UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2488) | | | |
|---|---|--|--|
| Major Division | | Group Symbol | Description |
| Coarse Grained Soils (more than 50% retained on #200 sieve) | Gravel (50% or more retained on No. 4 sieve) | Clean Gravel | GW Well-graded gravels and gravel-sand mixtures, little or no fines |
| | | Gravel with fines | GP Poorly graded gravels and gravel-sand mixtures, little or no fines |
| | | | GM Silty gravels and gravel-sand-silt mixtures |
| | Sand (> 50% passing No. 4 sieve) | Clean sand | GC Clayey gravels and gravel-sand-clay mixtures |
| | | | SW Well-graded sands and gravelly sands, little or no fines |
| | | | SP Poorly-graded sands and gravelly sands, little or no fines |
| Fine Grained Soils (50% or more passing #200 sieve) | Silt and Clay (liquid limit < 50) | SM Silty sands and sand-silt mixtures | |
| | | SC Clayey sands and sand-clay mixtures | |
| | | ML Inorganic silts, rock flour and clayey silts | |
| | | CL Inorganic clays of low-medium plasticity, gravelly, sandy & lean clays | |
| | | OL Organic silts and organic silty clays of low plasticity | |
| Silt and Clay (liquid limit > 50) | Silt and Clay (liquid limit > 50) | MH Inorganic silts and clayey silts | |
| | | CH Inorganic clays or high plasticity, fat clays | |
| | | OH Organic clays of medium to high plasticity | |
| Highly Organic Soils | | PT | Peat, muck and other highly organic soils |



| GRAPHIC SYMBOL LEGEND | | |
|-----------------------|---|--|
| GRAB | ☒ | Grab sample |
| SPT | ■ | Standard Penetration Test (2" OD), ASTM D1586 |
| ST | ▨ | Shelby Tube, ASTM D1587 (pushed) |
| DM | ▧ | Dames and Moore ring sampler (3.25" OD and 140-pound hammer) |
| CORE | ▩ | Rock coring |

APPENDIX D: ROCK CLASSIFICATION LEGEND

| WEATHERING DESCRIPTORS FOR INTACT ROCK (USB, 2001) | | | | | | |
|--|---|--|--|--|--|--|
| Descriptor | Chemical Weathering-Discoloration-Oxidation | | Mechanical Weathering and Grain Boundary Conditions | Texture and Solutioning | | General Characteristics |
| | Body of Rock | Fracture Surfaces | | Texture | Solutioning | |
| Fresh | No discoloration, not oxidized | No discoloration or oxidation | No separation, intact (tight) | No change | No solutioning | Hammer rings when crystalline rocks are struck |
| Slightly Weathered | Discoloration or oxidation limited to surface or short distance from fractures; some feldspar crystals are dull | Minor or complete discoloration or oxidation of most surfaces | No visible separation, intact (tight) | Preserved | Minor leaching of some soluble minerals may be noted | Hammer rings when crystalline rocks are struck; body of rock not weakened |
| Moderately Weathered | Discoloration or oxidation extends from fractures usually throughout; Fe-Mg minerals are "rusty," feldspar crystals are "cloudy" | All fracture surfaces are discolored or oxidized | Partial separation of boundaries visible | Generally preserved | Soluble minerals may be mostly leached | Hammer does not ring when rock is struck; body of rock is slightly weakened |
| Intensely Weathered | Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent or chemical alteration produces in-situ disaggregation | All fracture surfaces are discolored or oxidized; surfaces are friable | Partial separation; rock is friable; granitics are disaggregated in semi-arid conditions | Altered by chemical disaggregation such as via hydration or argillation | Leaching of soluble minerals may be complete | Dull sound when struck with hammer; usually can be broken with moderate to heavy manual pressure or by light hammer blow; rock is significantly weakened |
| Decomposed | Discolored or oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspars and Fe-Mg minerals are completely altered to clay | | Complete separation of grain boundaries (disaggregation) | Resembles a soil; partial or complete remnant rock structure may be preserved; leaching of soluble minerals usually complete | | Can be granulated by hand; resistant minerals such as quartz may be present as "stringers" or "dikes" |

| RQD DESCRIPTION (ASTM D6032-96) | |
|---------------------------------|-------------|
| RQD % | Description |
| 0-25 | Very poor |
| 25-50 | Poor |
| 50-75 | Fair |
| 75-90 | Good |
| 90-100 | Excellent |

| BEDDING SPACING (modified USB, 2001) | |
|--------------------------------------|------------------------------|
| Descriptor | Thickness or Spacing |
| Massive | > 10 feet |
| Very thickly bedded | 3 to 10 feet |
| Thickly bedded | 1 to 3 feet |
| Moderately bedded | 3-5/8 inches to 1 foot |
| Thinly Bedded | 1-1/4 inches to 3-5/8 inches |
| Very thinly bedded | 3/8 inch to 1-1/4 inches |
| Laminated | < 3/8 inch |

| CORE RECOVERY CALCULATION (%) |
|---|
| = $\frac{\text{length of recovered core pieces}}{\text{total length of core run}} \times 100\%$ |

| RQD CALCULATION (%) |
|--|
| = $\frac{\text{length of intact core pieces} > 4 \text{ in}}{\text{total length of core run (inches)}} \times 100\%$ |



| ROCK HARDNESS (ISRM, 1978) | | | |
|----------------------------|-------|---|-------------------------------------|
| Descriptor | Grade | Criteria | Uniaxial Compressive Strength (psi) |
| Very soft | R0 | Indented by thumbnail | <100 |
| Soft | R1 | Crumbles under firm blows with geological hammer. Can be peeled with a pocket knife. | 100-1,000 |
| Moderately soft | R2 | Can be peeled with a pocket knife with difficulty. Shallow indentations made by firm blow with geological hammer. | 1,000-4,000 |
| Moderately hard | R3 | Cannot be scraped or peeled with pocket knife. Can be fractured with a single blow of geological hammer. | 4,000-8,000 |
| Hard | R4 | Requires more than one blow of geological hammer to fracture it. | 8,000-16,000 |
| Very hard | R5 | Requires many blows of geological hammer to fracture it. | 16,000-36,000 |
| Extremely hard | R6 | Can only be chipped with geological hammer. | >36,000 |

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

A complete report and signed report cover form, along with [applicable review fee](#), are required before a report review timeline can be initiated by the Department of State Lands. All applicants will receive an emailed confirmation that includes the report's unique file number and other information.

Ways to submit report:

- ❖ **Under 50MB** - A single unlocked PDF can be emailed to: wetland.delineation@dsl.oregon.gov.
- ❖ **50MB or larger** - A single unlocked PDF can be uploaded to [DSL's Box.com](#) website. After upload notify DSL by email at: wetland.delineation@dsl.oregon.gov.
- ❖ **OR** a hard copy of the unbound report and signed cover form can be mailed to: Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279.

Ways to pay review fee:

- ❖ By credit card on [DSL's epayment portal](#) after receiving the unique file number from DSL's emailed confirmation.
- ❖ By check payable to the Oregon Department of State Lands attached to the unbound mailed hardcopy **OR** attached to the complete signed cover form if report submitted electronically.

Contact and Authorization Information

| | |
|--|---|
| <input checked="" type="checkbox"/> Applicant <input checked="" type="checkbox"/> Owner Name, Firm and Address: Oregon TreeHouse Partners LLC | Business phone # Mobile phone # (optional) E-mail: |
| <input checked="" type="checkbox"/> Authorized Legal Agent, Name and Address (if different): Kevin Gindlesperger 1276 NW 107th Ave. Portland, OR 97229 | Business phone # (503) 969-2158 Mobile phone # (optional) E-mail: kevingindy@yahoo.com |
| I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact. | |
| Typed/Printed Name: <u>Kevin Gindlesperger</u> Signature: Date: <u>8/27/2022</u> Special instructions regarding site access: _____ | |

Project and Site Information

| | |
|---|--|
| Project Name: Oregon TreeHouse WD | Latitude: 45.24017 Longitude: 123.96160 decimal degree - centroid of site or start & end points of linear project |
| Proposed Use: Development for commercial camping | Tax Map # 04S10W06 |
| | Tax Lot(s) 600 |
| Project Street Address (or other descriptive location): From SandLake Road take Floyd Avenue. Property boundary begins at the gate. 6080 Floyd Avenue. | Tax Map # _____ |
| | Tax Lot(s) _____ |
| City: Tierra del Mar County: Tillamook | Township 04S Range 10W Section 06 QQ Use separate sheet for additional tax and location information |
| | Waterway: Sand Lake River Mile: 2.4 |

Wetland Delineation Information

| | |
|---|---|
| Wetland Consultant Name, Firm and Address: Christine McDonald 2901 Brayton Road Pullman, WA 99163 | Phone # (503) 801-2243 Mobile phone # (if applicable) E-mail: Contactchris100@gmail.com |
| The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge. | |
| Consultant Signature: Christine McDonald Date: 08/22/2022 | |

Primary Contact for report review and site access is Consultant Applicant/Owner Authorized Agent

Wetland/Waters Present? Yes No Study Area size: 18.6 Total Wetland Acreage: 1.8500

Check Applicable Boxes Below

| | |
|---|--|
| <input type="checkbox"/> R-F permit application submitted | <input checked="" type="checkbox"/> Fee payment submitted \$ <u>500</u> |
| <input type="checkbox"/> Mitigation bank site | <input type="checkbox"/> Resubmittal of rejected report (\$100) |
| <input type="checkbox"/> EFSC/ODOE Proj. Mgr: _____ | <input type="checkbox"/> Request for Reissuance. See eligibility criteria. (no fee) |
| <input type="checkbox"/> Wetland restoration/enhancement project (not mitigation) | DSL # _____ Expiration date _____ |
| <input checked="" type="checkbox"/> Previous delineation/application on parcel If known, previous DSL # <u>WD2008-0525</u> | <input type="checkbox"/> LWI shows wetlands or waters on parcel Wetland ID code _____ |

For Office Use Only

| | | |
|--|-----------------------------------|---------------------------|
| DSL Reviewer: <u>DE</u> | Fee Paid Date: ____ / ____ / ____ | DSL WD # <u>2022-0477</u> |
| Date Delineation Received: <u>08 / 29 / 2022</u> | | DSL App.# _____ |

1.0 Landscape Setting and Land Use (previous and current) OAR141-090-0035 (7) (a)

The 18.6-acre study area is located in Tierra del Mar, Tillamook County, Oregon and encompasses the western third of tax lot 600 map 4S-10-06 (see Figure 1 and 2 and 6a). The study area is located east of Sand Lake Road in unincorporated Tierra del Mar. The lot is bounded to the north, south and west by undeveloped forest land and a residential area to the west. The Pacific Ocean is approximately .2 mile to the west.

The land surface varies from the lowland dune terrace to mountain side slopes ranging in elevation from 18-250 feet (NAD 88). Within the lowland terraces, the Natural Resources Conservation Service (NRCS) has mapped the Waldport fine sand, 0-5 percent slopes (9B) and the Haceta fine sand, 0-3 percent slopes. The Waldport is a non-wetland soil formed in sandy eolian material. According to the NRCS, inclusions of Haceta may be found within depressions or swales. The Haceta is a hydric soil. NRCS has mapped the well-drained Klootchie-Necanicum complex, 30-60 percent slopes (20E) on the mountain slopes.

Beltz Creek meanders through the lowland dune terrace. The braided stream flows northerly through a broad swale. Sand Lake estuary is 2.4 miles to the northwest. On the mountain slope, a perennial stream with a side channel dissects the study area. The stream flows through an abandoned quarry before entering the mainstem of Beltz Creek. The removal of rock on the steep slope has created a waterfall directly above the quarry.

Vegetation within the study area is composed of undisturbed forested wetland and forestland on the hillslopes. Vascular plant species encountered within the study area or mentioned in this report are included in Table 1.

Table 1. List of vascular plants observed within the study area, 2022.

| Scientific Name | Common Name | Indicator Status | Native, Non-native, or Invasive* |
|------------------------------|--------------------------|------------------|----------------------------------|
| <i>Acer circinatum</i> | Vine Maple | FAC | N |
| <i>Alnus rubra</i> | Red Alder | FAC | N |
| <i>Athyrium filix-femina</i> | Lady Fern | FAC | N |
| <i>Blechnum spicant</i> | Deer Fern | FAC | N |
| <i>Cardamine angulata</i> | Seaside Bittercress | FACW | N |
| <i>Carex obnupta</i> | Slough Sedge | OBL | N |
| <i>Claytonia sibirica</i> | Siberian Springbeauty | FAC | N |
| <i>Dryopteris expansa</i> | Spreading Woodfern | FACW | N |
| <i>Frangula purshiana</i> | Cascara | FAC | N |
| <i>Gaultheria shallon</i> | Salal | FACU | N |
| <i>Glyceria elata</i> | Tall Mannagrass | FACW | N |
| <i>Holcus lanatus</i> | Common Velvetgrass | FAC | NN |
| <i>Lonicera involucrata</i> | Black Twinberry | FAC | N |
| <i>Lotus corniculatus</i> | Birds-foot Trefoil | FAC | NN |
| <i>Lysichiton americanus</i> | Skunk Cabbage | OBL | N |
| <i>Maianthemum dilatatum</i> | False Lily-of-the-valley | FAC | N |
| <i>Malus fusca</i> | Pacific Crabapple | FACW | N |

| Scientific Name | Common Name | Indicator Status | Native, Non-native, or Invasive* |
|---------------------------------|--------------------------|------------------|----------------------------------|
| <i>Mimulus dentatus</i> | Coastal Monkeyflower | OBL | N |
| <i>Oenanthe sarmentosa</i> | Pacific Water Parsley | OBL | N |
| <i>Picea sitchensis</i> | Sitka spruce | FAC | N |
| <i>Polypodium scolieri</i> | Leathery Polypody | FACU | N |
| <i>Polystichum munitum</i> | Sword Fern | FACU | N |
| <i>Pteridium aquilinum</i> | Bracken Fern | FACU | N |
| <i>Ranunculus repens</i> | Creeping Buttercup | FAC | NN |
| <i>Ribes bracteosum</i> | California Black Currant | FAC | N |
| <i>Rubus armeniacus</i> | Himalayan Blackberry | FACU | I |
| <i>Rubus spectabilis</i> | Salmonberry | FAC | N |
| <i>Rubus ursinus</i> | California Blackberry | FACU | N |
| <i>Salix hookeriana</i> | Hooker's Willow | FACW | N |
| <i>Sambucus racemosa</i> | Red Elderberry | FACU | N |
| <i>Senecio minimus</i> | Coastal Burnweed | FACU | NN |
| <i>Sonchus asper</i> | Spiny Sowthistle | FACU | NN |
| <i>Spiraea douglasii</i> | Douglas Spiraea | FACW | N |
| <i>Stachys mexicana</i> | Mexican Hedgenettle | FACW | N |
| <i>Streptopus amplexifolius</i> | Claspleaf twistedstalk | FAC | N |
| <i>Tiarella trifoliata</i> | Three Leaf Foamflower | FAC | N |
| <i>Tsuga heterophylla</i> | Western Hemlock | FACU | N |
| <i>Vaccinium ovatum</i> | Evergreen Blueberry | UPL | N |
| <i>Vacciniuym parvifolium</i> | Red Huckleberry | FACU | N |

This is not meant to be a complete plant list of the study area.

Previous and current land uses

The land is currently in wetland and forestland. A mature forest, the pristine nature of the wetlands and streams, and a mild climate provide a diversity of habitat for wildlife. An unimproved forest road leads to an abandoned rock quarry before continuing up the mountain slope. Landowner goals are to maintain the pristine nature of the property and develop the lot for commercial camping sites.

2.0 Site Alterations OAR141-090-0035 (7) (c)

The quarry and the forest road have altered the landscape. From Floyd Avenue the forest road crosses Beltz Creek. Two culverts were installed at the Beltz Creek crossing and another 12" culvert mid slope below the quarry. The unimproved road continues up the hill to breathtaking views of the coastline. Google Earth historical imagery shows road and quarry activity beginning between 2005 and 2011. The quarry has been abandoned and the road needs repair and maintenance. Quarry operations removed overlying soil and rock and altered groundwater flow patterns. All these activities are older than five years and therefore circumstances were considered normal.

3.0. Precipitation Data and Analysis OAR141-090-0035 (7)(i)

Climate data from the Cloverdale AgACIS Station (<http://agacis.rcc-acis.org/?fips=41057>) was used for this study and is summarized in Table 2.

Table 2. AGACIS Cloverdale Observed Precipitation for the dates of fieldwork and for the Water Year October 2021-April 2022

| Observed Precipitation | | | | | |
|------------------------|---------------------|---------------------|--------------------------|-------------------------|------------------------|
| Date of Field Visit | Date of Visit (.in) | 2 Weeks Prior (.in) | Water year to Date (in.) | Normal Water Year (in.) | % of Normal Water Year |
| May 21, 2022 | 0 | 4.19 | 74.39 | 66.1 | +12% |
| May 22, 2022 | 0 | 3.81 | 74.39 | 66.1 | +12% |

Table 3 compares the 2022 data with the WETS data (1971-2000) using the Direct Antecedent Rainfall Evaluation Method (DAREM). For this study the climatic/hydrologic conditions were considered typical for this time of year even though April and May precipitation were wetter than normal.

Table 3. Monthly precipitation recorded by AgACIS for Cloverdale, Oregon compared with WETS data for Cloverdale, Oregon (351682) using DAREM

Table 2. Assessing Rainfall for the Preceding 3-Month Period)
Direct Antecedent Rainfall Evaluation Method (DAREM)

| | Prior Month Name | WETS Rainfall Percentile | | Measured Rainfall | Condition* Dry, Wet, Normal | Condition Value (1=dry, 2=normal, or 3=wet) | Month weight | Multiply Previous two columns |
|---|------------------|--------------------------|-------|-------------------|--------------------------------|--|--------------|-------------------------------|
| | | 30th | 70th | | | | | |
| 1st (most recent)+A6 | April | 4.24 | 6.97 | 10.46 | WET | 3 | 3 | 9 |
| 2nd | March | 7.52 | 10.9 | 6.22 | DRY | 1 | 2 | 2 |
| 3rd | February | 6.5 | 11.54 | 6.85 | DRY | 1 | 1 | 1 |
| Sum | | | | | | | | 12 |
| Rainfall of prior period was: drier than normal (sum is 6-9), normal (sum is 10-14), wetter than normal (sum is 15-18) | | | | | | | | Normal, standard met |

WETS Static Cloverdale Oregon 351682
Measured R Cloverdale Oregon 351682

* Normal: measured within WETS normal range
Dry: measured below WETS normal range
Wet: measured above WETS normal range

4.0. Methods (site-specific methods for field investigation, determining wetland boundaries and geographic extent of other waters) OAR141-090-0030, OAR141-090-0035 (7)(d-e), (g-h), (16)(a-b), (f), (d) or (g), (17), & (19-20)

Prior to collecting field data Christine McDonald reviewed NRCS Web Soil Survey (Figure 1), the National Wetland Inventory (Figure 4) and the 2008 Wold Consulting Wetland Determination Report. The Wold Report was not approved by DSL and focused more on the County ROW. The focus of this study was the western third of the 52-acre lot where the first phase of development is planned. Field investigation was conducted on May 21 and 22, 2022. Christine McDonald

evaluated the site using the Corps of Engineers *Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (May 2010) supplement.

The Corps of Engineers 2010 manual provides technical criteria, field indicators, and recommended procedures to be used in determining whether an area is a jurisdictional wetland. For wetlands to exist, there must be a prevalence of hydrophytic vegetation, hydric soils, and wetland hydrology. Under normal circumstances, all three parameters must be present to satisfy the criteria for jurisdictional wetlands.

Hydric Soils

A hydric soil is a soil that remains wet long enough during the growing season to alter physical (redoximorphic) features of the soil. Due to saturation, flooding, or ponding, soils develop anaerobic conditions. This oxygen-deficient environment favors the growth and regeneration of hydrophytic vegetation. Soil color becomes altered as iron is reduced to a mobile form. Wetland conditions also slow down the decomposition of organic material, thereby causing soil color to be very dark with a low soil chroma, and high organic carbon content. The wetland scientist analyzed soil collected from more than 60 soil pits by examining texture, moisture content, color, redoximorphic features, and structure. Because ground water filled the pit, the soil structure, color, and presence of redoximorphic features in the lowland wetland were not always discernable.

Hydrophytic Vegetation

Hydrophytic vegetation occurs in soils that are saturated for extended periods during the growing season and have adapted to wet soil conditions. More than 50% of the species must have a wetland indicator status of obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC). Wetland scientists estimated vegetation cover visually at each sample point, identified all vascular plant species, and recorded the indicator status for each plant species from national wetland indicator lists. The Dominance or Prevalence Test was used to determine hydrophytic vegetation presence. The 2016 U.S. Army Corps of Engineers Plant List for the State of Oregon was used for this study. Aerial photography was used to estimate the percentage of the PFOC and PSSC mosaic in wetland A and B.

Wetland Hydrology

Indications of wetland hydrology may include drainage patterns, sediment deposits, hydrogen sulfide odor, watermarks, oxidized root zones, saturation, high water table, or inundation. Wetland hydrology affects soil and vegetation by inundating soils or saturating soils to the surface for a significant length of time (5-12.5%) during the growing season. The contribution of coastal fog drip or groundwater to wetland hydrology is unavailable. Fog drip may be contributing to wetland hydrology in the late summer months when coastal fog is frequent. Precipitation over the previous three months and the overall trend for the water year were taken into consideration when evaluating indicators for wetland hydrology.

Paired sample plots along either side of the wetland boundary substantiate the jurisdictional boundary. Eighteen sample plots document wetlands and non-wetlands within the study area. Wetland Determination data forms can be found in Appendix A.

The methods for the Ordinary High-Water Line (OHWL) can be found in Appendix B.

5.0. Description of All Wetlands and Other Non-Wetland Waters (their characteristics and boundaries, e.g. whether they extend offsite) OAR141-090-0035 (2), (7)(b), & (17)

Within the 18.6-acre study area Palustrine Forested Seasonally Flooded (PFOC) wetlands and Palustrine Shrub-Shrub Seasonally Flooded (PSSC) wetlands were mapped. The OHWL for Stream S1 is 567 feet and S2 is 91 feet in length (See Figure 6). Table 4 summarizes wetlands within the study area. A description of the streams can be found in Appendix B.

Table 4. Summary of Wetlands Found Within the Study Area

| Wetland | Area (acres) | Cowardin/HGM | Comments |
|---------|--------------|-----------------------------|---|
| A | .6 | PFOC, Flats/PSSC, Flats-RFT | South of Floyd Avenue, Vegetation Mosaic of 45% PFOC and 55% PSSC wetland |
| B | 1.15 | PFOC, Flats/PSSC, Flats-RFT | North of Floyd Avenue, Vegetation Mosaic of 45% PFOC and 55% PSSC |
| C | .03 | PFOC Slope | Alluvial floodplain bordering S1 stream |
| D | .03 | PSSC, Slope | At the Quarry |
| Total | 1.8 | | |

Wetlands A and B are within the lowland dune terrace. The vegetation patterns of forest and scrub-shrub freshwater wetland are too small to map out individually and create a mosaic of vegetation. Beltz Creek flows through the wetlands as a braided channel centered along the eastern side of the wetland floodplain and is dominated by species associated with Palustrine Shrub-Shrub Seasonally Flooded (PSSC) wetland. Black Twinberry, Hooker’s Willow, and Salmonberry are common. The Palustrine Forested Seasonally Flooded, Flats wetland is dominated by Red Alder, Sitka Spruce and Hookers Willow. Mature Sitka Spruce is more common along the wetland boundary and within scattered islands of the Beltz Creek channel. Skunk Cabbage, Water Parsley, and Slough Sedge dominant the herbaceous stratum of the moaic. Himalayan Blackberry was found along the perimeter of the road crossing. Wetlands extend off-site to the north, south and west.

The soils within the wetland are typical of dune swales with sandy substrates and high organic matter content. The soils have a thick organic mat over fine sand, loamy or mucky substrates. Within the soil matrix wetland indicators started within 6 inches of the mineral surface as Sandy Redox (S5), Sandy Mucky Mineral (S1) or a depleted matrix (F3). Wetland soils were most typical of the Haceta which is a hydric soil inclusion of the Waldport fine sand. Hydrologic indicators within the wetlands include geomorphic position, seasonal creek overflow, high water table, hillside drainage and seepage, and saturation. The source of hydrology is groundwater, seepage, seasonal stream flow, direct precipitation, and runoff.

Wetland C is within the alluvial terrace of the S1 stream. The overstory is dominated by Red Alder, and Sitka Spruce. California Black Current and Salmonberry are in the understory. Within the herbaceous stratum Skunk Cabbage, Water Parsley, and Slough Sedge dominant. Soils are gravelly with loamy substrate and met the depleted matrix (F6) criteria for hydric soils. Hydrologic indicators within the wetlands include geomorphic position, seasonal creek overflow, high water table, hillside drainage and seepage. The source of hydrology is groundwater, seasonal stream flow, and precipitation. The wetlands extend offsite to the north and west.

Wetland D The wetland is a remnant of the site disturbance from quarry operations. The shallow soils and impermeable bedrock are two distinguishing characteristics creating site conditions for this wetland to be present. Depth to bedrock is 10-18 inches. Seeps along the perimeter of the old quarry, surface water, runoff and precipitation are providing the hydrology. Soils are shallow, very to extremely gravelly silt loams and have redox features starting within 10 inches of the soil surface. More recent disturbance from equipment has created ruts and encouraged more non-native species. Where trees have re-established, Red Alder is present. The shrub stratum is dominated by Himalayan Blackberry, Douglas Spiraea and Red Alder saplings. The herbaceous stratum is dominated by a variety of non-native grasses, and various forbs such as Common Velvetgrass, Spiny Sowthistle, and Slough Sedge.

Description of Non-Wetlands

Soils are very deep to very deep well drained soils formed in colluvium from volcanic rock on mountain slopes. Slopes are 30-60%+ and relief is typically flat or convex. The overstory is dominated by mature Western Hemlock, Sitka Spruce and Red Alder. The shrub layer is dominated by Salal, Evergreen Blueberry, Red Huckleberry, Red Elderberry, and Salmonberry. Within the herbaceous stratum Swordfern, False Lily-of-the-valley, and Ladyfern are dominant. The non-wetlands at the quarry and forest roads had lower tree cover with Himalayan Blackberry in the understory and a dominance of non-native herbs and grasses such as Spiny Sowthistle, Sweet Vernalgrass and Velvetgrass.

The soils are typical of the Necanicum or Klootchie. Non-wetland soils in the quarry were a result of past and atypically shallow to moderately deep. Hydrology was observed in the spring growing season when groundwater levels could be measured. On the day of the site visit, hydrologic indicators were not evident in the upper 12 inches of soil.

6.0 Deviation from LWI or NWI (if any, wetland determination data or explanation required.) *OAR141-090-0035 (16)(e)*

A Local Wetland Inventory (LWI) does not exist for Tierra del Mar. The National Wetlands Inventory (NWI) mapped PFOC wetlands within the lowland swale of the study area (Figure 4). This study is consistent with the mapping of the NWI within the lowland swale. The NWI was done from aerial photography with little ground truthing and lacks the detail needed to map the quarry wetland.

7.0 Mapping Method (including mapping precision estimate) *OAR141-090-0035 (7)(f), (11), (12), (13), (18), & (22)*

Christine McDonald flagged sample points with yellow pin flags. The wetland boundary was flagged with blue flagging and blue pin flags. Where indicated on Figure 6, the OHWL was marked with blue and white striped flagging. The centerline of Beltz Creek and the upper end of the S1 stream were estimated using field observations, aerial imagery. They do not meet the DSL mapping precision standard.

The study area boundary and sample points were then professionally land surveyed by NorthStar Survey. A Trimble R-12 GNSS system with a horizontal accuracy of 8 mm+1ppmRMS and

horizontal accuracy 15 mm+1ppmsRMS, and a Trimble S5 total station EDM accuracy 1.0 mm+2ppms prism and 2.0mm+2ppm DR was used for the land survey.

8.0 Additional Information (i.e., if needed to establish state jurisdiction) *OAR141-085-0015 (1-7), OAR141-090-0030 (2), OAR141-090-0035 (6)(c), (16)(c), & (21)*

According to OFDW there are no fish surveys on Beltz Creek or its tributaries. Resident cutthroat trout are likely present. To the north, coho salmon have been observed in Reneke Creek however it is unknown if coho are present in the Beltz Creek tributaries.

9.0 Results and Conclusions of the Investigation *OAR141-090-0035 (7)(j)*

On May 21 and 22, 2022, 1.89 acres of PFOC and PSSC wetland and waterways were mapped within the 18.6-acre study area. Wetlands extend offsite to the north, south, and west. The OHWL of 658 feet of mountain streams S1 and S2 were mapped as part of this study. The stream extends off-site to the east and west.

10.0 Required Disclaimer *OAR141-090-0035 (7)(k)*

This report documents the investigation, best professional judgment, and conclusions of the investigators. It is correct and complete to the best of our knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with OAR 141-090-0005 through 141-090-0055.

References

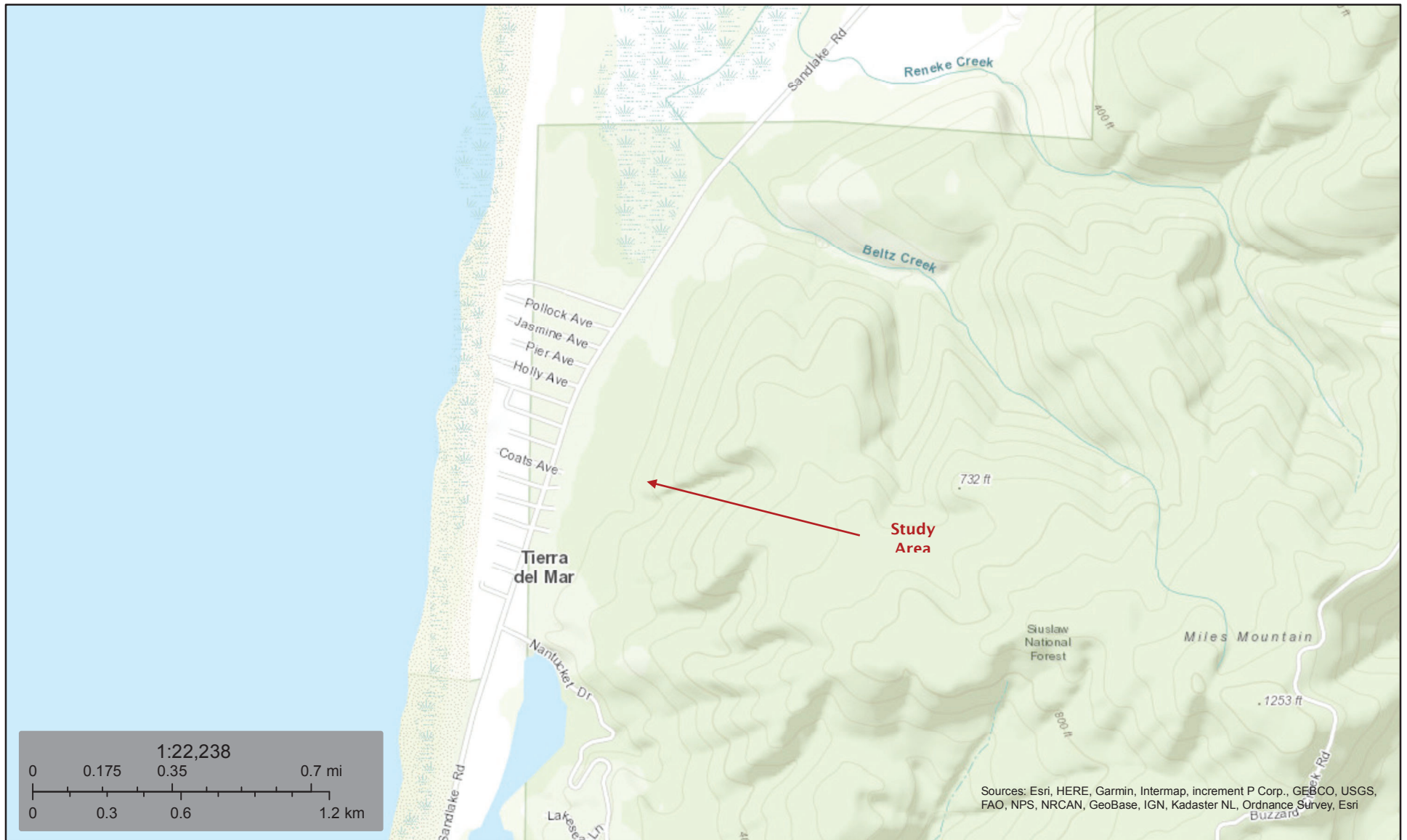
- Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region (May 2010), U. S. Army Corps of Engineer Waterways Experiment Station, Vicksburg, MS.
- NRCS National Water and Climate Center WETS data available online at <http://www.wcc.nrcs.usda.gov/climate/wetlands.htm>
- NRCS Wetland Climate Evaluation Database (AgACIS <http://agacis.rcc-acis.org/?fips=41057>) for the station in Cloverdale
- Natural Resource Conservation Service, National Cooperative Soil Survey, Web Soil Survey 1.1, available online at <http://websoilsurvey.nrcs.usda.gov>
- USDA, Natural Resources Conservation Service, Hydric Soil List available online at http://www.or.nrcs.gov/pnw_soil/ordata.html
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- Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List: 2016 wetland ratings*. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X
- WOLD Environmental Consultants, LLC., October 2008. Tierra Vista ROW, Tierra del Mar, Tillamook County, Oregon, WD 2008-0525



Study Area



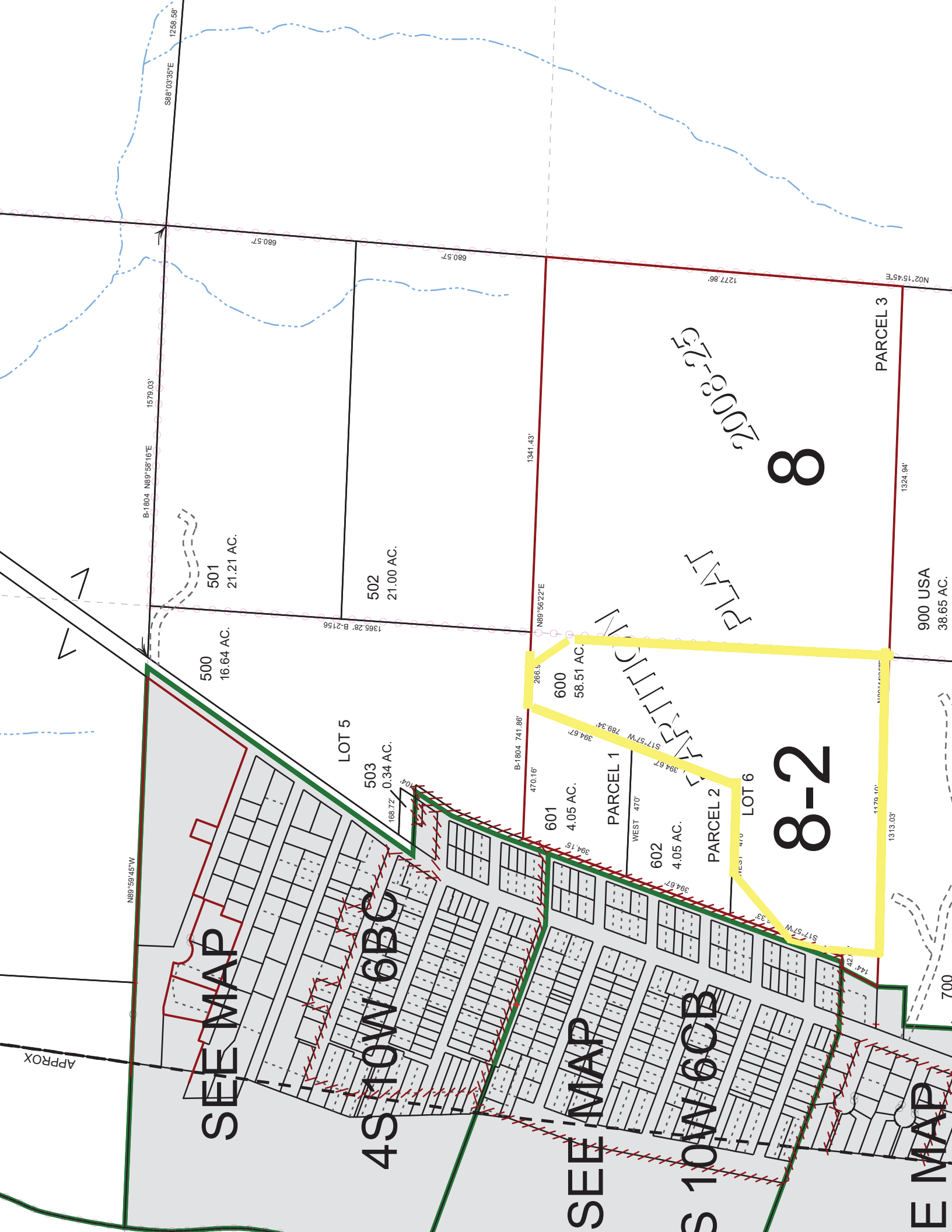
Figure 1b. USGS Topographic Map



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri

June 4, 2020

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



APPROX

N89°59'45"W

B-1804 N89°58'16"E

S88°03'35"E

1579.03'

680.57'

1258.58'

SEE MAP

500
16.64 AC.

501
21.21 AC.

680.57'

1365.28' B-2156

LOT 5

503
0.34 AC.

502
21.00 AC.

680.57'

1341.43'

SEE MAP

601
4.05 AC.

600
58.51 AC.

B-1804 741.86'

1341.43'

N89°56'22"E

PARCEL 1

WEST 470'

602
4.05 AC.

394.67'

394.67'

394.67'

394.67'

394.67'

394.67'

394.67'

394.67'

394.67'

S 10W 6CB

PARCEL 2

WEST 470'

LOT 6

144' 25"

1170.00'

1313.03'

1277.86'

1277.86'

1277.86'

1277.86'

8-2

2008-75

8

PARCEL 3

1324.94'

900 USA
38.65 AC.

N02°15'45"E

SEE MAP

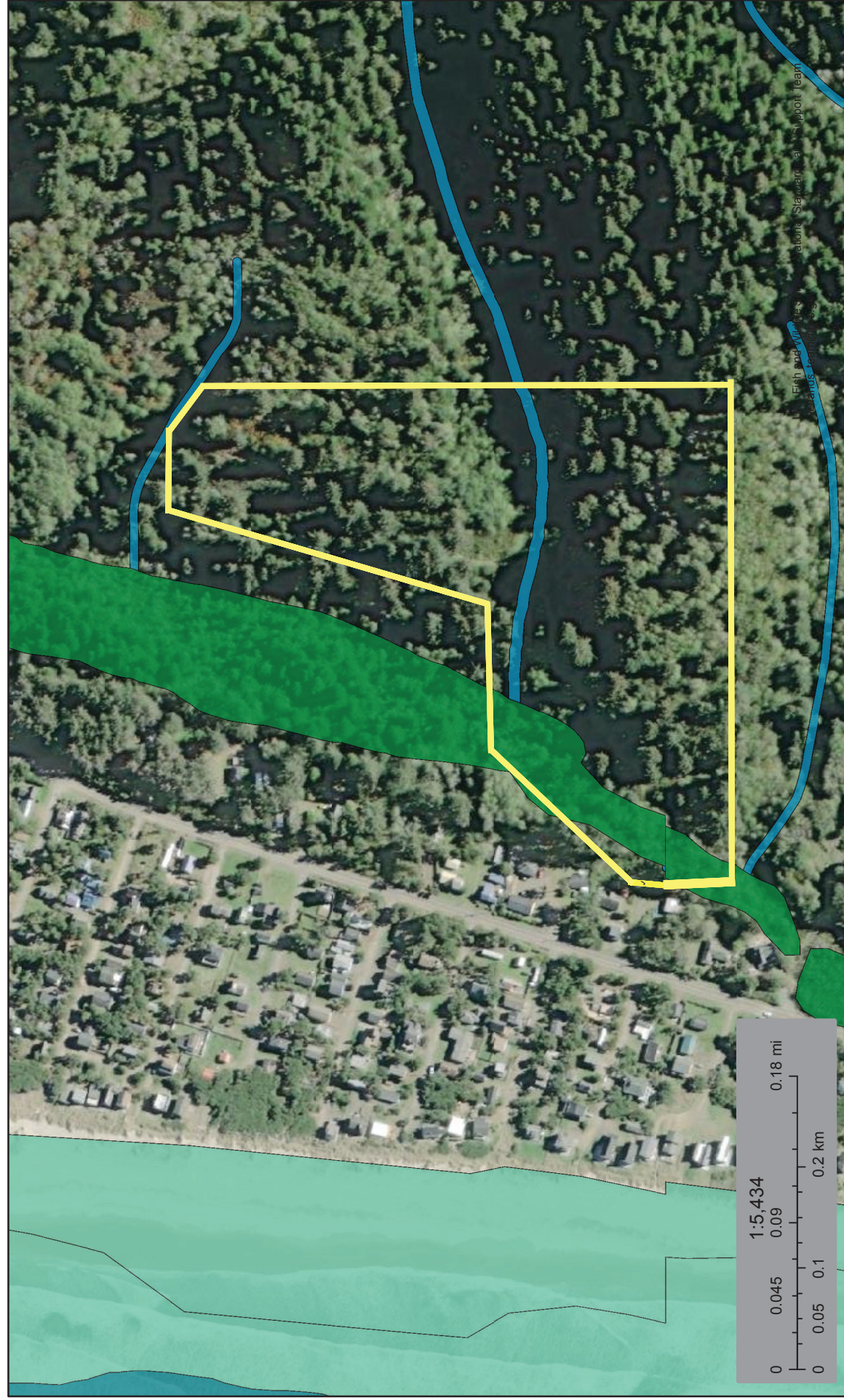
700



U.S. Fish and Wildlife Service

National Wetlands Inventory

Figure 3. National Wetlands Inventory for Oregon Treehouse WD



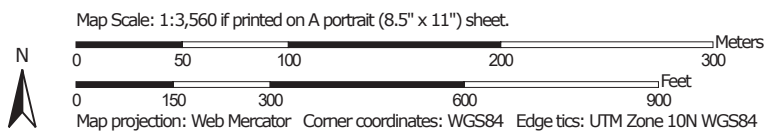
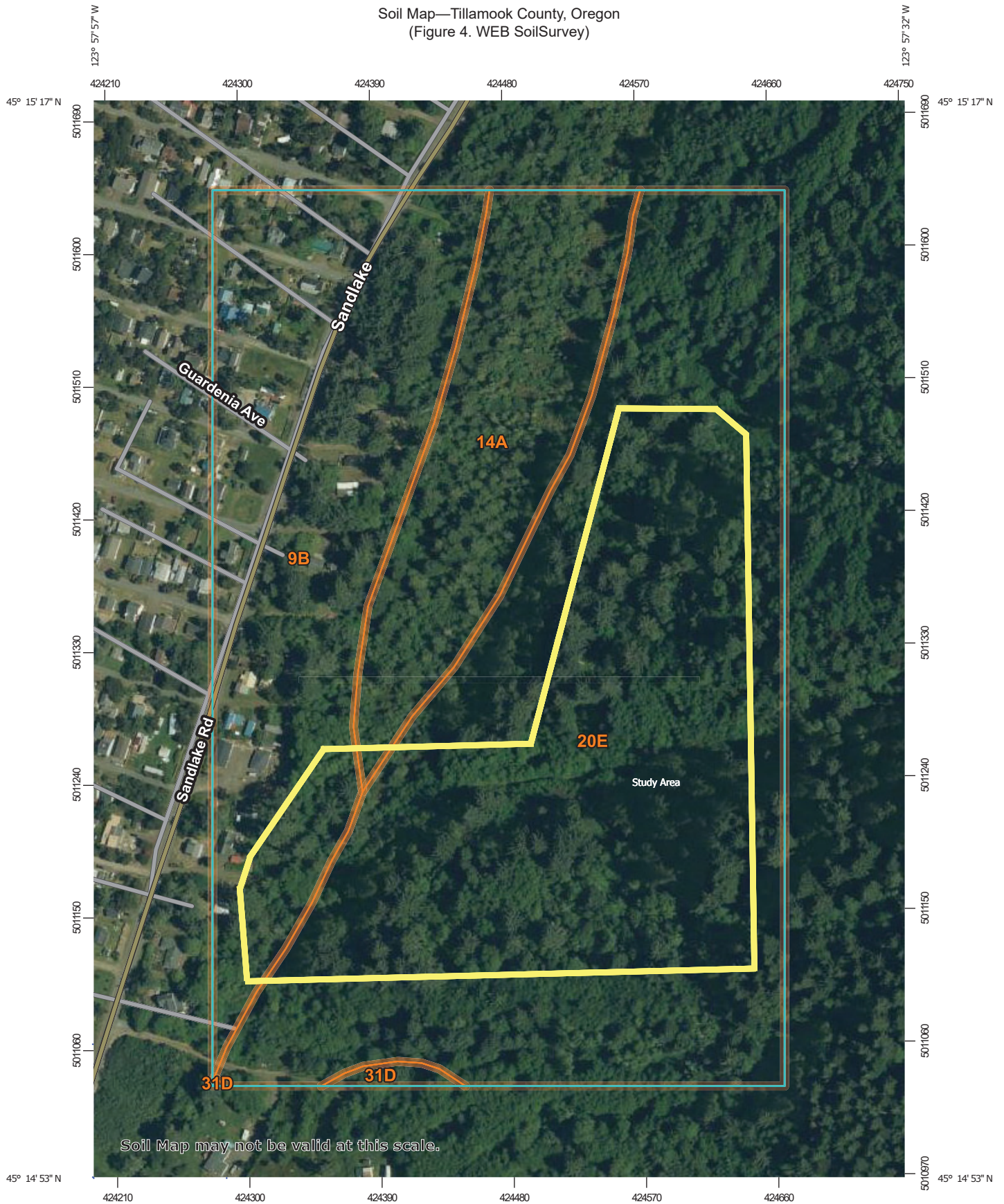
May 13, 2022

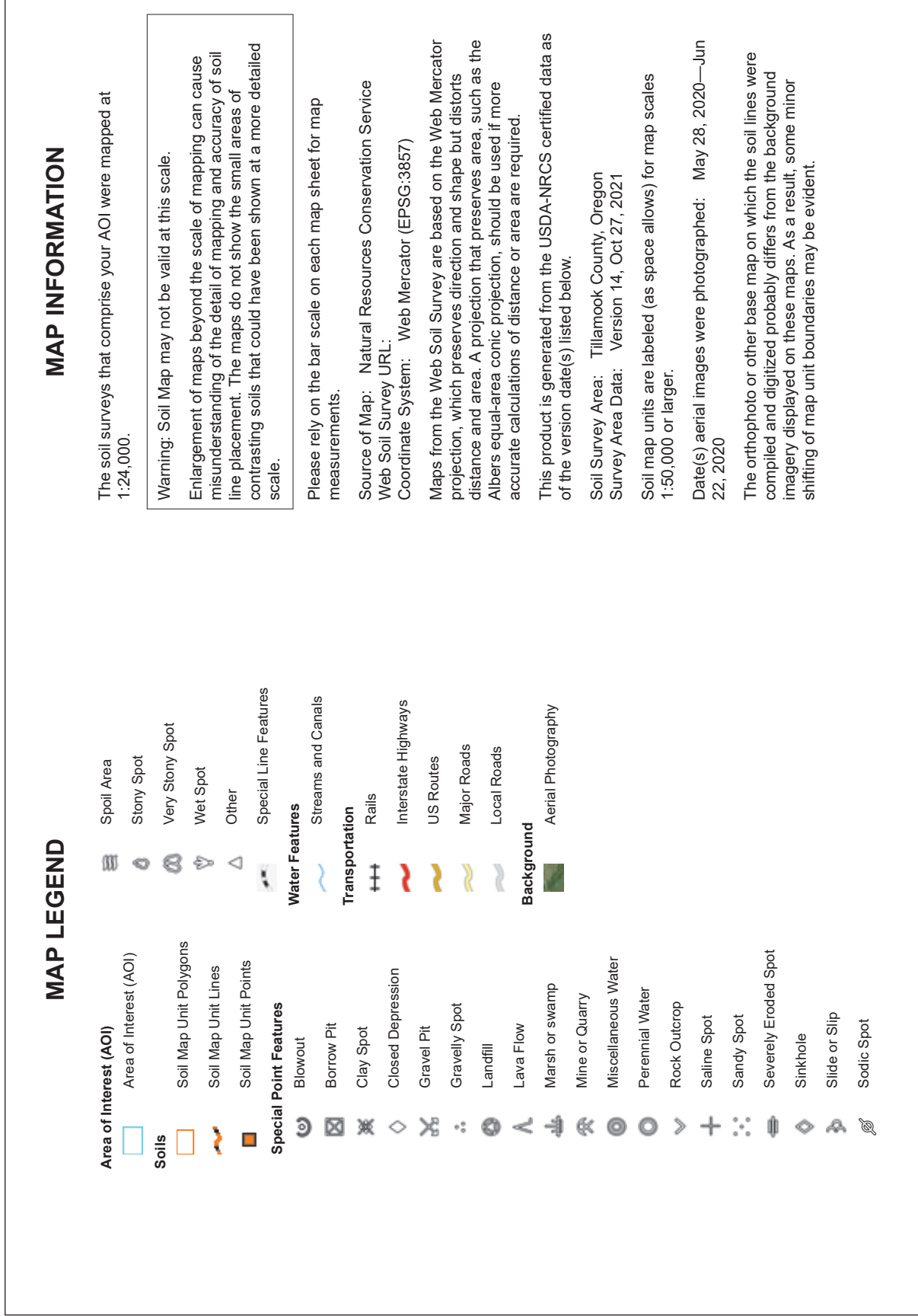
Wetlands

- Estuarine and Marine Deepwater
- Freshwater Emergent Wetland
- Lake
- Estuarine and Marine Wetland
- Freshwater Forested/Shrub Wetland
- Other
- Freshwater Pond
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Soil Map—Tillamook County, Oregon
(Figure 4. WEB Soil Survey)





Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|------------------------------------|--|--------------|----------------|
| 9B | Waldport fine sand, 0 to 5 percent slopes | 16.4 | 27.9% |
| 14A | Heceta fine sand, 0 to 3 percent slopes | 8.3 | 14.2% |
| 20E | Kloutchie-Necanicum complex, 30 to 60 percent slopes | 33.7 | 57.5% |
| 31D | Tolovana-Templeton medial silt loams, 5 to 30 percent slopes | 0.3 | 0.5% |
| Totals for Area of Interest | | 58.7 | 100.0% |

Figure 5. Wetland Determination Photographs May 21 and 22, 2022



Figure 1. At culvert crossing on Floyd Avenue looking east (P-1)



Figure 2. View From culvert crossing on Floyd Avenue looking south into wetland and Beltz Creek (P-2)

Figure 5. Wetland Determination Photographs May 21 and 22, 2022



Figure 3. Looking south along the wetland boundary. (P-3)

Figure 4. View of the lowland wetland looking north from SP-18 (P-4).



Figure 5. Wetland Determination Photographs May 21 and 22, 2022



Figure 5. Blue flag is at Wetland C boundary. Yellow flag in the background at SP-10 and SP-11 in non-wetland in the foreground. View is to the northwest (P-5).



Figure 6. Wetland D at Quarry looking east from forest road (P-6).

Figure 5. Wetland Determination Photographs May 21 and 22, 2022



Figure 7. S1 Stream above the Quarry 1 Looking d/s west (P-7).



Figure 8. View of the upland at SP -7 (P-8).

Figure 5. Wetland Determination Photographs May 21 and 22, 2022



Figure 9. From S2 Channel looking d/s to waterfall above the quarry (P-9).



Figure 10. View to the west from SP-16. (P-10).

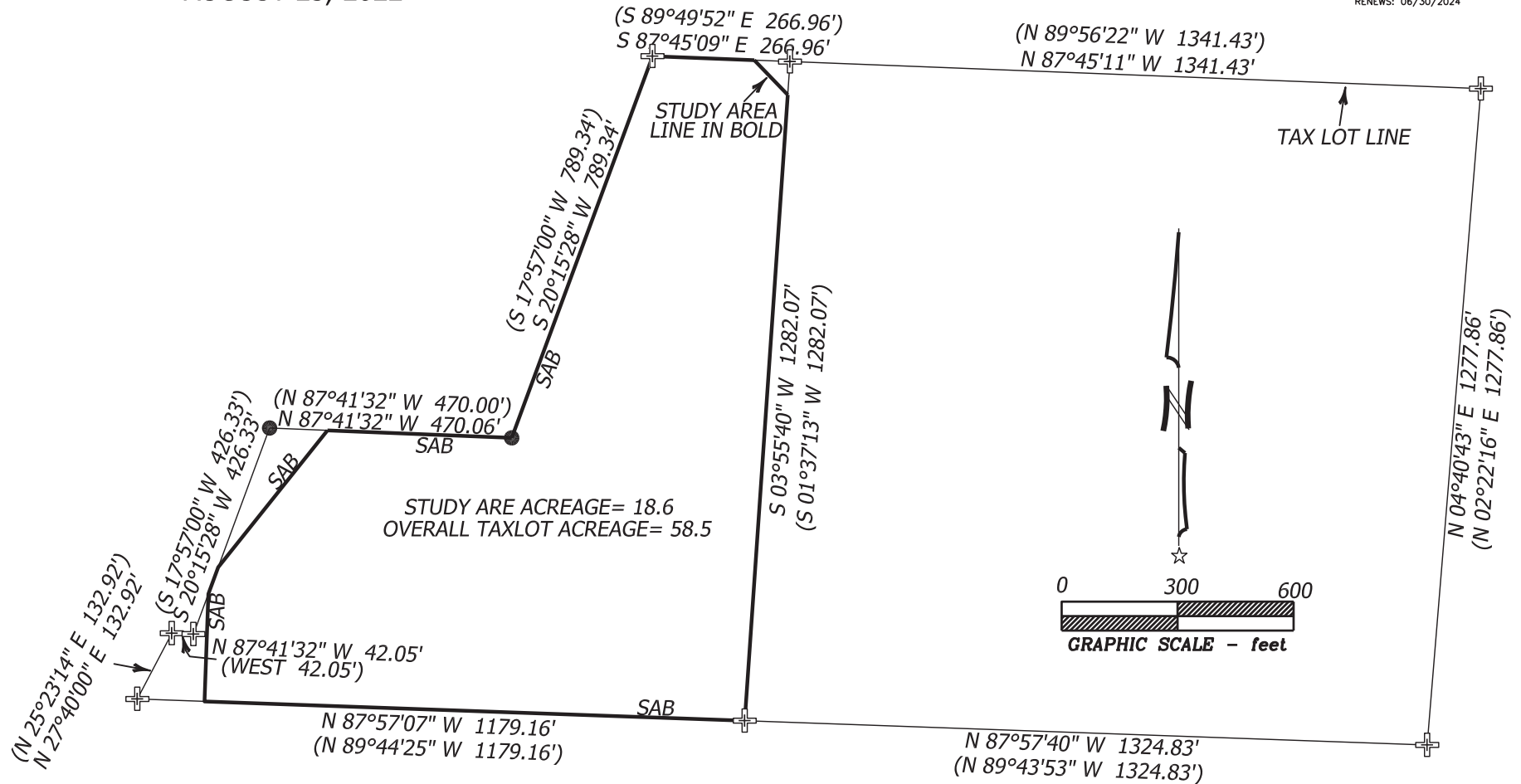
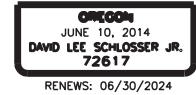
FIGURE 6A
for
OREGON TREEHOUSE PARTNERS

in the
NW 1/4, SW 1/4 OF SECTION 6
T 4 S, R 10 W, W.M.
TAX LOT 600 OF MAP 131033BE
TILLAMOOK COUNTY, OREGON

AUGUST 25, 2022

LEGEND

-FOUND MONUMENT AS NOTED PER PP 2008-25
- ⊕.....COMPUTED POINT (NOTHING SET OR FOUND)
- ()....RECORD DATA FROM PP 2008-25
- SAB.....STUDY AREA BOUNDARY



Appendix A

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 21, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-1
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): Dune terrace Local relief (concave, convex, none): concave Slope (%): 1-2
 Subregion (LRR): A Lat: 45.24992 Long: 123.96420 Datum: NAD 83
 Soil Map Unit Name: 9B- Waldport fine sand 0-5% slopes NWI classification: PFOC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | | | |
|---------------------------------|---|-----------------------------|--|---|-----------------------------|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampled Area within a Wetland? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | | | |

Remarks: 4.2 inches of rain in the previous 2 weeks- sunny today. South of the road in the wetland. Large spruce mainly along the bank-with shrubs in the wetted area. AT WB-4. Wetland boundary follows the base at contrasting slope from flat to steep.

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: |
|---|------------------|-------------------|------------------|--|
| 1. <u><i>Picea sitchensis</i></u> | 30 | D | FAC | Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B) |
| 2. <u><i>Alnus rubra</i></u> | 40 | D | FAC | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| <u>70</u> = Total Cover | | | | |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Prevalence Index worksheet: |
| 1. <u><i>Rubus spectabilis</i></u> | 5 | | FAC | Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) Prevalence Index = B/A = _____ |
| 2. <u><i>Gaultheria shallon</i></u> | 20 | D | FACU | |
| 3. <u><i>Salix hookeriana</i></u> | 5 | | FACW | |
| 4. <u><i>Lonicera involucrata</i></u> | 25 | D | FAC | |
| 5. _____ | | | | |
| <u>55</u> = Total Cover | | | | |
| Herb Stratum (Plot size: <u>10'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Indicators: |
| 1. <u><i>Carex obnupta</i></u> | 100 | D | OBL | <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 2. <u><i>Lysichiton americanus</i></u> | 5 | | OBL | |
| 3. <u><i>Blechnum spicant</i></u> | 1 | | FAC | |
| 4. <u><i>Polystichum munitum</i></u> | 1 | | FACU | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| 7. _____ | | | | |
| 8. _____ | | | | |
| 9. _____ | | | | |
| 10. _____ | | | | |
| 11. _____ | | | | |
| <u>107</u> = Total Cover | | | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Present? |
| 1. _____ | | | | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 2. _____ | | | | |
| <u>0</u> = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>5/30% litter</u> | | | | |

Remarks: GASA on mounds/ woody debris

SOIL

Sampling Point: SP-1

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|-----|----------------|---|-------------------|------------------|-----------------------|----------|
| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 3-0 | 10YR 2/2 | 100 | | | | | | |
| 0-5+ | 10YR 2/2 | 100 | | | | | Mucky fine sandy loam | 6-10% OC |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

| | | | |
|--|--|---|--|
| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) | | Indicators for Problematic Hydric Soils³: | |
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) | |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) | |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) | |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | | |
| <input checked="" type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

| | |
|--|---|
| Restrictive Layer (if present): Type: _____ Depth (inches): _____ | Hydric Soil Present? Yes <input type="checkbox"/> x No <input type="checkbox"/> |
|--|---|

Remarks: Can squeeze water easily out of the soil. Fiber in texture along with fine sand. Water is light brown. Organic Carbon 5-10%.. This soil may meet other soil indicators, but it is too wet to dig out. Water filled up the hole within a few minutes.

HYDROLOGY

| | | | |
|--|--|---|--|
| Wetland Hydrology Indicators: | | Secondary Indicators (2 or more required) | |
| Primary Indicators (minimum of one required; check all that apply) | | | |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) | |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input checked="" type="checkbox"/> Drainage Patterns (B10) | |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) | |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) | |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input checked="" type="checkbox"/> Geomorphic Position (D2) | |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) | |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) | |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) | |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | | |

| | |
|---|---|
| Field Observations: | Wetland Hydrology Present? Yes <input type="checkbox"/> x No <input type="checkbox"/> |
| Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ | |
| Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>5</u> | |
| Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0-1</u> | |

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

| |
|--|
| Remarks: Water in the stream 5- 10 feet to the west. Pit filled up with water within minutes. Frogs along the bank. |
|--|

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oregon TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 21, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-2
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): Dune terrace Local relief (concave, convex, none): Convex/flat Slope (%): 30-40
 Subregion (LRR): A Lat: 45.3332 Long: 123.87379 Datum: NAD 83
 Soil Map Unit Name: 20E Klotchie-Necanicum complex 30-60% slopes NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---------------------------------|---|--|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |

Remarks: 4.2 inches of precipitation in the previous two weeks. Yellow pin flagging at sample point. Blue flagging at wetland boundary. Sample point at WB-4. SP is at the base of the hillslope above the slope break.

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
|---|------------------|-------------------|------------------|--|
| 1. <u><i>Picea sitchensis</i></u> | 20 | D | FAC | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>71</u> (A/B) |
| 2. <u><i>Alnus rubra</i></u> | 55 | D | FAC | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| <u>75</u> | | = Total Cover | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <input type="checkbox"/> x 1 = <input type="checkbox"/> FACW species <input type="checkbox"/> x 2 = <input type="checkbox"/> FAC species <input type="checkbox"/> x 3 = <input type="checkbox"/> FACU species <input type="checkbox"/> x 4 = <input type="checkbox"/> UPL species <input type="checkbox"/> x 5 = <input type="checkbox"/> Column Totals: <input type="checkbox"/> (A) Prevalence Index = B/A = <input type="checkbox"/> |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <u><i>Rubus spectabilis</i></u> | 10 | D | FAC | |
| 2. <u><i>Gaultheria shallon</i></u> | 5 | | FACU | |
| 3. <u><i>Sambucus racemosa</i></u> | 10 | D | FACU | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| <u>25</u> | | = Total Cover | | |
| Herb Stratum (Plot size: <u>10'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <u><i>Carex obnupta</i></u> | 35 | D | OBL | Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 2. <u><i>Polystichum munitum</i></u> | 40 | D | FAC | |
| 3. <u><i>Blechnum spicant</i></u> | 3 | | FAC | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| 7. _____ | | | | |
| 8. _____ | | | | |
| 9. _____ | | | | |
| 10. _____ | | | | |
| 11. _____ | | | | |
| <u>78</u> | | = Total Cover | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <u><i>Rubus ursinus</i></u> | 2 | D | FACU | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 2. _____ | | | | |
| <u>2</u> | | = Total Cover | | |
| % Bare Ground in Herb Stratum <u>20% litter</u> | | | | |

Remarks: The Carex extends up the slope.

SOIL

Sampling Point: SP-2

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|-----|----------------|---|-------------------|------------------|-------------|-------------------|
| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 4-0 | 10YR 2/2 | 100 | | | | | Smeary loam | Duff/litter/humus |
| 0-4 | 10YR 3/2 | 100 | | | | | SiL | |
| 4-20 | 10YR 3/3 | 100 | | | | | SiL | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

| | |
|--|---|
| <p>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Redox Depressions (F8) </p> | <p>Indicators for Problematic Hydric Soils³:</p> <p> <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) </p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic</p> |
|--|---|

| | |
|---|--|
| <p>Restrictive Layer (if present):</p> <p>Type: _____</p> <p>Depth (inches): _____</p> | <p>Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> |
|---|--|

Remarks: Soil is moist but not wet. Wetland boundary follows the slope break between Soil MU 9B and 20E.

HYDROLOGY

| | | |
|--|--|--|
| <p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one required; check all that apply)</p> <p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres along Living <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Soils (C6) Stunted or Stressed Plants (D1) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> (LRR A) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Other (Explain in Remarks) </p> | | <p>Secondary Indicators (2 or more required)</p> <p> <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7) </p> |
|--|--|--|

| | |
|---|--|
| <p>Field Observations:</p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)</p> | <p>Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> |
|---|--|

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Well-drained soil.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 21, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-3
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): Dune terrace/swale Local relief (concave, convex, none): concave Slope (%): 1-2
 Subregion (LRR): A Lat: 45.25022 Long: 123.96440 Datum: NAD 83
 Soil Map Unit Name: 9B- Waldport fine sand 0-5% slopes NWI classification: PFOC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|--|--|
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Hydic Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|---|---|--|--|

Remarks: 4.2 inches of rain in the previous 2 weeks- sunny today. Just below Floyd Avenue entry at WBN-5. Wetland boundary follows the base of the road fill.

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: |
|---|------------------|-------------------|------------------|--|
| 1. <u><i>Alnus rubra</i></u> | 20 | D | FAC | Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B) |
| 2. _____ | | | | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| <u>20</u> = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <input type="checkbox"/> x 1 = <input type="checkbox"/> FACW species <input type="checkbox"/> x 2 = <input type="checkbox"/> FAC species <input type="checkbox"/> x 3 = <input type="checkbox"/> FACU species <input type="checkbox"/> x 4 = <input type="checkbox"/> UPL species <input type="checkbox"/> x 5 = <input type="checkbox"/> Column Totals: <input type="checkbox"/> (A) Prevalence Index = B/A = <input type="checkbox"/> |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | | | | |
| 1. <u><i>Rubus armeniacus</i></u> | 25 | D | FAC | |
| 2. <u><i>Spiraea douglasii</i></u> | 5 | D | FACW | |
| 3. <u><i>Sambucus racemosa</i></u> | 1 | | FACU | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| <u>32</u> = Total Cover | | | | |
| Herb Stratum (Plot size: <u>10'</u>) | | | | |
| 1. <u><i>Carex obnupta</i></u> | 100 | D | OBL | |
| 2. <u><i>Lysichiton americanus</i></u> | 10 | | OBL | |
| 3. <u><i>Athyrium filix-femina</i></u> | 2 | | FAC | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| 7. _____ | | | | |
| 8. _____ | | | | |
| 9. _____ | | | | |
| 10. _____ | | | | |
| 11. _____ | | | | |
| <u>112</u> = Total Cover | | | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | | | | |
| 1. <u><i>Rubus ursinus</i> *</u> | 1 | | FACU | |
| 2. _____ | | | | |
| <u>1</u> = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>30% litter</u> | | | | |
| Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) | | | | |
| ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | |

Remarks: ALRU is rooted in the road fill and shading the plot.. RUAR included in shrub stratum

SOIL

Sampling Point: SP-3

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|-----|----------------|----|-------------------|------------------|-----------------|-----------------|
| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 2-0 | 10YR 3/1 | 100 | | | | | Smeary loam | Organics/litter |
| 0-2+ | 10YR 2/2 | 100 | | | | | fine sandy loam | |
| 2-5+ | 10YR 4/2 | 90 | 7.5YR 4/3 | 10 | C | M | FSL | High Organics |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) | | | Indicators for Problematic Hydric Soils ³ : | | |
|---|---|---|--|--|--|
| <input type="checkbox"/> Histosol (A1) | <input checked="" type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) | | | |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) | | | |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) | | | |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) | | | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | | | | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | | | | |
| <input checked="" type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | | | | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | | | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

| | |
|--|---|
| Restrictive Layer (if present): Type: _____ Depth (inches): _____ | Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|--|---|

Remarks: Organic fibers. This soil may meet S5 soil indicator. Water filled up the hole within a few minutes. Dug this out to 10 inches but to wet to sample soil

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (2 or more required) | |
|--|---|--|--|
| Primary Indicators (minimum of one required; check all that apply) | | | |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) | |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Drainage Patterns (B10) | |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) | |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) | |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input checked="" type="checkbox"/> Geomorphic Position (D2) | |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) | |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) | |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) | |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | | |

| | |
|--|---|
| Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>5</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0-1</u> | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|--|---|

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Surface water about 20 feet away in braided channel.

4WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 21, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-4
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): Road slope Local relief (concave, convex, none): Convex/flat Slope (%): 20+
 Subregion (LRR): A Lat: 45.25001 Long: 123.96441 Datum: NAD 83
 Soil Map Unit Name: 9B Waldport fine sand 0-5% NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | | | |
|---------------------------------|------------------------------|--|--|------------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | | | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | | | |

Remarks: 4.2 inches of precipitation in the previous two weeks. Yellow pin flagging at sample point. Blue flagging is wetland boundary. Sample point at WBN-5. SP is on gravelly road fill elevated above the wetland to the south.

VEGETATION – Use scientific names of plants.

| Stratum | Plot size | Absolute % Cover | Dominant Species? | Indicator Status | |
|---|-------------------------------------|------------------|-------------------|------------------|--|
| Tree Stratum (Plot size: <u>30'</u>) | | | | | |
| 1. | <u><i>Alnus rubra</i></u> | 15 | D | FAC | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B) |
| 2. | _____ | | | | |
| 3. | _____ | | | | |
| 4. | _____ | | | | |
| | | 15 | = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | | | | | |
| 1. | <u><i>Rubus armeniacus</i></u> | 4 | D | FAC | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <input type="checkbox"/> x 1 = <input type="checkbox"/> FACW species <u>4</u> x 2 = <u>8</u> FAC species <u>88</u> x 3 = <u>264</u> FACU species <u>16</u> x 4 = <u>64</u> UPL species <input type="checkbox"/> x 5 = <input type="checkbox"/> Column Totals: <u>108</u> (A) <u>336</u> Prevalence Index = B/A = <u>3.1</u> |
| 2. | <u><i>Gaultheria shallon</i></u> | 5 | D | FACU | |
| 3. | <u><i>Sambucus racemosa</i></u> | 5 | D | FACU | |
| 4. | _____ | | | | |
| 5. | _____ | | | | |
| | | 14 | = Total Cover | | |
| Herb Stratum (Plot size: <u>10'</u>) | | | | | |
| 1. | <u><i>Stachys mexicana</i></u> | 4 | | FACW | Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 2. | <u><i>Polystichum munitum</i></u> | 50 | D | FAC | |
| 3. | <u><i>Blechnum spicant</i></u> | t | | FAC | |
| 4. | <u><i>Ranunculus repens</i></u> | 2 | | FAC | |
| 5. | <u><i>Athyrium filix-femina</i></u> | 5 | | FAC | |
| 6. | <u><i>Holcus lanatus</i></u> | 3 | | FAC | |
| 7. | <u><i>Claytonia sibirica</i></u> | 5 | | FAC | |
| 8. | <u><i>Digitalis purpurea</i></u> | 1 | | FACU | |
| 9. | <u><i>Tolmiea menziesii</i></u> | 4 | | FAC | |
| 10. | _____ | | | | |
| 11. | _____ | | | | |
| | | 74 | = Total Cover | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | | | | | |
| 1. | <u><i>Rubus ursinus</i></u> | 5 | D | FACU | Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 2. | _____ | | | | |
| | | 5 | = Total Cover | | |
| % Bare Ground in Herb Stratum <u>10/20% litter</u> | | | | | |

Remarks: Vegetation typical of roadside disturbance.

SOIL

Sampling Point: SP-4

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|-----|----------------|---|-------------------|------------------|---------|-------------------|
| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 0-2 | 10YR 3/2 | 100 | | | | | loam | Duff/litter/humus |
| 0-3 | 10YR 3/3 | 100 | | | | | VGRSIL | 50% gravel |
| 3-19 | 10YR 3/4 | 100 | | | | | VGRSIL | 50% gravel |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

| | | | |
|--|---|---|--|
| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) | | Indicators for Problematic Hydric Soils³: | |
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) | |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) | |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) | |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

| | |
|--|---|
| Restrictive Layer (if present): Type: _____ Depth (inches): _____ | Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
|--|---|

Remarks: Soil is moist but not wet. Elevated above the wetland on gravelly road fill.

HYDROLOGY

| | | |
|--|---|--|
| Wetland Hydrology Indicators: | | |
| Primary Indicators (minimum of one required; check all that apply) | | Secondary Indicators (2 or more required) |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | |

| | |
|--|---|
| Field Observations: | |
| Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ | Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ | |
| Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ | |

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Well-drained soil.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 21, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-5
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): Dune terrace/swale Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): A Lat: 45.25031 Long: 123.96363 Datum: NAD 83
 Soil Map Unit Name: 9B- Waldport fine sand 0-5% slopes NWI classification: PFOC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|--|--|
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Hydic Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|---|---|--|--|

Remarks: 4.2 inches of rain in the previous 2 weeks- sunny today. AT WBN-16. There is a mature PISI along the wetland boundary and younger spruce in the wetland. Wetland boundary follows the base of the hill.

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: |
|---|------------------|-------------------|------------------|--|
| 1. <u><i>Alnus rubra</i></u> | 20 | D | FAC | Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83</u> (A/B) |
| 2. <u><i>Picea stichensis</i></u> | 40 | D | FAC | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| <u>60</u> = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <input type="checkbox"/> x 1 = <input type="checkbox"/> FACW species <input type="checkbox"/> x 2 = <input type="checkbox"/> FAC species <input type="checkbox"/> x 3 = <input type="checkbox"/> FACU species <input type="checkbox"/> x 4 = <input type="checkbox"/> UPL species <input type="checkbox"/> x 5 = <input type="checkbox"/> Column Totals: <input type="checkbox"/> (A) Prevalence Index = B/A = <input type="checkbox"/> |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <u><i>Rubus armeniacus</i></u> | 3 | D | FAC | |
| 2. <u><i>Rubus spectabilis</i></u> | 2 | | FAC | |
| 3. <u><i>Lonicera involucrata</i></u> | 10 | D | FAC | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| <u>15</u> = Total Cover | | | | |
| Herb Stratum (Plot size: <u>10'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <u><i>Carex obnupta</i></u> | 70 | D | OBL | |
| 2. <u><i>Lysichiton americanus</i></u> | 30 | D | OBL | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| 7. _____ | | | | |
| 8. _____ | | | | |
| 9. _____ | | | | |
| 10. _____ | | | | |
| 11. _____ | | | | |
| <u>100</u> = Total Cover | | | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <u><i>Rubus ursinus</i></u> | 2 | D | FACU | |
| 2. _____ | | | | |
| <u>2</u> = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>30% litter</u> | | | | |
| Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) | | | | |
| ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | |

Remarks: Salix just outside the plot to the west along the channel. The mature conifers along the wetland boundary and to the west made this PFOC. Closer to the stream channel the wetland is freshwater Scrub-Shrub with dense herbaceous understory.

SOIL

Sampling Point: SP-5

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|-----|----------------|---|-------------------|------------------|-----------------|-----------|
| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 0-5+ | 10YR 3/2 | 100 | | | | | Mucky fine sand | See below |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

| | | | |
|--|--|---|--|
| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) | | Indicators for Problematic Hydric Soils³: | |
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) | |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) | |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) | |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | | |
| <input checked="" type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

| | |
|--|---|
| Restrictive Layer (if present): Type: _____ Depth (inches): _____ | Hydric Soil Present? Yes <input type="checkbox"/> x No <input type="checkbox"/> |
|--|---|

Remarks: The pit filled up with water within minutes. Not possible to discern subsurface layers. Organic fibers present, easily squeeze water out that was brownish in color. This soil may meet other soil indicators beside mucky. OC estimated at 10%. Litter on surface from CAO and alder leaves.

HYDROLOGY

| | | | |
|--|---|---|--|
| Wetland Hydrology Indicators: | | Secondary Indicators (2 or more required) | |
| Primary Indicators (minimum of one required; check all that apply) | | | |
| <input type="checkbox"/> Surface Water (A1) | <input checked="" type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) | |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Drainage Patterns (B10) | |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) | |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) | |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input checked="" type="checkbox"/> Geomorphic Position (D2) | |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) | |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) | |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) | |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | | |

| | |
|---|---|
| Field Observations: | Wetland Hydrology Present? Yes <input type="checkbox"/> x No <input type="checkbox"/> |
| Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ | |
| Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>5</u> | |
| Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>0-2</u> | |

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Used the Tillamook station for precipitation. Cloverdale data is not available.

Remarks: BELTZ Creek east bank of OHWL is within 10 -15 feet, low gradient, sandy and braided.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 21, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-6
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Convex Slope (%): 30-40
 Subregion (LRR): A Lat: 45.25030 Long: 123.87372 Datum: NAD 83
 Soil Map Unit Name: 20E Klotchie-Necanicum complex 30-40% slopes NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---------------------------------|------------------------------|--|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |

Remarks: 4.2 inches of precipitation in the previous two weeks. Yellow pin flagging at sample point. Blue flagging is wetland boundary. Sample point at WBN-16 at the base of the hill slope. The access road is upslope.

VEGETATION – Use scientific names of plants.

| Stratum | Plot size | Absolute % Cover | Dominant Species? | Indicator Status | | |
|--|--------------------------------|------------------|-------------------|------------------|--|--|
| Tree Stratum (Plot size: <u>30'</u>) | | | | | | |
| 1. | <u>Picea sitchensis</u> | 50 | D | FAC | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B) | |
| 2. | <u>Alnus rubra</u> | 5 | | FAC | | |
| 3. | | | | | | |
| 4. | | | | | | |
| | | 55 | = Total Cover | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <input type="checkbox"/> x 1 = <input type="checkbox"/> FACW species <input type="checkbox"/> x 2 = <input type="checkbox"/> FAC species <input type="checkbox"/> x 3 = <input type="checkbox"/> FACU species <input type="checkbox"/> x 4 = <input type="checkbox"/> UPL species <input type="checkbox"/> x 5 = <input type="checkbox"/> Column Totals: <input type="checkbox"/> (A) Prevalence Index = B/A = <input type="checkbox"/> | |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | | | | | | |
| 1. | <u>Rubus spectabilis</u> | 5 | | FAC | | |
| 2. | <u>Gaultheria shallon</u> | 5-10 | | FACU | | |
| 3. | <u>Sambucus racemosa</u> | 25 | D | FACU | | |
| 4. | <u>Tsuga heterophylla</u> | 3 | | FACU | | |
| 5. | <u>Loينicera involucrata</u> | 5 | | | | |
| 6. | <u>Vaccinium parvifolium</u> 5 | 70 | | FACU | | |
| | | = Total Cover | | | | |
| Herb Stratum (Plot size: <u>10'</u>) | | | | | | |
| 1. | <u>Carex obnupta</u> | 5 | | OBL | | |
| 2. | <u>Polystichum munitum</u> | 40 | D | FAC | | |
| 3. | <u>Athyrium filix-femina</u> | 1 | | FAC | | |
| 4. | | | | | | |
| 5. | | | | | | |
| 6. | | | | | | |
| 7. | | | | | | |
| 8. | | | | | | |
| 9. | | | | | | |
| 10. | | | | | | |
| 11. | | | | | | |
| | | 46 | = Total Cover | | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | | | | | | |
| 1. | <u>Rubus ursinus</u> | 2 | D | FACU | | |
| 2. | | | | | | |
| | | 2 | = Total Cover | | | |
| % Bare Ground in Herb Stratum <u>5/20% litter</u> | | | | | | |
| Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. | | | | | | |
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | | | |

Remarks: Photos east up the hill and west into wetland.

Other species in Shrub layer
 Vaccinium ovatum 2 FACU
 Frangula purshiana 10 FAC
 Rubus armeniacus 5 FAC

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 21, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-7
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 35-45
 Subregion (LRR): A Lat: 45.24976 Long: 123.96362 Datum: NAD 83
 Soil Map Unit Name: 20E Klotchie-Necanicum complex 30-60% NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | | | |
|---------------------------------|------------------------------|--|--|------------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | | | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | | | |

Remarks: 4.2 inches of precipitation in the previous two weeks. Yellow pin flagging at sample point. Sample point is representative of non-wetlands in forest midslope of the hill. Followed a cleared path to an excavated test pit. SP is about 50 feet south of the pit. The nearby (septic) test pit was excavated to 3-4 feet with deep soil and good drainage.

VEGETATION – Use scientific names of plants.

| Stratum | Plot size | Absolute % Cover | Dominant Species? | Indicator Status | |
|--|--------------------------|------------------|-------------------|------------------|--|
| Tree Stratum | (Plot size: <u>30'</u>) | | | | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B) |
| 1. <u><i>Picea sitchensis</i></u> | | 65 | D | FAC | |
| 2. <u><i>Alnus rubra</i></u> | | 10 | | FAC | |
| 3. _____ | | | | | |
| 4. _____ | | | | | |
| | | 75 | = Total Cover | | |
| Sapling/Shrub Stratum | (Plot size: <u>20'</u>) | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <input type="checkbox"/> x 1 = <input type="checkbox"/> FACW species <input type="checkbox"/> x 2 = <input type="checkbox"/> FAC species <u>125</u> x 3 = <u>375</u> FACU species <u>61</u> x 4 = <u>244</u> UPL species <input type="checkbox"/> x 5 = <input type="checkbox"/> Column Totals: <u>186</u> (A) <u>619</u> Prevalence Index = B/A = <u>3.33</u> |
| 1. <u><i>Rubus spectabilis</i></u> | | 40 | D | FAC | |
| 2. <u><i>Gaultheria shallon</i></u> | | 15 | D | FACU | |
| 3. _____ | | | | | |
| 4. _____ | | | | | |
| | | 56 | = Total Cover | | |
| Herb Stratum | (Plot size: <u>10'</u>) | | | | Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 1. <u><i>Maianthenun dilatatum</i></u> | | 10 | | FAC | |
| 2. <u><i>Polystichum munitum</i></u> | | 45 | D | FACU | |
| 3. _____ | | | | | |
| 4. _____ | | | | | |
| 5. _____ | | | | | |
| 6. _____ | | | | | |
| 7. _____ | | | | | |
| 8. _____ | | | | | |
| 10. _____ | | | | | |
| 11. _____ | | | | | |
| | | 55 | = Total Cover | | |
| Woody Vine Stratum | (Plot size: <u>20'</u>) | | | | Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 1. <u><i>Rubus ursinus</i></u> | | 1 | | FACU | |
| 2. _____ | | | | | |
| | | 1 | = Total Cover | | |

Remarks: RUUR included in shrub layer

SOIL

Sampling Point: SP-7

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|-----|----------------|---|-------------------|------------------|-------------|-------------------|
| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 1.5-0 | 7.5YR 2/2 | 100 | | | | | Smeary loam | Duff/litter/humus |
| 0-4 | 7.5 YR 2/2 | 100 | | | | | SiL | |
| 4-20 | 7.5YR 3/4 | 100 | | | | | SiL | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) | | Indicators for Problematic Hydric Soils ³ : | |
|---|---|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) | |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) | |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) | |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

| | |
|--|---|
| Restrictive Layer (if present): Type: _____ Depth (inches): _____ | Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
|--|---|

Remarks: Soil is moist but not wet. Wetland boundary follows the topographic boundary between 9B and 20E.

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (2 or more required) | |
|--|---|--|--|
| Primary Indicators (minimum of one required; check all that apply) | | | |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) | |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Drainage Patterns (B10) | |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) | |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) | |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Geomorphic Position (D2) | |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) | |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) | |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) | |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | | |

| | |
|--|---|
| Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ | Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
|--|---|

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Well-drained soil on hill slope.

4WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 21, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-8
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): Road fill slope Local relief (concave, convex, none): Convex/none Slope (%): 20+
 Subregion (LRR): A Lat: 45.24996 Long: 123.96436 Datum: NAD 83
 Soil Map Unit Name: 9B Waldport fine sand NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | | | |
|---------------------------------|------------------------------|--|--|------------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | | | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | | | |

Remarks: 4.2 inches of precipitation in the previous two weeks. Yellow pin flagging at sample point. Blue flagging is wetland boundary. Sample point at WB-15. SP is on gravelly road fill. The road and fill have been here for decades-Normal circumstances are present.

VEGETATION – Use scientific names of plants.

| Stratum | Plot size | Absolute % Cover | Dominant Species? | Indicator Status | | |
|---|-------------------------------------|------------------|-------------------|------------------|--|--|
| Tree Stratum (Plot size: <u>30'</u>) | | | | | | |
| 1. | <u><i>Alnus rubra</i></u> | 25 | D | FAC | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40</u> (A/B) | |
| 2. | _____ | | | | | |
| 3. | _____ | | | | | |
| 4. | _____ | | | | | |
| | | 25 | = Total Cover | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <input type="checkbox"/> x 1 = <input type="checkbox"/> FACW species <input type="checkbox"/> x 2 = <input type="checkbox"/> FAC species <input type="checkbox"/> x 3 = <input type="checkbox"/> FACU species <input type="checkbox"/> x 4 = <input type="checkbox"/> UPL species <input type="checkbox"/> x 5 = <input type="checkbox"/> Column Totals: <input type="checkbox"/> (A) Prevalence Index = B/A = <input type="checkbox"/> | |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | | | | | | |
| 1. | <u><i>Rubus armeniacus</i></u> | 5 | | FAC | | |
| 2. | <u><i>Gaultheria shallon</i></u> | 2 | | FACU | | |
| 3. | <u><i>Sambucus racemosa</i></u> | 10 | D | FACU | | |
| 4. | _____ | | | | | |
| 5. | _____ | | | | | |
| | | 17 | = Total Cover | | | |
| Herb Stratum (Plot size: <u>10'</u>) | | | | | | |
| 1. | <u><i>Stachys mexicana</i></u> | 4 | | FACW | Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. | |
| 2. | <u><i>Polystichum munitum</i></u> | 15 | D | FACU | | |
| 3. | <u><i>Anthoxanthum odoratum</i></u> | 10 | | FAC | | |
| 4. | <u><i>Ranunculus repens</i></u> | 5 | | FAC | | |
| 5. | <u><i>Athyrium filix-femina</i></u> | 5 | | FAC | | |
| 6. | <u><i>Holcus lanatus</i></u> | 15 | D | FAC | | |
| 7. | <u><i>Claytonia sibirica</i></u> | 3 | | FAC | | |
| 8. | <u><i>Cirsium spp</i></u> | t | | UNK | | |
| 9. | <u><i>Carex obnupta</i></u> | 5 | | OBL | | |
| 10. | _____ | | | | | |
| 11. | _____ | | | | | |
| | | 65 | = Total Cover | | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | | | | | | |
| 1. | <u><i>Rubus ursinus</i></u> | 3 | D | FACU | Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | |
| 2. | _____ | | | | | |
| | | 3 | = Total Cover | | | |
| % Bare Ground in Herb Stratum <u>25/20% litter</u> | | | | | | |

Remarks: Vegetation typical of roadside disturbance. Bare ground on in road surface

SOIL

Sampling Point: SP-8

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|-----|----------------|---|-------------------|------------------|---------|-------------|
| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 1-0 | 10YR 3/3 | 100 | | | | | loamy | Duff/litter |
| 0-18 | 10YR 3/3 | 100 | | | | | VGRSIL | 50% gravel |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

| | |
|---|---|
| <p>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Redox Depressions (F8) </p> | <p>Indicators for Problematic Hydric Soils³:</p> <p> <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) </p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic</p> |
|---|---|

| | |
|---|---|
| <p>Restrictive Layer (if present):</p> <p>Type: _____</p> <p>Depth (inches): _____</p> | <p>Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> |
|---|---|

Remarks: Soil is moist but not wet. Wetland boundary follows the base of road fill.

HYDROLOGY

| | | | | | |
|---|--|--|--|--|--|
| <p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one required; check all that apply)</p> <p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) </p> | | | <p>Secondary Indicators (2 or more required)</p> <p> <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7) </p> | | |
|---|--|--|--|--|--|

| | |
|---|---|
| <p>Field Observations:</p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)</p> | <p>Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> |
|---|---|

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Well-drained gravelly soil.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 21, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-9
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): Dune terrace swale Local relief (concave, convex, none): concave Slope (%): 1-2
 Subregion (LRR): A Lat: 45.24994 Long: 123.96435 Datum: NAD 83
 Soil Map Unit Name: 9B- Waldport fine sand 0-5% slopes NWI classification: PFOC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---------------------------------|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |

Remarks: 4.2 inches of rain in the previous 2 weeks- sunny today. North of Floyd Avenue at WBN-5. Wetland boundary follows the base of the road fill.

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: |
|---|------------------|-------------------|------------------|---|
| 1. <u><i>Alnus rubra</i></u> | 50 | D | FAC | Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) |
| 2. _____ | | | | Total Number of Dominant Species Across All Strata: <u>5</u> (B) |
| 3. _____ | | | | Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B) |
| 4. _____ | | | | |
| | 50 | = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Prevalence Index worksheet: |
| 1. <u><i>Rubus armeniacus</i></u> | 5 | | FAC | Total % Cover of: _____ Multiply by: _____ |
| 2. <u><i>Salix hookeriana</i></u> | 35 | D | FACW | OBL species _____ x 1 = _____ |
| 3. <u><i>Sambucus racemosa</i></u> | 2 | | FACU | FACW species _____ x 2 = _____ |
| 4. <u><i>Lonicera involucrata</i></u> | 50 | D | FAC | FAC species _____ x 3 = _____ |
| 5. _____ | | | | FACU species _____ x 4 = _____ |
| | 94 | = Total Cover | | UPL species _____ x 5 = _____ |
| | | | | Column Totals: _____ (A) |
| | | | | Prevalence Index = B/A = _____ |
| Herb Stratum (Plot size: <u>10'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Indicators: |
| 1. <u><i>Carex obnupta</i></u> | 70 | D | OBL | <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation |
| 2. <u><i>Lysichiton americanus</i></u> | 7 | | OBL | <input checked="" type="checkbox"/> 2 - Dominance Test is >50% |
| 3. <u><i>Athyrium filix-femina</i></u> | 2 | | FAC | <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ |
| 4. _____ | | | | <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) |
| 5. _____ | | | | <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ |
| 6. _____ | | | | <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) |
| 7. _____ | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 8. _____ | | | | |
| 9. _____ | | | | |
| 10. _____ | | | | |
| 11. _____ | | | | |
| | 79 | = Total Cover | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Present? |
| 1. <u><i>Rubus ursinus</i> *</u> | 2 | D | FACU | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 2. _____ | | | | |
| | 2 | = Total Cover | | |
| % Bare Ground in Herb Stratum <u>10 / 10</u> litter | | | | |

Remarks: ALRU is rooted in the road fill and shading the plot. Mature spruce to the north.
 * rooted in road fill and trailing into the wetland-included in shrub stratum

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 22, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-10
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): /wale Local relief (concave, convex, none): concave Slope (%): 5-6
 Subregion (LRR): A Lat: 45.25082 Long: 123.96239 Datum: NAD 83
 Soil Map Unit Name: 20E Klootchie Necanicum complex NWI classification: PFOC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|--|--|
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Hydic Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|---|---|--|--|

Remarks: 3.8 inches of rain in the previous 2 weeks- sunny today. AT WB-36 in an alluvial swale with disturbance from flooding/debris flow that is older Normal circumstances present. Lot Corner stake visible and plot near the SAB. S1 stream north of plot. Included this in Wetland A but is more influenced by the alluvial activity of the mountain stream.

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: |
|---|------------------|-------------------|------------------|---|
| 1. <u>Picea sitchensis</u> | 45 | D | FAC | Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B) |
| 2. <u>Alnus rubra</u> | 60 | D | FAC | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| <u>105</u> = Total Cover | | | | |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Prevalence Index worksheet: |
| 1. <u>Rubus spectabilis</u> | 5 | | FAC | Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) Prevalence Index = B/A = _____ |
| 2. <u>Gaultheria shallon</u> | 2 | | FACU | |
| 3. <u>Ribes bracteosum</u> | 15 | D | FACW | |
| 4. <u>Picea sitchensis</u> | 5 | | FAC | |
| 5. _____ | | | | |
| <u>27</u> = Total Cover | | | | |
| Herb Stratum (Plot size: <u>10'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Indicators: |
| 1. <u>Lotus corniculatus</u> | t | | FAC | 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 ¹ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) 5 - Wetland Non-Vascular Plants ¹ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 2. <u>Lysichiton americanus</u> | 30 | D | OBL | |
| 3. <u>Cardamine angulata</u> | 6 | | FACW | |
| 4. <u>Polystichum munitum</u> | 1 | | FACU | |
| 5. <u>Tiarrella trifoliata</u> | 10 | | FAC | |
| 6. <u>Oenanthe sarmentosa</u> | 15 | D | OBL | |
| 7. <u>Glyceria elata</u> | 10 | | FACW | |
| 8. <u>Athyrium filix-femina</u> | 8 | | FAC | |
| 9. <u>Moneses uniflora</u> | 10 | | FACU | |
| 10. _____ | | | | |
| 11. _____ | | | | |
| <u>90</u> = Total Cover | | | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Present? |
| 1. _____ | | | | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 2. _____ | | | | |
| <u>0</u> = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>20/5% litter</u> | | | | |

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oregon TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 22, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-11
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): Dune terrace/swale Local relief (concave, convex, none): Convex/flat Slope (%): 6-8
 Subregion (LRR): A Lat: 45.25084 Long: 123.96237 Datum: NAD 83
 Soil Map Unit Name: 20E Klootchie Necanicum complex 30-60% slopes NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|--|
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Hydic Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> |
| Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | |

Remarks: 3.8 inches of rain in the previous 2 weeks- sunny today. AT WB-36 is on the edge of alluvial floodplain with rocky hillslope to the south.

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: |
|--|------------------|-------------------|------------------|--|
| 1. <u>Picea sitchensis</u> | 45 | D | FAC | Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60</u> (A/B) |
| 2. <u>Alnus rubra</u> | 10 | D | FAC | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| <u>55</u> = Total Cover | | | | |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Prevalence Index worksheet: |
| 1. <u>Rubus spectabilis</u> | 5 | | FAC | Total % Cover of: Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) Prevalence Index = B/A = _____ |
| 2. <u>Sambucus racemosa</u> | 75 | D | FACU | |
| 3. <u>Ribes bracteosum</u> | 2 | | FACW | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| <u>82</u> = Total Cover | | | | |
| Herb Stratum (Plot size: <u>10'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Indicators: |
| 1. <u>Claytonia sibirica</u> | 5 | | FAC | <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 2. <u>Athyrium filix-femina</u> | 2 | | FAC | |
| 3. <u>Cardamine angulata</u> | 5 | | FACW | |
| 4. <u>Polystichum munitum</u> | 22 | D | FACU | |
| 5. <u>Tiarella trifoliata</u> | 15 | D | FAC | |
| 6. <u>Carex obnupta</u> | t | | OBL | |
| 7. <u>Dryopteris expansa</u> | 2 | | FACW | |
| 8. _____ | | | | |
| 9. _____ | | | | |
| 10. _____ | | | | |
| 11. _____ | | | | |
| <u>51</u> = Total Cover | | | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Present? |
| 1. _____ | | | | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 2. _____ | | | | |
| <u>0</u> = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>35/15% litter</u> | | | | |

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oregon TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 22, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-12
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): Hill slope Local relief (concave, convex, none): uneven Slope (%): 10
 Subregion (LRR): A Lat: 45.25073 Long: 123.96151 Datum: NAD 83
 Soil Map Unit Name: 20E Klotchie Necanicum complex 30-60% slope NWI classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|--|--|
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Hydic Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|---|---|--|--|

Remarks: At the rock quarry wetland. Significant disturbance vegetation, soils and hydrology from quarry operations. Rock removal has disrupted groundwater movement. Shallow soils after soil and rock removal. Quarry operations ceases more than 5 years ago there Normal Circumstances are present. Slopes west and southwest to road and stream channel.

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: |
|--|------------------|-------------------|------------------|---|
| 1. <u><i>Alnus rubra</i></u> | 20 | D | FAC | Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) |
| 2. _____ | | | | Total Number of Dominant Species Across All Strata: <u>5</u> (B) |
| 3. _____ | | | | Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B) |
| 4. _____ | | | | |
| <u>20</u> = Total Cover | | | | |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Prevalence Index worksheet: |
| 1. <u><i>Rubus spectabilis</i></u> | 5 | | FAC | Total % Cover of: _____ Multiply by: _____ |
| 2. <u><i>Spiraea douglasii</i></u> | 12 | D | FACW | OBL species _____ x 1 = _____ |
| 3. <u><i>Sambucus racemosa</i></u> | 2 | | FACU | FACW species _____ x 2 = _____ |
| 4. <u><i>Alnus rubra</i></u> | 10 | D | FAC | FAC species _____ x 3 = _____ |
| 5. <u><i>Rubus armeniacus</i></u> | 10 | D | FAC | FACU species _____ x 4 = _____ |
| <u>39</u> = Total Cover | | | | UPL species _____ x 5 = _____ |
| | | | | Column Totals: _____ (A) |
| | | | | Prevalence Index = B/A = _____ |
| Herb Stratum (Plot size: <u>10'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Indicators: |
| 1. <u><i>Epilobium ciliatum</i></u> | 2 | | FACW | <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation |
| 2. <u><i>Holcus lanatus</i></u> | 30 | D | FAC | <input checked="" type="checkbox"/> 2 - Dominance Test is >50% |
| 3. <u><i>Ranunculus repens</i></u> | 3 | | FAC | <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ |
| 4. <u><i>Anthoxanthum odoratum</i></u> | 5 | | FAC | <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) |
| 5. <u><i>Equisetum arvense</i></u> | 5 | | FAC | <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ |
| 6. <u><i>Oenanthe sarmentosa</i></u> | 3 | | OBL | <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) |
| 7. <u><i>Mimulus dentatus</i></u> | 1 | | OBL | |
| 8. <u><i>Athyrium filix-femina</i></u> | 1 | | FAC | |
| 9. <u><i>Senecio minimus</i></u> | 1 | | FACU | |
| 10. <u><i>Claytonia sibirica</i></u> | 2 | | FAC | |
| 11. <u><i>Sonchaspasper</i></u> | 3 | | FACU | |
| <u>56</u> = Total Cover | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Present? |
| 1. _____ | | | | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 2. _____ | | | | |
| <u>0</u> = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>20/10% litter</u> | | | | |

Remarks: Bare ground and rutting from equipment driving in wet areas. There is a debris pile on edge of plot.

SOIL

Sampling Point: SP-12

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|-----|----------------|----|-------------------|------------------|---------|-------------|
| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 0-8 | 10YR 2/2 | 100 | | | | | VGR SiL | 50% GR |
| 8-12 | 10YR 4/2 | 100 | 7.5YR 4/6 | 15 | C | M/PL | XGRSiL | 60% GR/10%K |
| 12+ | Bedrock | | | | | | | basalt |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

| | | | | | |
|--|---|---|---|--|--|
| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) | | | Indicators for Problematic Hydric Soils³: | | |
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) | | | |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) | | | |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) | | | |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) | | | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Depleted Matrix (F3) | | | | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | | | | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | | | | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | | | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

| | |
|---|---|
| Restrictive Layer (if present): Type: <u>Rock</u> Depth (inches): <u>12"</u> | Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|---|---|

Remarks: Disturbance + shallow soils and subsurface flow create conditions for wetland.

HYDROLOGY

| | | |
|--|---|--|
| Wetland Hydrology Indicators: | | |
| Primary Indicators (minimum of one required; check all that apply) | | Secondary Indicators (2 or more required) |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Water Marks (B1) | <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Drift Deposits (B3) | <input checked="" type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | |

| | |
|--|---|
| Field Observations: | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ | |
| Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u> | |
| Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u> | |

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Shallow soils, precipitation, runoff, groundwater and bedrock seeps provide hydrology for this unusual wetland. A manmade berm of gravel and rock and other quarry debris separate the wetland from the S! channel. Coastal flooding and depositional may also be contributing and influencing the channel location.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oregon TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 22, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-13
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 2-3
 Subregion (LRR): A Lat: 45.25064 Long: 123.96146 Datum: NAD 83
 Soil Map Unit Name: 20E Klotchie Necanicum complex 30-60% slopes NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|--|
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Hydic Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> |
| Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | |

Remarks: 3.8 inches of rain in the previous 2 weeks- sunny today. AT WQ-2 in the quarry. Disturbance from the quarry operations have altered vegetation, soil and hydrology. SP is in a depositional area of the quarry where the depth to bedrock exceeds 12-20 ". Rock and debris separate the wetland from the stream channel. There is a brush pile on the edge of the upland.

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: |
|--|------------------|-------------------|------------------|---|
| 1. <u>Alnus rubra</u> | 10 | D | FAC | Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) |
| 2. _____ | | | | Total Number of Dominant Species Across All Strata: <u>4</u> (B) |
| 3. _____ | | | | Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B) |
| 4. _____ | | | | |
| <u>10</u> = Total Cover | | | | |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Prevalence Index worksheet: |
| 1. <u>Rubus armeniacus</u> | 25 | D | FAC | Total % Cover of: _____ Multiply by: _____ |
| 2. <u>Spiraea douglasii</u> | 1 | | FACW | OBL species _____ x 1 = _____ |
| 3. <u>Salix hookeriana</u> | 1 | | FACW | FACW species _____ x 2 = _____ |
| 4. <u>Alnus rubra</u> | 10 | D | FAC | FAC species _____ x 3 = _____ |
| 5. _____ | | | | FACU species _____ x 4 = _____ |
| <u>37</u> = Total Cover | | | | UPL species _____ x 5 = _____ |
| | | | | Column Totals: _____ (A) |
| | | | | Prevalence Index = B/A = _____ |
| Herb Stratum (Plot size: <u>10'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Indicators: |
| 1. <u>Holcus lanatus</u> | 45 | D | FAC | <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation |
| 2. <u>Anthoxanthum odoratum</u> | 5 | | FAC | <input checked="" type="checkbox"/> 2 - Dominance Test is >50% |
| 3. <u>Oenanthe sarmentosa</u> | 2 | | OBL | <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ |
| 4. <u>Mimulus dentatus</u> | t | | OBL | <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) |
| 5. <u>Epilobium ciliatum</u> | 1 | | FAC | <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ |
| 6. <u>Carex obnupta</u> | 1 | | OBL | <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) |
| 7. <u>Lotus corniculatus</u> | 1 | | FAC | |
| 8. <u>Sonchaspasper</u> | 8 | | FACU | |
| 9. <u>Equisetm arvense</u> | 3 | | FAC | |
| 10. <u>Senecio minimus</u> | 2 | | FACU | |
| 11. <u>Hypochaeris radicata</u> | 1 | | FACU | |
| <u>69</u> = Total Cover | | | | ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| Woody Vine Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Present? |
| 1. _____ | | | | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 2. _____ | | | | |
| <u>0</u> = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>30/15% litter</u> | | | | |

Remarks: Cirsium spp t

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oregon TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 22, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-14
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): Hillslope/quarry Local relief (concave, convex, none): uneven Slope (%): 6
 Subregion (LRR): A Lat: 45.25064 Long: 123.96146 Datum: NAD 83
 Soil Map Unit Name: 20E Klootchie Necanicum complex 30-60% slopes NWI classification: PSSC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|--|--|
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Hydic Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|---|---|--|--|

Remarks: 3.81 inches of rain in the previous 2 weeks- sunny today. In quarry in south finger below the rock wall. Interruption of groundwater flow from quarry operations. Google Earth historical imagery shows quarry operations beginning sometime between 2005 and 2011.

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: |
|--|------------------|-------------------|------------------|---|
| 1. <u><i>Alnus rubra</i></u> | 60 | D | FAC | Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B) |
| 2. _____ | | | | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| <u>60</u> = Total Cover | | | | |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Prevalence Index worksheet: |
| 1. <u><i>Rubus armeniacus</i></u> | 15 | D | FAC | Total % Cover of: Multiply by: OBL species <input type="text"/> x 1 = <input type="text"/> FACW species <input type="text"/> x 2 = <input type="text"/> FAC species <input type="text"/> x 3 = <input type="text"/> FACU species <input type="text"/> x 4 = <input type="text"/> UPL species <input type="text"/> x 5 = <input type="text"/> Column Totals: <input type="text"/> (A) Prevalence Index = B/A = <input type="text"/> |
| 2. <u><i>Sambucus racemosa</i></u> | t | | FACU | |
| 3. <u><i>Salix hookeriana</i></u> | 10 | D | FACW | |
| 4. <u><i>Picea stichensis</i></u> | 2 | | FAC | |
| 5. _____ | | | | |
| <u>27</u> = Total Cover | | | | |
| Herb Stratum (Plot size: <u>10'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Indicators: |
| 1. <u><i>Equisetum arvense</i></u> | 2 | | FAC | 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 2. <u><i>Lysichiton americanus</i></u> | 8 | | OBL | |
| 3. <u><i>Oenanthe sarmentosa</i></u> | 3 | | OBL | |
| 4. <u><i>Athyrium filix-femina</i></u> | 1 | | FAC | |
| 5. <u><i>Tolmiea menziesii</i></u> | 10 | D | FAC | |
| 6. <u><i>Carex obnupta</i></u> | 35 | D | OBL | |
| 7. <u><i>Polystichum munitum</i></u> | t | | FAC | |
| 8. <u><i>Dryopteris expansa</i></u> | t | | FACW | |
| 9. _____ | | | | |
| 10. _____ | | | | |
| 11. _____ | | | | |
| <u>59</u> = Total Cover | | | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Present? |
| 1. _____ | | | | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 2. _____ | | | | |
| <u>0</u> = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>35/15% litter</u> | | | | |

Remarks: Vegetation is more typical of wetland conditions.

SOIL

Sampling Point: SP-14

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|-----|----------------|---|-------------------|------------------|----------|---------|
| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 0-4 | 10YR 3/2 | 100 | | | | | VGR SiL | 50% GR |
| 4-12 | 10YR 4/3 | 30 | | | | | VGR SiCL | 50% GR |
| | 10YR 4/2 | 55 | 7.5YR 4/4 | 5 | C | M | | |
| | 2.5Y 5/2 | 5 | | | | | | |
| 12-14+ | Rock | | | | | | | basalt |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) | | Indicators for Problematic Hydric Soils ³ : | |
|---|---|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) | |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) | |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) | |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input checked="" type="checkbox"/> Other (Explain in Remarks) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Depleted Matrix (F3) | | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

| | |
|---|---|
| Restrictive Layer (if present): Type: <u>Bedrock</u> Depth (inches): <u>12-14+</u> | Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
|---|---|

Remarks: Depth to redox, and soil color and gravel content changes - best meets F3.

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (2 or more required) | |
|--|---|--|--|
| Primary Indicators (minimum of one required; check all that apply) | | | |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) | |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input checked="" type="checkbox"/> Drainage Patterns (B10) | |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) | |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) | |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input checked="" type="checkbox"/> Geomorphic Position (D2) | |
| <input type="checkbox"/> Drift Deposits (B3) | <input checked="" type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) | |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) | |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) | |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | | |

| | |
|--|---|
| Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>4</u> Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>4</u> | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|--|---|

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Cloverdale data is not available for the month of May. Used the Tillamook data. 3.81" in the previous 2 weeks. Water year is normal for 2021/22 and previous 2 months are drier than normal

Remarks: Seepage along rock face and restrictive layer.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 22, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-15
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): hillslope/swale Local relief (concave, convex, none): concave Slope (%): 30-40
 Subregion (LRR): A Lat: 45.25017 Long: 123.96160 Datum: NAD 83
 Soil Map Unit Name: 20E Klootchie Necanicum complex NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|--|
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Hydic Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/> |
| Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | |

Remarks: 3.8 inches of rain in the previous 2 weeks- sunny today. Upslope of the S2 stream in a swale. Representative of wetlands on mountain slope in low topographic position.

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: |
|--|------------------|-------------------|------------------|---|
| 1. <u><i>Picea sitchensis</i></u> | 10 | D | FAC | Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60</u> (A/B) |
| 2. <u><i>Alnus rubra</i></u> | 10 | D | FAC | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| <u>20</u> = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) Prevalence Index = B/A = _____ |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <u><i>Rubus spectabilis</i></u> | 25 | D | FAC | |
| 2. <u><i>Gaultheria shallon</i></u> | 10 | | FACU | |
| 3. <u><i>Sambucus racemosa</i></u> | 45 | D | FACU | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| <u>80</u> = Total Cover | | | | |
| Herb Stratum (Plot size: <u>10'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 1. <u><i>Blechnum spicant</i></u> | 2 | | FAC | |
| 2. <u><i>Boykinia occidentalis</i></u> | 7 | | FAC | |
| 3. <u><i>Tiarella trifoliata</i></u> | 2 | | FAC | |
| 4. <u><i>Polystichum munitum</i></u> | 40 | D | FACU | |
| 5. <u><i>Claytonia sibirica</i></u> | 2 | | FAC | |
| 6. <u><i>Luzula parviflora</i></u> | 1 | | FAC | |
| 7. <u><i>Dryopteris expansa</i></u> | 2 | | FACW | |
| 8. <u><i>Athyrium filix-femina</i></u> | 2 | | FAC | |
| 9. <u><i>Mentha spicata</i></u> | 3 | | FACW | |
| 10. <u><i>Polypodium glycyrrhiza</i></u> | 1 | | FACU | |
| 11. _____ | | | | |
| <u>62</u> = Total Cover | | | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 1. _____ | | | | |
| 2. _____ | | | | |
| <u>0</u> = Total Cover | | | | |
| % Bare Ground in Herb Stratum <u>10/35% litter</u> | | | | |

Remarks: Mature spruce trees outside the plot

SOIL

Sampling Point: SP-15

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|-----|----------------|---|-------------------|------------------|---------|-------------------|
| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 5-0 | 10YR 3/3 | 100 | | | | | loamy | Humus/litter/moss |
| 0-3 | 10YR 3/4 | 100 | | | | | GR SiL | 20% GR |
| 3-17+ | 10YR 4/4 | 100 | | | | | GR SiL | 20% GR |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

| | |
|--|---|
| <p>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Redox Depressions (F8) </p> | <p>Indicators for Problematic Hydric Soils³:</p> <p> <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) </p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic</p> |
|--|---|

| | |
|---|--|
| <p>Restrictive Layer (if present):</p> <p>Type: _____</p> <p>Depth (inches): _____</p> | <p>Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> |
|---|--|

Remarks: forest soil

HYDROLOGY

| | | |
|--|--|---|
| <p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one required; check all that apply)</p> <p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) </p> | | <p>Secondary Indicators (2 or more required)</p> <p> <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7) </p> |
|--|--|---|

| | |
|--|--|
| <p>Field Observations:</p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)</p> | <p>Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> |
|--|--|

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Used the Tillamook data for precipitation in the past 2 weeks of 3.8". Cloverdale not available.

Remarks: Stream channel downslope.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oregon TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 21, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-16
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 40-50
 Subregion (LRR): A Lat: 45.24026 Long: 123.96369 Datum: NAD 83
 Soil Map Unit Name: 20E Klootchie-Necanicum complex NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | | | |
|---------------------------------|------------------------------|--|--|------------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| Hydric Soil Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | | | |
| Wetland Hydrology Present? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | | | |

Remarks: 3.8 inches of precipitation in the previous two weeks. Yellow pin flagging at sample point. Sample point is representative of non-wetlands. Followed the road in forest 50" up the hill and east. Beautiful ocean view to the west.

VEGETATION – Use scientific names of plants.

| Stratum | Plot size | Absolute % Cover | Dominant Species? | Indicator Status | Notes | |
|--|-----------------------------------|------------------|-------------------|------------------|--|--|
| Tree Stratum (Plot size: <u>30'</u>) | | | | | | |
| 1. | <u><i>Picea sitchensis</i></u> | 70 | D | FAC | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25</u> (A/B) | |
| 2. | | | | | | |
| 3. | <u><i>Tsuga heterophylla</i></u> | 35 | D | FACU | | |
| 4. | | | | | | |
| | | 105 | = Total Cover | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <input type="checkbox"/> x 1 = <input type="checkbox"/> FACW species <input type="checkbox"/> x 2 = <input type="checkbox"/> FAC species <input type="checkbox"/> x 3 = <input type="checkbox"/> FACU species <input type="checkbox"/> x 4 = <input type="checkbox"/> UPL species <input type="checkbox"/> x 5 = <input type="checkbox"/> Column Totals: <input type="checkbox"/> (A) Prevalence Index = B/A = <input type="checkbox"/> | |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | | | | | | |
| 1. | <u><i>Rubus spectabilis</i></u> | 3 | | FAC | | |
| 2. | <u><i>Gaultheria shallon</i></u> | 80 | D | FACU | | |
| 3. | <u><i>Acer circinatum</i></u> | 7 | | FAC | | |
| 4. | <u><i>Fragula purshiana</i></u> | 7 | | FAC | | |
| 5. | <u><i>Vaccinium ovatum</i></u> | t | | FACU | | |
| | | 98 | = Total Cover | | | |
| Herb Stratum (Plot size: <u>10'</u>) | | | | | | |
| 1. | <u><i>Polystichum munitum</i></u> | 25 | D | FACU | Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. | |
| 2. | | | | | | |
| 3. | | | | | | |
| 4. | | | | | | |
| 5. | | | | | | |
| 6. | | | | | | |
| 7. | | | | | | |
| 8. | | | | | | |
| 9. | | | | | | |
| 10. | | | | | | |
| 11. | | | | | | |
| | | 55 | = Total Cover | | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | | | | | | |
| 1. | <u><i>Rubus ursinus</i>*</u> | 1 | | FACU | | |
| 2. | | | | | | |
| | | 1 | = Total Cover | | | |
| % Bare Ground in Herb Stratum <u>5/50% litter</u> | | | | | | |
| Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | | | |

Remarks: RUUR included in shrub layer

SOIL

Sampling Point: SP-16

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|-----|----------------|---|-------------------|------------------|-------------|-------------------|
| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 3-0 | 7.5YR 3/3 | 100 | | | | | Smeary loam | Duff/litter/humus |
| 0-10 | 7.5YR 3/3 | 100 | | | | | SiL | Many roots |
| 10-20+ | 7.5YR 3/4 | 100 | | | | | SiL | Many roots |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) | | | Indicators for Problematic Hydric Soils ³ : | | |
|---|---|---|--|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) | | | |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) | | | |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) | | | |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) | | | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | | | | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | | | | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | | | | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | | | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

| | |
|--|---|
| Restrictive Layer (if present): Type: _____ Depth (inches): _____ | Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
|--|---|

Remarks: Soil is moist but not wet. Well drained on slope.

HYDROLOGY

| Wetland Hydrology Indicators: | | | |
|--|---|--|--|
| Primary Indicators (minimum of one required; check all that apply) | | Secondary Indicators (2 or more required) | |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) | |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Drainage Patterns (B10) | |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) | |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) | |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Geomorphic Position (D2) | |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) | |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) | |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) | |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | | |

| | |
|--|---|
| Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ | Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
|--|---|

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Well-drained soil on hill slope.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oregon TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 22, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-17
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): Dune terrace Local relief (concave, convex, none): concave Slope (%): 1-2
 Subregion (LRR): A Lat: 45.24979 Long: 123.96382 Datum: NAD 83
 Soil Map Unit Name: 9B- Waldport fine sand 0-5% slopes NWI classification: PFOC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---------------------------------|---|-----------------------------|--|
| Hydrophytic Vegetation Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Wetland Hydrology Present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |

Remarks: 3.8 inches of rain in the previous 2 weeks- sunny today. Representative of wetlands south of the road. Mature spruce rooted along the wetland boundary. Beltz Creek channel is about 5 feet to the west. Wetland intact/functional with native species.

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
|---|------------------|-------------------|------------------|---|
| 1. <u><i>Picea sitchensis</i></u> | 45 | D | FAC | Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B) |
| 2. <u><i>Alnus rubra</i></u> | 40 | D | FAC | |
| 3. _____ | | | | |
| 4. _____ | | | | |
| <u>85</u> | | = Total Cover | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <input type="checkbox"/> x 1 = <input type="checkbox"/> FACW species <input type="checkbox"/> x 2 = <input type="checkbox"/> FAC species <input type="checkbox"/> x 3 = <input type="checkbox"/> FACU species <input type="checkbox"/> x 4 = <input type="checkbox"/> UPL species <input type="checkbox"/> x 5 = <input type="checkbox"/> Column Totals: <input type="checkbox"/> (A) Prevalence Index = B/A = <input type="checkbox"/> |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <u><i>Malus fusca</i></u> | 10 | | FACW | |
| 2. <u><i>Gaultheria shallon</i></u> | 8 | | FACU | |
| 3. <u><i>Salix hookeriana</i></u> | 30 | D | FACW | |
| 4. <u><i>Lonicera involucrata</i></u> | 12 | D | FAC | |
| 5. _____ | | | | |
| <u>60</u> | | = Total Cover | | |
| Herb Stratum (Plot size: <u>10'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. <u><i>Carex obnupta</i></u> | 80 | D | OBL | |
| 2. <u><i>Lysichiton americana</i></u> | 6 | | OBL | |
| 3. <u><i>Athyrium filix-femina</i></u> | 5 | | FAC | |
| 4. _____ | | | | |
| 5. _____ | | | | |
| 6. _____ | | | | |
| 7. _____ | | | | |
| 8. _____ | | | | |
| 9. _____ | | | | |
| 10. _____ | | | | |
| 11. _____ | | | | |
| <u>91</u> | | = Total Cover | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | |
| 1. _____ | | | | |
| 2. _____ | | | | |
| <u>0</u> | | = Total Cover | | |
| % Bare Ground in Herb Stratum <u>10/30% litter</u> | | | | |
| Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. | | | | |
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | | | |

Remarks:

SOIL

Sampling Point: SP-17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
|-------------------|---------------|-----|----------------|---|-------------------|------------------|--------------------------|----------|
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 1-0 | 7.5YR 2.5/1 | 100 | | | | | | |
| 0-10+ | 7.5YR 2.5/2 | 100 | | | | | Mucky fine sandy loam | 8-12% OC |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | |
|--|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input checked="" type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) |

- 2 cm Muck (A10)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Can squeeze water easily out of the soil and see fibers, with low bulk density. Water is light brown. High Organic Carbon. This soil may meet other soil indicators, but it is too wet to dig out. Water filled up the hole within a few minutes.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- | | | |
|--|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input checked="" type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | |

Field Observations:

Surface Water Present? Yes No Depth (inches): * _____
 Water Table Present? Yes No Depth (inches): 3 _____
 Saturation Present? (includes capillary fringe) Yes No Depth (inches): 0-1 _____

Wetland Hydrology Present? Yes No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Water in the stream about 5 feet to the west.

3WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oregon TreeHouse WD City/County: Tierra del Mar/Tillamook Sampling Date: May 22, 2022
 Applicant/Owner: Kevin Gindlesperger State: OR Sampling Point: SP-18
 Investigator(s): C. McDonald, K. McDonald Section, Township, Range: 04S-10W-06 Lot 600
 Landform (hillslope, terrace, etc.): Dune terrace Local relief (concave, convex, none): concave Slope (%): 0-1
 Subregion (LRR): A Lat: 45.25020 Long: 123.96394 Datum: NAD 83
 Soil Map Unit Name: 9B- Waldport fine sand 0-5% slopes NWI classification: PFOC
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | | |
|---|---|--|--|
| Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Hydic Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|---|---|--|--|

Remarks: 3.8 inches of rain in the previous 2 weeks- sunny today. Representative of wetlands north of the road. Mature spruce rooted along the wetland boundary. Beltz Creek channel is about 5 feet to the west. Wetland intact functional with native species.

VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: <u>30'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | Dominance Test worksheet: | |
|--|------------------|-------------------|------------------|---|--|
| 1. <u><i>Picea sitchensis</i></u> | 50 | D | FAC | Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83</u> (A/B) | |
| 2. <u><i>Alnus rubra</i></u> | 30 | D | FAC | | |
| 3. _____ | | | | | |
| 4. _____ | | | | | |
| <u>80</u> = Total Cover | | | | Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <input type="checkbox"/> x 1 = <input type="checkbox"/> FACW species <input type="checkbox"/> x 2 = <input type="checkbox"/> FAC species <input type="checkbox"/> x 3 = <input type="checkbox"/> FACU species <input type="checkbox"/> x 4 = <input type="checkbox"/> UPL species <input type="checkbox"/> x 5 = <input type="checkbox"/> Column Totals: <input type="checkbox"/> (A) <input type="checkbox"/> Prevalence Index = B/A = <input type="checkbox"/> | |
| Sapling/Shrub Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | | |
| 1. <u><i>Rubus spectabilis</i></u> | 3 | D | FAC | | |
| 2. <u><i>Sambucus racemosa</i></u> | 3 | D | FACU | | |
| 3. <u><i>Salix hookeriana</i></u> | 5 | D | FACW | | |
| 4. _____ | | | | | |
| 5. _____ | | | | | |
| <u>11</u> = Total Cover | | | | | |
| Herb Stratum (Plot size: <u>10'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | | |
| 1. <u><i>Carex obnupta</i></u> | 90 | D | OBL | Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. | |
| 2. <u><i>Lysichiton americanus</i></u> | 10 | | OBL | | |
| 3. <u><i>Athyrium filix-femina</i></u> | 5 | | FAC | | |
| 4. <u><i>Polystichum munitum</i></u> | 1 | | FACU | | |
| 5. _____ | | | | | |
| 6. _____ | | | | | |
| 7. _____ | | | | | |
| 8. _____ | | | | | |
| 9. _____ | | | | | |
| 10. _____ | | | | | |
| 11. _____ | | | | | |
| <u>91</u> = Total Cover | | | | | |
| Woody Vine Stratum (Plot size: <u>20'</u>) | Absolute % Cover | Dominant Species? | Indicator Status | | |
| 1. _____ | | | | Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | |
| 2. _____ | | | | | |
| <u>0</u> = Total Cover | | | | | |
| % Bare Ground in Herb Stratum <u>10/30% litter</u> | | | | | |

Remarks: SARA stems from dying plants + a few live ones. Spruce is mature. Called this PFOC because of the mature spruce along the wetland boundary.

SOIL

Sampling Point: SP-18

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) | | | | | | | | |
|---|---------------|-----|----------------|---|-------------------|------------------|-----------------------|----------|
| Depth (inches) | Matrix | | Redox Features | | | | Texture | Remarks |
| | Color (moist) | % | Color (moist) | % | Type ¹ | Loc ² | | |
| 0-10+ | 7.5YR 2.5/3 | 100 | | | | | Mucky fine sandy loam | 8-12% OC |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) | | Indicators for Problematic Hydric Soils ³ : | |
|---|---|---|--|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) | |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) | |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) | |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Other (Explain in Remarks) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | | |
| <input checked="" type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

| | |
|--|---|
| Restrictive Layer (if present): Type: _____ Depth (inches): _____ | Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
|--|---|

Remarks: Can squeeze water easily out of the soil and see fibers, with low bulk density. Water is light brown. High Organic Carbon. This soil may meet other soil indicators but it is too wet to dig out. Water filled up the hole within a few minutes.

HYDROLOGY

| Wetland Hydrology Indicators: | | Secondary Indicators (2 or more required) | |
|--|---|--|--|
| Primary Indicators (minimum of one required; check all that apply) | | | |
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) | <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) | |
| <input checked="" type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Salt Crust (B11) | <input checked="" type="checkbox"/> Drainage Patterns (B10) | |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Dry-Season Water Table (C2) | |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) | |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input checked="" type="checkbox"/> Geomorphic Position (D2) | |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Shallow Aquitard (D3) | |
| <input type="checkbox"/> Algal Mat or Crust (B4) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> FAC-Neutral Test (D5) | |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) | <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) | |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Frost-Heave Hummocks (D7) | |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | | |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) | | | |

| | |
|--|---|
| Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 6 Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 0-1 | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|--|---|

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Water in the stream near OHWL-Line

Appendix B. Stream Description, Methods and Photos

A. Methods Used to Determine the Ordinary High-Water Line (OHWL)

Vegetation composition and cover, slope shape and the outer limits of the depression within the braided stream were used to determine the OHWL. The outermost edge of the east side of the braided channel was flagged on May 21 and 22, 2022. Due to time and contractual constraints only segments of the OHWL was flagged. Field observations, professional judgement, DEM and aerial imagery as used to show the centerline of Beltz Creek as indicated on Figure 6.

The OHWL for streams S1 and S2 was determined by observing vegetation composition and cover, slope shape and gradient, and the active channel width. The eastern 80 feet as shown on Figure 6 does not meet the DSL precision standard of 1 meter. Professional judgement, DEM and aerial imagery as used to determine the extent of the S1 stream as shown on Figure 6.

B. Description of Streams Within the Study Area

Beltz Creek is a fresh-water, low gradient, shallow, braided stream that meanders across a broad floodplain. The stream and wetland are in a natural state and provide resident fish, amphibian and wildlife habitat. Dunes to the west and the hillslope toe to the east form the outer edges of unconstrained flow. Flood events carrying sediment loads likely direct the flow to off channels. This study found the mainstem of the channel is centered to the east along the toe of the hillslope. The western bank is 15-30 feet westward. The substrate is sandy, and gradient is less than 2 percent. Streambanks are vegetated with Hooker's Willow, Black Twinberry, Salmonberry, Salal, California Black Currant, Trailing Blackberry, and Lady Fern. The braided area of the is Palustrine Scrub-Shrub Seasonally Flooded (PSSC). If present, Sitka Spruce and Red Alder are within islands of the braided channels. The dominant herbaceous species are Slough Sedge and Skunk Cabbage. The stream flows off-site to the north toward Sand Lake Estuary. At Floyd Avenue the road bisects the wetland. Two culverts connect wetland A to wetland B. Beaver activity was not observed.

Mountain stream S1 is a perennial stream that originates off-site to the east. Stream gradient is high within the U-shaped channel and substrate is gravelly or bedrock controlled. Mid-slope the stream flows through the quarry creating a cascading waterfall. Soil and rock debris from previous quarry operations direct flow to the southern edge of the quarry and around the quarry wetland. Vegetation composition along the banks of both the S1 and S2 streams is composed of Sitka Spruce, Western Hemlock and Red Alder. Salmonberry, California Black Currant, Red Elderberry, and Salal are common shrubs. Within the herbaceous layer Lady Fern, Sword Fern and native herbs are present. Stream flow is constricted at the road crossing and lack of road maintenance has created conditions for overland flow where a twelve inch culvert is in need of replacement.

The mountains stream S2 is a first order intermittent stream. This stream is a narrow high gradient channel. The stream confluence with S1 is below the waterfall at the quarry. Hydrology within the mountain streams S1 and S2 are overland flow and drainage basin concentration and flow, direct precipitation, ground water, and seepage. Table 1 summarizes stream characteristics by stream segment. See photos P-2, P-7 and P-9 in Figure 5.

Appendix B. Stream Description, Methods and Photos

Table 1. Stream Description by Stream Segment

| Stream ID | Stream Length (ft)/Area (acres) | Average stream width (ft)* | Average Estimated depth (ft)* | Cowardin/HGM Class | Comments |
|------------------------|-------------------------------------|----------------------------|-------------------------------|--|--|
| Beltz Creek floodplain | Flow is confined to wetland A and B | Braided varies 15-40 feet | <.5-2 | Riverine/Flat/ Lower Perennial/Unconsolidated Bottom/Fresh | Low gradient, sandy bottom, flow could be low or non-existent in a dry year. Flood events redirect flow. |
| S1 | 91 ft/.06 | 2-4 | <.5-1 | Riverine/Perennial/ Streambed/Cobble-Gravel/Fresh | Perennial, high gradient mountain stream. |
| S2 | 567 ft/.01 | 2-3 | <.5 | Riverine/Intermittent/ Streambed/Cobble-Gravel/Fresh | Intermittent flow. High gradient |



Figure 11. Blue and White flagging is edge of Beltz Creek Channel. The blue flagging is wetland boundary. Looking d/s to the north into wetland B (P-11).

Appendix B. Stream Description, Methods and Photos



Figure 12. S1 stream at Quarry looking d/s (P-12).

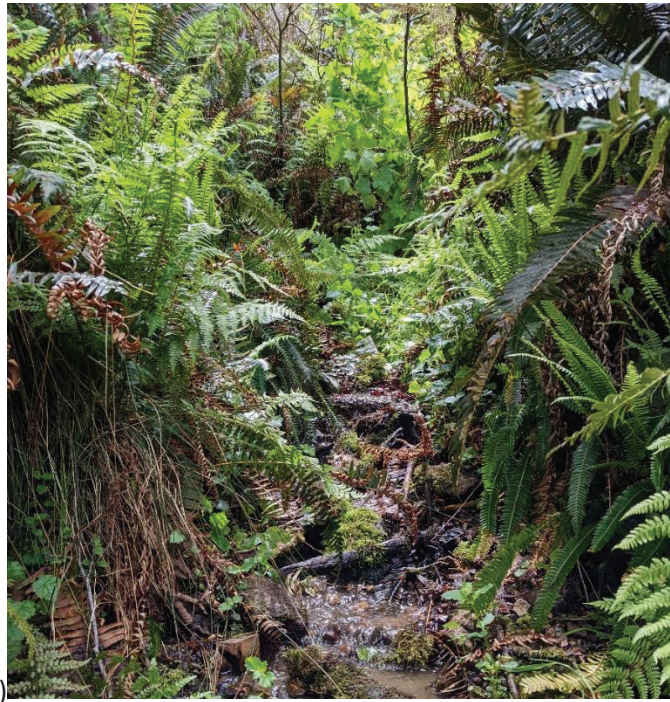


Figure 13. S2 stream looking u/s to the south at confluence with S1(P-13)



Oregon

Tina Kotek, Governor

Department of State Lands

775 Summer Street NE, Suite 100

Salem, OR 97301-1279

(503) 986-5200

FAX (503) 378-4844

www.oregon.gov/dsl

State Land Board

January 17, 2023

Oregon TreeHouse Partners LLC
Attn: Kevin Gindlesperger
1276 NW 107th Avenue
Portland, OR 97229

Tina Kotek
Governor

Re: WD # 2022-0477 **Approved**
Wetland Delineation Report for Oregon TreeHouse
Tillamook County; T4S R10W S6 TL600 (Portion)

Shemia Fagan
Secretary of State

Tobias Read
State Treasurer

Dear Kevin Gindlesperger:

The Department of State Lands has reviewed the wetland delineation report prepared by Christine McDonald for the site referenced above. Please note that the study area includes only a portion of the tax lot described above (see the attached maps). Based upon the information presented in the report, and additional information submitted upon request, we concur with the wetland and waterway boundaries as mapped in Figure 6 of the report. Please replace all copies of the preliminary wetland map with this final Department-approved map.

Within the study area, 4 wetlands (Wetland A, B, C and D, totaling approximately 1.81 acres) and 3 waterways (S1, S2, Unnamed Tributary) were identified. They are subject to the permit requirements of the state Removal-Fill Law. Under current regulations, a state permit is required for cumulative fill or annual excavation of 50 cubic yards or more in wetlands or below the ordinary high-water line (OHWL) of the waterway (or the 2-year recurrence interval flood elevation if OHWL cannot be determined). Additionally, the Unnamed Tributary is approximated and does not meet the DSL sub-meter mapping accuracy standard. Should a Removal-Fill permit be required for work at this location, an updated delineation map with improved mapping accuracy may be required. In addition, Wetland A and B contain a mosaic of mature Sitka spruce tree clumps and therefore, part or all of these wetlands may meet the state's criteria for Aquatic Resources of Special Concern. This could affect the eligibility protocols for compensatory mitigation if a Removal-Fill permit is required.

This concurrence is for purposes of the state Removal-Fill Law only. We recommend that you attach a copy of this concurrence letter to any subsequent state permit application to speed application review. Federal, other state agencies or local permit requirements may apply as well. The U.S. Army Corps of Engineers will determine jurisdiction under the Clean Water Act, which may require submittal of a complete Wetland Delineation Report.

Please be advised that state law establishes a preference for avoidance of wetland impacts. Because measures to avoid and minimize wetland impacts may include reconfiguring parcel layout and size or development design, we recommend that you work with Department staff on appropriate site design before completing the city or county land use approval process.

This concurrence is based on information provided to the agency. The jurisdictional determination is valid for five years from the date of this letter unless new information necessitates a revision. Circumstances under which the Department may change a determination are found in OAR 141-090-0045 (available on our web site or upon request). In addition, laws enacted by the legislature and/or rules adopted by the Department may result in a change in jurisdiction; individuals and applicants are subject to the regulations that are in effect at the time of the removal-fill activity or complete permit application. The applicant, landowner, or agent may submit a request for reconsideration of this determination in writing within six months of the date of this letter.

Thank you for having the site evaluated. If you have any questions, please contact the Jurisdiction Coordinator for Tillamook County, Daniel Evans, PWS, at (503) 986-5271.

Sincerely,

A handwritten signature in black ink, appearing to read "Peter Ryan".

Peter Ryan, SPWS
Aquatic Resource Specialist

Enclosures

ec: Christine McDonald
Tillamook County Planning Department
Kate Mott, Corps of Engineers
Dan Cary, SPWS, DSL
Oregon Coastal Management Program

WETLAND DELINEATION / DETERMINATION REPORT COVER FORM

A complete report and signed report cover form, along with [applicable review fee](#), are required before a report review timeline can be initiated by the Department of State Lands. All applicants will receive an emailed confirmation that includes the report's unique file number and other information.

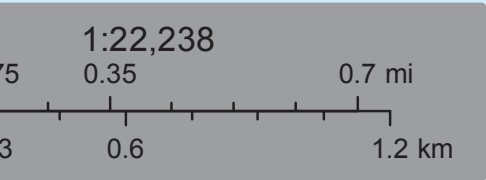
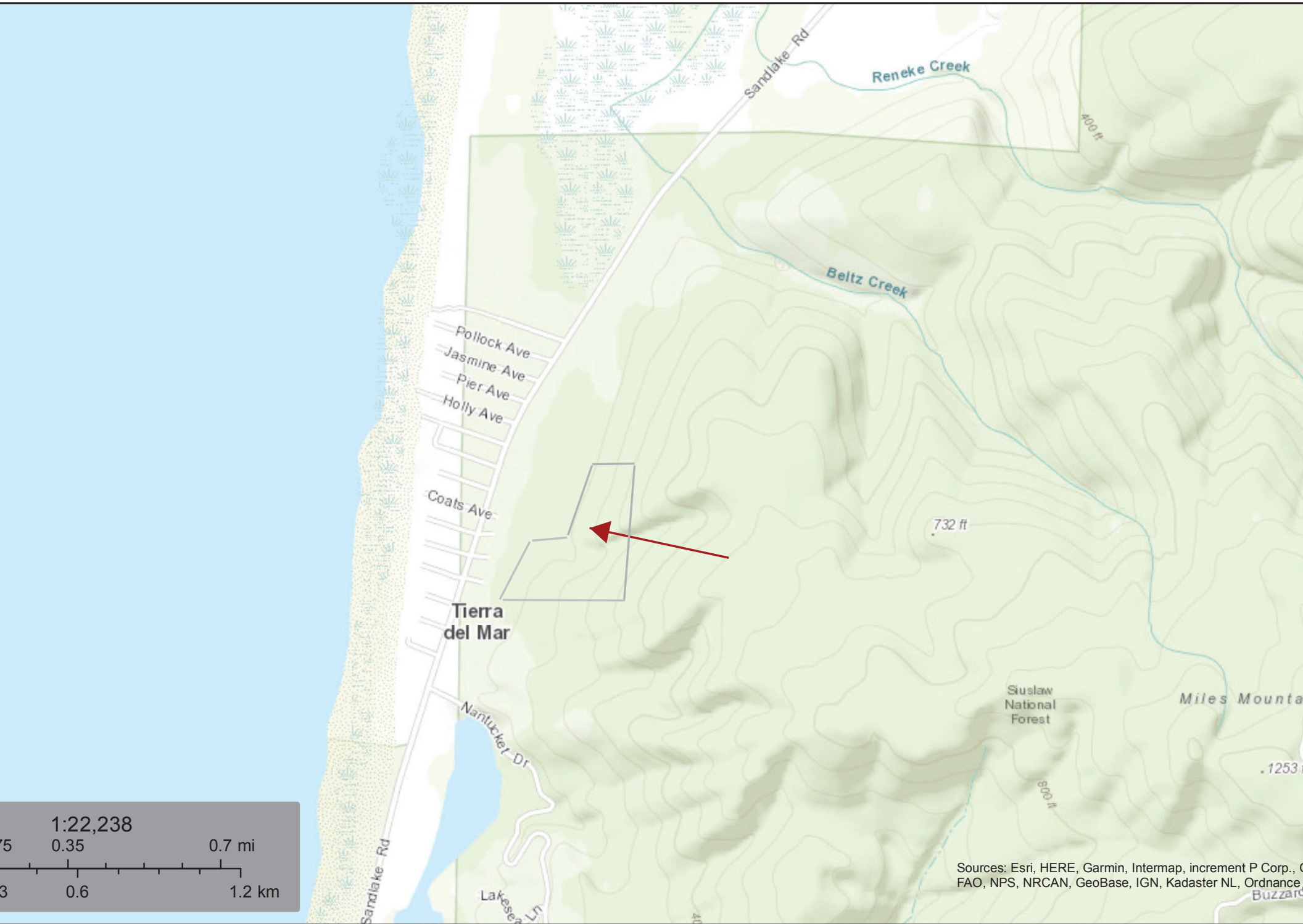
Ways to submit report:

- ❖ **Under 50MB** - A single unlocked PDF can be emailed to: wetland.delineation@dsl.oregon.gov.
- ❖ **50MB or larger** - A single unlocked PDF can be uploaded to [DSL's Box.com](#) website. After upload notify DSL by email at: wetland.delineation@dsl.oregon.gov.
- ❖ **OR** a hard copy of the unbound report and signed cover form can be mailed to: Oregon Department of State Lands, 775 Summer Street NE, Suite 100, Salem, OR 97301-1279.

Ways to pay review fee:

- ❖ By credit card on [DSL's epayment portal](#) after receiving the unique file number from DSL's emailed confirmation.
- ❖ By check payable to the Oregon Department of State Lands attached to the unbound mailed hardcopy **OR** attached to the complete signed cover form if report submitted electronically.

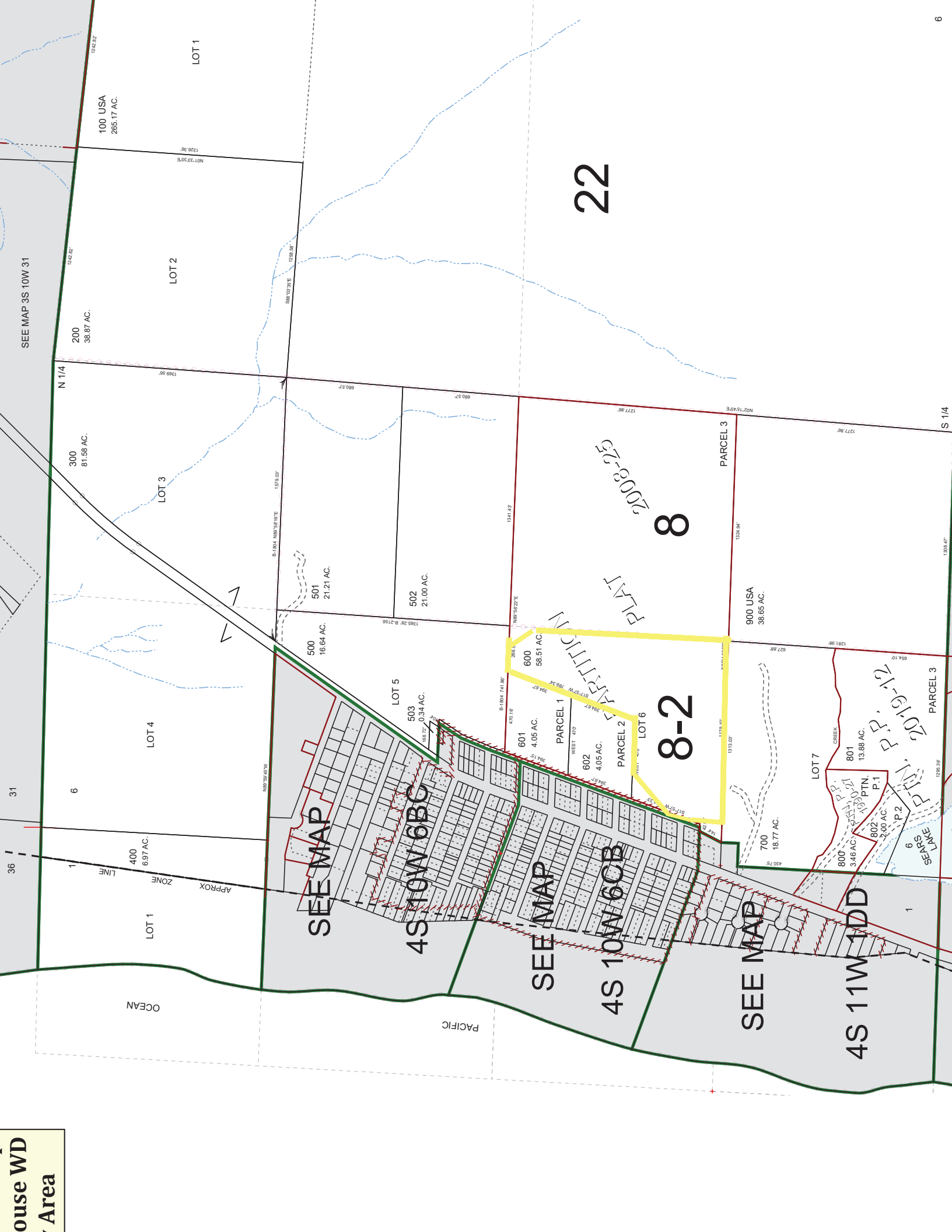
| Contact and Authorization Information | |
|--|---|
| <input checked="" type="checkbox"/> Applicant <input checked="" type="checkbox"/> Owner Name, Firm and Address: Oregon TreeHouse Partners LLC | Business phone # Mobile phone # (optional) E-mail: |
| <input checked="" type="checkbox"/> Authorized Legal Agent, Name and Address (if different): Kevin Gindlesperger 1276 NW 107th Ave. Portland, OR 97229 | Business phone # (503) 969-2158 Mobile phone # (optional) E-mail: kevingindy@yahoo.com |
| I either own the property described below or I have legal authority to allow access to the property. I authorize the Department to access the property for the purpose of confirming the information in the report, after prior notification to the primary contact. | |
| Typed/Printed Name: <u>Kevin Gindlesperger</u> Signature: Date: <u>8/27/2022</u> Special instructions regarding site access: _____ | |
| Project and Site Information | |
| Project Name: Oregon TreeHouse WD | Latitude: 45.250228 Longitude: -123.963942 decimal degree - centroid of site or start & end points of linear project |
| Proposed Use: Development for commercial camping | Tax Map # 04S10W06 Tax Lot(s) 600 (partial) Tax Map # _____ Tax Lot(s) _____ |
| Project Street Address (or other descriptive location): From SandLake Road take Floyd Avenue. Property boundary begins at the gate. 6080 Floyd Avenue. | Township 04S Range 10W Section 06 QQ Use separate sheet for additional tax and location information |
| City: Tierra del Mar County: Tillamook | Waterway: Sand Lake River Mile: 2.4 |
| Wetland Delineation Information | |
| Wetland Consultant Name, Firm and Address: Christine McDonald 2901 Brayton Road Pullman, WA 99163 | Phone # (503) 801-2243 Mobile phone # (if applicable) E-mail: Contactchris100@gmail.com |
| The information and conclusions on this form and in the attached report are true and correct to the best of my knowledge. | |
| Consultant Signature: Christine McDonald Date: 08/22/2022 | |
| Primary Contact for report review and site access is <input checked="" type="checkbox"/> Consultant <input type="checkbox"/> Applicant/Owner <input type="checkbox"/> Authorized Agent | |
| Wetland/Waters Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Study Area size: 18.6 Total Wetland Acreage: 1.8100 |
| Check Applicable Boxes Below | |
| <input type="checkbox"/> R-F permit application submitted | <input checked="" type="checkbox"/> Fee payment submitted \$ <u>500</u> |
| <input type="checkbox"/> Mitigation bank site | <input type="checkbox"/> Resubmittal of rejected report (\$100) |
| <input type="checkbox"/> EFSC/ODOE Proj. Mgr: _____ | <input type="checkbox"/> Request for Reissuance. See eligibility criteria. (no fee) DSL # _____ Expiration date _____ |
| <input type="checkbox"/> Wetland restoration/enhancement project (not mitigation) | <input type="checkbox"/> LWI shows wetlands or waters on parcel Wetland ID code _____ |
| <input checked="" type="checkbox"/> Previous delineation/application on parcel If known, previous DSL # <u>WD2008-0525</u> | |
| For Office Use Only | |
| DSL Reviewer: <u>DE</u> | Fee Paid Date: ____ / ____ / ____ |
| Date Delineation Received: <u>08 / 29 / 2022</u> | DSL WD # <u>2022-0477</u> DSL App.# _____ |



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance

This map is for general reference only. The US Service is not responsible for the accuracy or base data shown on this map. All wetlands be used in accordance with the layer metadata

House WD Area



SEE MAP 3S 10W 31

100 USA
285.17 AC.

LOT 2

LOT 1

200
38.87 AC.

300
81.58 AC.

LOT 3

LOT 4

LOT 1

OCEAN

SEE MAP

4S 10W 6BC

SEE MAP

4S 10W 6CB

SEE MAP

4S 11W 1DD

LOT 5

501
21.21 AC.

502
21.00 AC.

500
16.64 AC.

503
0.34 AC.

601
4.05 AC.

602
4.05 AC.

600
58.51 AC.

8-2

8

PLAT

2008-25

PARCEL 3

900 USA
38.65 AC.

LOT 7

801
13.88 AC.

802
2.00 AC.

800
3.46 AC.

PTN. P.P. 2019-12

SEARS LAKE

PTN. P.1

PTN. P.2

PTN. P.3

PTN. P.4

PTN. P.5

PTN. P.6

PTN. P.7

PTN. P.8

PTN. P.9

PTN. P.10

PTN. P.11

PTN. P.12

February 14, 2023

Christine McDonald
2901 Brayton Road
Pullman, WA 99163



Subject: Lot 6000

To Tillamook County:

Oregon Treehouse Inc. contracted me to do the wetland study on the subject property. The study showed the presence of four wetlands totally 1.81 acres within the 18.6-acre study area. Three streams were also identified within the lowland terrace and on the mountain slope. A Concurrence Letter of the wetland findings was issued by DSL on January 17, 2023.

As this project moves forward, the goals are to avoid the jurisdictional wetlands and reduce and mitigate impacts to waterways at the stream crossings. The site-specific plans of how that will be done are shown on the new site plan, which illustrates no planned improvements in wetlands, septic fields have been relocated further away from mapped wetlands, reduced roadway size at the main crossing on the unnamed stream, and replacement of degraded culverts on the mountain stream S1.

The need for permitting within the waterway road crossings is being explored with local, state and federal agencies. A Pre-Application meeting with the appropriate agencies to review the site-specific plans as they are developed will further help to reduce and mitigate any impacts to jurisdictional wetlands and waterways and determine the level of permitting, if necessary. Given the degraded conditions at the quarry site this project will enhance the wetland habitat, provide education and meet the goals of Two Capes Lookout.

Best Regards,

A handwritten signature in cursive script, appearing to read 'CM'.

Christine McDonald
Soil Scientist